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FORMING, OPERATING, AND IMPROVING MICRO-SYSTEMS OF HEALTH CARE

A Thesis

Submitted to the Faculty

in partial fulfillment of the requirements for

the degree of

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in the

Evaluative Clinical Sciences

by

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ABSTRACT

Health care micro-systems are small, organized groups of clinicians and staff working together with a shared clinical purpose to provide care for a defined set of patients. The size of individual micro-systems vary — a micro-system must be large enough to accomplish its clinical purpose, but small enough to allow knowledge of the individual parts and the interrelationships between the parts. Use of information is key to the micro-system's ability to function; information technology facilitates collecting, assessing, and sharing information. Micro-systems may be part of a larger organization and are embedded in a legal, financial, social, and regulatory environment.

This research used qualitative methods to explore, describe, and characterize the micro-systems that coexist to form our current health care delivery system. Telephone interviews were conducted with representatives from 43 micro-systems. The interview was designed to determine each micro-system's level of performance, patient experience, use of information and information technology, investment in improvement, and leadership and management. A cross-case analysis of these micro-systems revealed eight factors for thinking about characteristics of health care micro-systems — integration of information, measurement, interdependence of the care team, supportiveness of the larger system, constancy of purpose, connection to community, investment in improvement, and alignment of role and training. These eight factors became a framework that can be used for evaluating health care micro-systems.

Five micro-systems were asked an additional set of questions to determine the process and outcomes of care provided to patients with diabetes. Two approaches were used to analyze the data. First a micro-system analysis linked the micro-system model to the process and outcomes of care in the five diabetes sites. This analysis did not reveal a

"best" strategy for providing diabetes care. However it was clear that not all the patients were receiving the recommended care and the micro-systems were not consistently measuring the care that was provided. The second approach used to analyze the data applied the eight factors of the micro-system framework to the five diabetes sites. This provided additional insight into identifying areas that individual micro-systems could improve to eliminate some of the barriers to providing effective diabetes care.

PREFACE

The aim of this research is to understand and to gain insight into how to form, operate, and improve micro-systems of care. The results from this work are relevant to providers, administrators, health professions faculty, and policy makers. Providers and administrators — those involved in organizing and providing health care at the frontlines and in enabling the delivery of health care by the front offices — are looking for ways to improve the current process and outcomes of care and take work and costs out of the system. Health professions faculty continue to look for ways to prepare new graduates for the reality they will be facing as future providers and leaders in health care. Policy makers and those involved in planning delivery of care at a system level can use the results in the design and redesign of delivery systems.

This work draws upon my experiences as a graduate student at the Center for Evaluative Clinical Sciences (CECS) and as a Research Associate in the Health Care Improvement Leadership Development section of CECS. This work has required expanding my skills in qualitative research and analysis. Additionally, it has been necessary to learn about type 2 diabetes and approaches to providing care for diabetic patients. This was accomplished by enrolling in a four-week class (16 hours) designed for the elderly (>65) patient with type 2 diabetes. This class provided an opportunity to learn about diabetes from the patient's perspective. Volunteering at a diabetes care center over a period of two months allowed me to learn about diabetes from the clinician's perspective while helping them identify and map the process of care for patients with type 2 diabetes

ACKNOWLEDGMENTS

I would like to acknowledge the support of my mentors, colleagues, friends, and family — the people who have been instrumental in my pursuit of graduate education and in the completion of this doctoral thesis. It has been a privilege to have these people in my life.

While I was a graduate student at the UNC School of Public Health, Arnie Kaluzny was my academic advisor. In responding to my interest in learning more about health care quality improvement, Arnie said, "If you want to learn about improvement, you need to work with someone who is doing improvement." That is where my adventure in working with, and learning from, Paul Batalden began. One of the first things that Paul told me when I met him was that he wanted to create the space for me to work within. As my mentor, Paul has done that. He continues to help me define and redefine that space.

In addition to Arnie Kaluzny and Paul Batalden, the other members of my doctoral research committee — Ross Baker, Gene Nelson, and Gerry O'Connor — were a constant source of guidance and advice. From the beginning I have been confident that under the tutelage of my "five-star committee" when I finally finished it would be because I earned it.

My parents, David and Arlene Johnson, have provided emotional support and because they believe in me I have been able to believe in myself. Finally, this thesis is dedicated to my son, Harrison, who now knows more about pursuing a Ph.D. than any 3-year old should know — or be burdened with. Harrison's thought provoking question, "Mama, what do you want to be when you grow up?", encouraged me to finish writing my doctoral thesis and start the next chapter of my life.

The data used in this research resulted from a grant by the Robert Wood Johnson Foundation (Grant Number 036111) to the Institute of Medicine's Committee on the Quality of Health Care in America. The conclusions made herein are my own, and do imply endorsement and/or agreement by the Institute of Medicine, its Committee on the Quality of Health Care in America, or the Robert Wood Johnson Foundation.

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I. INTRODUCTION

To understand the concept of health care micro-systems, it helps to start with an understanding of systems. A system, according to Deming is "a network of interdependent components that work together to try to accomplish the aim of the system" (Deming 1993). Deming explains that every system must have an aim — the components of the system may not be clearly defined or documented, but without an aim there is no system. The boundaries of a system can be drawn at many different levels — a country, a geographic region, an integrated delivery system, a hospital, a department within a hospital, etc. The more inclusive the boundaries of the system, the more difficult it will be to manage, because management of a system requires "knowledge of the interrelationships between all the components within the system and of the people that work in it" (Deming 1993). Finally, Deming suggests that every system must be managed and the key to management is cooperation between the components toward the aim of the system.

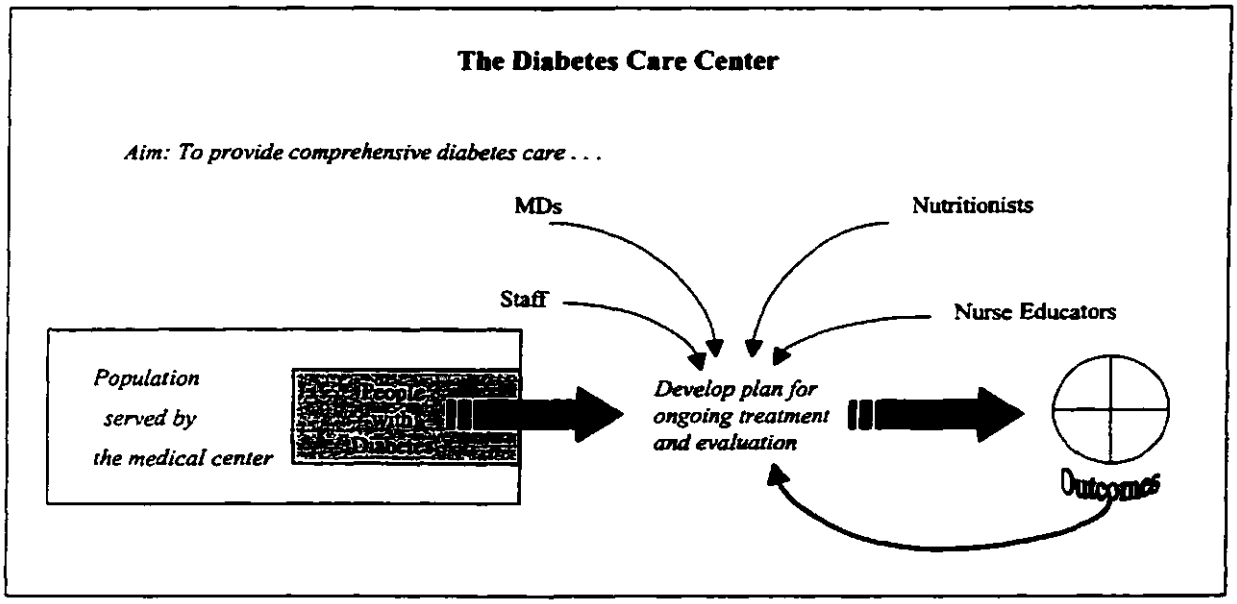
This basic understanding of a system, coupled with the theory of a smallest replicable unit (Quinn 1992) is at the heart of the concept of health care micro-systems. Quinn suggests the essential elements in a smallest replicable unit are: (1) the key players, (2) core activities, (3) micro-measures that help manage the core activities, and (4) combinations of activities and measures to meet individual needs.

From our understanding of a system and a smallest replicable unit, one can start to define the concept of a health care micro-system. The key players are a few clinicians and support staff, individual patients and a population of patients the micro-system serves. The core activities are processes the micro-system has for caring for their patients. The micro-measures, through the help of information and information

technology, enable the micro-system to monitor the outcomes of the care provided and plan care for the population they serve. The micro-system has an aim, e.g., to offer primary care, to provide cardiothoracic surgical care, to provide home health services, to provide care for patients with diabetes, etc. It is the shared aim, what Deming might refer to as the "constancy of purpose" (Deming 1986), that defines the essential elements of each micro-system.

An example of a micro-system organized to deliver diabetes care is illustrated in Figure 1. Although this is a simplified illustration of the work involved in providing diabetes care, it is helpful to see how the elements of the micro-system come together. The Diabetes Care Center's aim is to provide education, care, and outreach services for all patients with diabetes in an effort to minimize complications associated with diabetes. The Diabetes Care Center cares for the population served by the larger organization, which in this example is an academic medical center. Within that population are people living with diabetes who become patients of the Diabetes Care Center. Physicians, nurse educators, nutritionists, and other staff work together to develop a plan for each patient for ongoing treatment and evaluation. The Diabetes Care Center measures the results of that care in four major categories (clinical outcomes, functional outcomes, patient satisfaction, and financial/operation outcomes). Finally, feedback of the results into the care plan is used to improve the care that is provided.

Figure 1 Example of a Micro-system Organized to Deliver Diabetes Care



The following operational definition of micro-systems is drawn from my understanding of systems thinking, Brian Quinn's theory of the smallest replicable unit, the research and work directed by Batalden and Nelson at Dartmouth, and my interviews with 43 micro-systems across the country:

> *Micro-systems are small, organized groups of clinicians and staff working together with a shared clinical purpose to provide care for a defined set of patients. The clinical purpose defines the essential parts of the micro-system. A micro-system must be large enough to accomplish its clinical purpose, but small enough to allow knowledge of the individual parts and the interrelationships between the parts. Use of information is key to the micro-system's ability to function; information technology facilitates collecting, assessing, and sharing information. Micro-systems may be part of a larger organization and are embedded in a legal, financial, social, and regulatory environment.*

Once the concept of health care micro-systems is understood, it is possible to see them everywhere — primary care clinics, NICUs, renal dialysis units, diabetes care clinics, etc. Furthermore, the key components of a micro-system are not new. Patients, populations, providers, activities, and information technology exist in every health care

setting, but current methods for organizing and delivering health care, as well as for developing health professionals and conducting health care delivery research, have made it difficult to recognize the interdependence and function of the micro-system and its components.

Current U.S. models of health care delivery — primarily organized in response to fee-for-unit-of-service payment mechanisms — are designed to care for individual patients in individual episodes of care. As mainstream financing mechanisms have transitioned from fee-for-unit-of-service to fixed payment for clusters of services and provider organizations have turned to more global budgeting methods, it has been necessary for delivery systems to treat patients as individuals and simultaneously as members of a defined population. Furthermore, there is a financial imperative to reduce the costs associated with providing this care. This is typically accomplished by some combination of decreasing staff, decreasing referral expenses, decreasing hospital length of stay, and increasing the volumes of patients seen by each provider. Missing from that approach is attention to the design of the core business of health care — providing care.

In addition to the organization and delivery of health care, research has focused at the organizational or individual provider level while research at the level of the micro-system within the organization has received limited attention. Social policy, as well, has focused at the organizational level and individual provider level, thus missing the powerful contribution of the micro-system. It is important to focus attention on the micro-system because it is possible that the structures and strategies of the micro-system contributes to differences in patient outcomes as well as differences in the performance of the micro-system. Furthermore, the functionality of the micro-system enables or limits what the individual provider and what the organization can do.

Many organizations have made strides in organizing care for defined populations. Some (organizations as well as individual providers and groups of providers) have thought very carefully about providing care for specific populations and have designed formal approaches for doing this. Others are working more from intuition — it makes sense to think about care this way, but they have not learned out how to move from intuition about population needs and improvement opportunities to specific strategies for successfully managing patient care. There are many approaches for doing this, and no two facilities are identical with respect to their configuration, mix of staff, and their ability to address issues they are facing in trying to provide care in today's environment. But all organizations share a need — regardless of their configuration, mix of staff, and level of sophistication — for a way to respond to the increasing pressures to provide better care at greater value for individuals and defined populations.

Is it possible to address the needs of individual patients, the population, and issues of providing care in today's environment, without losing focus on providing care? My interest in designing this research was to learn how to form, operate, and improve micro-systems of care and to provide insight to those seeking to understand and improve their work as they adapt these approaches in other settings. Three research questions have guided this work:

1. How do micro-systems vary on factors related to more effective performance?
2. What are the strategies within high-performing micro-systems for maintaining and improving the quality of care for patients and populations with type 2 diabetes?
3. What are the perceived barriers and facilitators to providing effective care for patients with type 2 diabetes?

To meet my learning objectives and to address these research questions, qualitative methods were used to explore, describe, and characterize health care micro-systems. The micro-systems' care for patients with a chronic condition, specifically type 2 diabetes illustrates the micro-system concept. Cross-case methods were used to examine characteristics of micro-systems that contribute to more effective care for patients with type 2 diabetes. Table 1 summarizes the research methods. Section III, Methods, provides a detailed description of the methods used in this study.

Table 1 Summary of Research Methods

Aim: To understand and to gain insight into how to form, operate, and improve health care micro-systems.

Operational Definition of a health care micro-system: Micro-systems are small, organized groups of clinicians and staff working together with a shared clinical purpose to provide care for a defined set of patients. The clinical purpose defines the essential parts of the micro-system. A micro-system must be large enough to accomplish its clinical purpose, but small enough to allow knowledge of the individual parts and the interrelationships between the parts. Use of information is key to the micro-system's ability to function; information technology facilitates collecting, assessing, and sharing information. Micro-systems may be part of a larger organization and are embedded in a legal, financial, and regulatory environment.

	Research Questions		
	How do micro-systems vary on factors related to more effective performance?	**What are the strategies within high-performing micro-systems for maintaining and improving the quality of care for patients and populations with type 2 diabetes?**	**What are the perceived barriers and facilitators to providing effective care for patients with type 2 diabetes?**
Sample Selection	Sites identified from IOM Committee, IHI Breakthrough Series, RWJ Chronic Disease Study, and CECS micro-system course.	Subset of sites from larger sample that focus on diabetes care	Subset of sites from larger sample that focus on diabetes care.
Data Identification	In-depth open ended interviews.	Additional interview questions asked about diabetes care and outcomes.	Additional interview questions asked about diabetes care and outcomes.
Data Gathering	Interviews conducted over the telephone.	Phone interviews plus document review.	Phone interviews plus document review.
Analysis	Identify common set of themes, provide case level examples of each theme.	Identify strategies that are related to improved outcomes for diabetes indicators. Provide case level examples.	Identify common barriers and facilitators in providing diabetes care. Provide case level examples. Explore impact of larger system on micro-system.

II. BACKGROUND AND SIGNIFICANCE

MEDLINE and HEALTHPLAN databases were searched to find articles related to firms research, care provided by firms, and care for small populations. Searching the reference sections of the articles found through MEDLINE and HEALTHPLAN retrieved additional articles. For the purposes of this discussion, a small, population can be defined as the population of active patients, plus the practice community (the members of the household to which the active patients belong), plus the larger population whose health needs can be addressed (for example, members of a health plan, a geographic community, or a unique subset of the community such as veterans). This small population has also been referred to as a "denominator population" (Nutting 1987).

Delivery systems that are organized to manage care for a small population of patients receive much attention — both positive and negative. However, it appears that they result in improved outcomes for the patient (Waggoner, Frengley et al. 1979; Wasson, Sauvigne et al. 1984; Cebul 1991; Neuhauser 1991; Neuhauser 1992; Landefeld and Aucott 1995). Specifically, improved access to care and continuity of care, improved patient and staff satisfaction, lower readmission rates, and lower health care utilization have been demonstrated.

There are a number of precedents to providing care to defined populations of patients. Over two decades ago, MetroHealth Medical Center in Cleveland, Ohio, began an important innovation for teaching medical students and residents in internal medicine. The model used at MetroHealth was patterned after the British medical center "firm" system, where longitudinal relationships of small groups of professors, students, and patients were created and maintained throughout the course of the trainee's affiliation with the hospital (Cebul 1991). The firm system was recognized as a valuable approach

to patient care and training as well as a vehicle for research (Waggoner, Frengley et al. 1979) by evaluating different innovations in patient care and organizational design. According to Neuhauser (Neuhauser 1991), the concepts underlying firms research are:

(1) parallel providers of care

(2) ongoing random assignment of patients to these parallel providers

(3) continuous efficient evaluation and improvement.

Many academic settings have worked to adopt some of the concepts embodied in the firm system. For example, the Veteran's Health Administration has supported the idea as a means of organizing primary care services. Although each VA Medical Center differs in regards to staffing and who is eligible for services, researchers continue to evaluate the organizational determinants of the "firm" system and its impact on quality of care.

2.1. The micro-system concept

The micro-system model is based on what James Brian Quinn refers to as the "smallest replicable unit" (Quinn 1992). The theory behind the smallest replicable unit suggests that to be repeatable a unit must include these essential elements:

- key players,
- core activities,
- micro-measures that manage the core activities, and
- combinations of activities and measures to meet individual customer's (or patient's) needs.

Many micro-systems co-exist to make up what is otherwise know today as a "health system" or "organized provider." Quinn found that most of the highly successful service delivery systems became successful by starting to analyze their processes for producing and delivering a given service into the smallest measurable details, then "through careful

work design and iterative learning processes, they both re-engineered their processes to use this knowledge and developed the databases and feedback systems to capture and update needed information at the micro levels desired." Information technology was used to link components of the work. The utility of the available information improved as information technology was integrated with the work and the gaps that existed between the front office and the front lines began to close as management created a focus that corresponded with the real work (Quinn 1992).

As suggested by Batalden et. al (Batalden, Mohr et al. 1997) translating this language to health care, an individual patient encounter can be thought of as a "smallest replicable unit". The components consist of the patient and provider interaction; the core set of activities in assessing, diagnosing and treating the patient; and the support systems and the measures needed to monitor the care that has been provided. One can expand upon this "smallest replicable unit" for an individual patient's encounter to understand the "smallest replicable unit" for managing the general medical care of a defined population—the natural unit of work. The focus of my research was at this level of analysis of the natural unit of work, or the micro-system.

The important elements of a micro-system often include:

Key players —

- a small population of patients
- a few physicians
- a few non-physician practitioners
- some clinical support people
- some administrative support people

Core activities —

- enrollment and membership in a medical care system (such as a prepaid health plan)
- a process and system for delivering medical care and for changing and improving that care

Micro-measures —

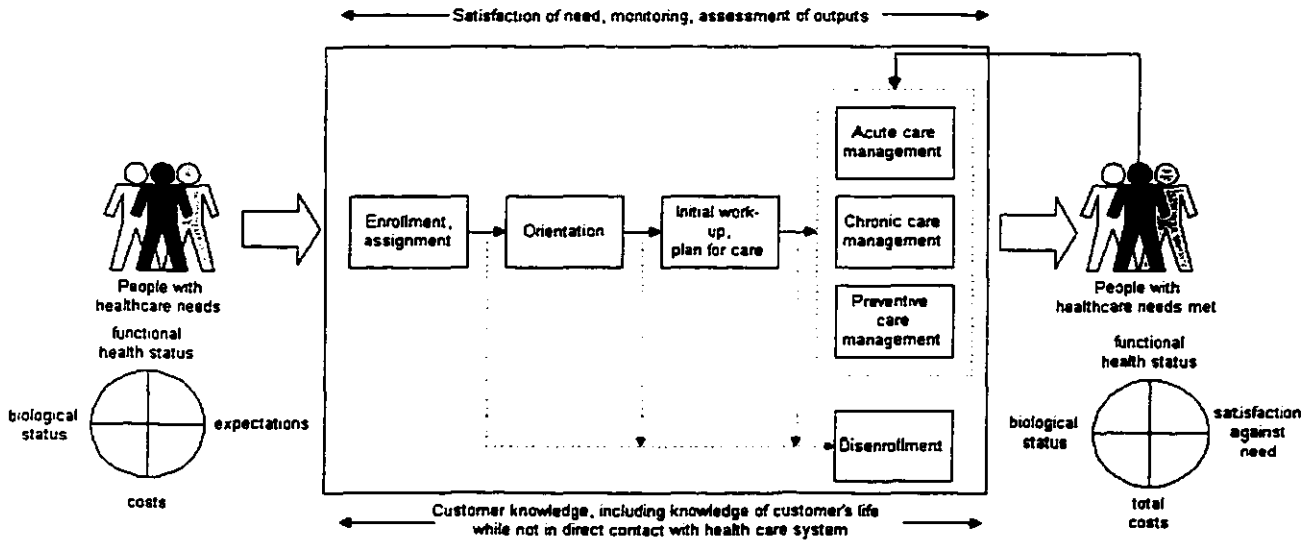
- monitoring the health of the population of patients the plan is accountable for
- assessment of customer satisfaction
- costs of providing care

Information technology —

- linking the components of the work
- producing usable information

Figure 2, taken from Batalden et. al (Batalden, Mohr et al. 1997) and subsequent model revisions, illustrates a micro-system model for primary care.

Figure 2 A Micro-system Model for Primary Care



The process starts and ends with a defined group of people who have measurable and definable states of health (Batalden, Nelson et al. 1994; Nelson, Batalden et al. 1996; Nelson, Mohr et al. 1996). At the beginning, the health assessment includes measurement of biological and functional well-being. For an individual, this assessment allows the providers and the micro-system to target the individual's needs. At the population level, the same model and aggregated measurement permits design and redesign of processes of care. After care, measurement of the same domains permits assessment of the results and impact of the care. Primary care patients today usually enter a small part of a much larger care system, or a micro-system. A primary care micro-system is generally composed of a series of interrelated processes that include enrollment and assignment (or in a fee-for-service environment, entry to practice and selection of physician); orientation; initial work-up and plan for care; acute, chronic, and preventive health care management, and disenrollment or exiting. These steps can be thought of as the "core process" of this type of micro-system.

Two additional processes are graphically depicted as occurring throughout the care process — measurement and monitoring of satisfaction against need, process performance and results; and beneficiary-customer knowledge building, including knowledge of the customer's life while not in direct contact with the health care system. These can be thought of as key supporting processes that inform the core process at several points of intersection.

The micro-system concept builds on and moves beyond the idea of teams or firms. Micro-systems offer (1) both greater standardization of common activities and customization of care to individual patients, (2) greater use and analysis of information to

support daily work, (3) consistent, measured improvement in performance, (4) extensive cooperation and teamwork within the micro-system, (5) and for the larger organization the micro-system exists within, it emphasizes the spread of best practices across micro-systems (Nelson, Batalden et al. 1998).

2.2. Chronic disease and the micro-system

Any effort to maintain and improve the quality of care for a population must consider the impact chronic disease has on the health care system. For example, a study at Group Health Cooperative of Puget Sound (Fishman, Von Korff et al. 1997) showed that 38 percent of their enrolled members had one or more chronic conditions, which accounted for 71 percent of the total costs for enrollees. Furthermore, their study showed that patients with chronic conditions had average costs twice as high compared to those with no chronic conditions. Patients with two or more chronic conditions had costs three times as high compared to those with no chronic conditions.

As providers continue to look for opportunities to improve the organization and delivery of health care, chronic care is a logical place to focus. Improving care for chronic illnesses has great potential for improving the health outcomes for a large portion of the population and for reducing the costs of providing care.

This research concentrated on one specific chronic illness, diabetes mellitus. The prevalence and incidence of diabetes, combined with outcomes associated with appropriate care, make diabetes an excellent, specific example for addressing a micro-system's strategies for maintaining and improving the quality of care for patients and populations. It is estimated that 15.7 million people — 5.9% of the United States population — have diabetes. Approximately 798,000 new cases are diagnosed each year. Even though diabetes is believed to be underreported on death certificates, both as a

condition and as a cause of death, diabetes is the seventh leading cause of death. Complications related to diabetes can include heart disease, stroke, hypertension, blindness, kidney disease, nervous system disease, and lower-extremity amputations. With appropriate treatment, people with diabetes can reduce the likelihood of complications and premature death. Type 2 diabetes, the focus of this research, is one of four types of diabetes, but it accounts for 90 – 95% of all diagnosed cases.

The United Kingdom Prospective Diabetes Study (UKPDS) (UKPDS 1998), which is the largest and longest study of patients with type 2 diabetes, found that improved blood glucose control reduces the risk of developing retinopathy and nephropathy and possibly reduces neuropathy. Furthermore they found that for every percentage point decrease in hemoglobin A_{1c} (e.g., a reduction from 9% to 8%) there was a 35% reduction in micro-vascular complications.

Based on that evidence, the Diabetes Quality Improvement Project (DQIP) recommends annual hemoglobin A_{1c} testing for all diabetics. While this seems like a straightforward guideline for diabetes care, The 1999 Dartmouth Atlas of Healthcare (Wennberg 1999) shows that compliance with this guideline for Medicare enrollees ranged from less than 10% to about 70%, with a mean of 35.6%. The Atlas also shows that compliance with recommended annual eye exams ranged from about 25% to 66%, with a mean of 45.3%. Compliance with monitoring LDL blood lipids ranged from about 7% to 69%, with a mean of 33.1%. While The 1999 Dartmouth Atlas of Healthcare findings focus on care for Medicare enrollees, these findings are significant for research on micro-systems caring for diabetic patients because Medicare is the largest purchaser of diabetes care in the United States.

Treatment of diabetes is aimed at lowering blood glucose to near normal levels. This requires comprehensive education in self-management and, for most individuals, intensive treatment. Standards of care from the American Diabetes Association (ADA 2000) recommend:

- Self-monitoring of blood glucose
- Medical nutrition therapy
- Regular exercise
- Insulin regimen and/or oral glucose lowering agents
- Instruction in prevention and treatment of hypoglycemia and other acute and chronic complications
- Continuing education
- Periodic assessment of treatment goals

Furthermore, the ADA specifies that care plans for managing diabetes should be formulated in collaboration with the patient. The plan should emphasize involvement of the patient in problem solving as much as possible.

The Diabetes Quality Improvement Project (DQIP 1998) was an initiative involving 4 organizations — Health Care Financing Administration (HCFA), the American Diabetes Association (ADA), National Committee on Quality Assurance (NCQA), and the Foundation for Accountability. Their task was to recommend a set of diabetes-specific performance and outcome measures. They recommended 2 outcome measures and 5 process measures:

- Hemoglobin A_{1c} testing (process)
- Poor hemoglobin A_{1c} control (outcome)

- Lipid profile (process)
- Lipid control (outcome)
- Retinal exams (process)
- Monitoring for nephropathy (process)
- Foot exams (process)

The coalition came together for the first time in 1997 and in 2000 the set of measures will be required for commercial and Medicare managed care plans.

2.3. Use of Qualitative Methods

> *"Qualitative inquiry cultivates the most useful of all human capacities — the capacity to learn from others." — (Patton 1994)*

The aim of this research on health care micro-systems indicates a need to study micro-systems in the context in which they exist, so that meaningful inferences can be made about the micro-systems, the key elements, and the interdependencies among the key elements. Choosing a method, or a strategy for guiding the work, is an important step that deserves careful consideration, because it is the research strategy that determines the final form of the research. While qualitative and quantitative methods differ, qualitative and quantitative researchers are quite similar regarding a goal for the research to result in solid theory. How they go about getting there is the difference.

Quantitative methods test theory, with an emphasis on hypothesis testing and verification. Data from a quantitative study is in the form of numbers and it is evaluated objectively, using descriptive and inferential statistics. A quantitative approach to a study on health care micro-systems might involve a variable oriented analysis by computing the correlation between a variable and a selected outcome. Another option would be a

regression analysis, done by entering all the variables and assessing relative weight. However, these approaches require some clarity about the important variables going in to the study, and since this is an exploratory look at micro-systems as a unit of analysis, the important variables are not clear at the beginning but will emerge as the study progresses.

Qualitative methods develop theory by emphasizing rich description and discovery. Data is in the form of words and is evaluated subjectively by systematically reducing data to themes and categories. The fundamental assumptions underlying qualitative methods further supported my belief that a qualitative strategy would be appropriate for this research. Qualitative methods build on the theme of naturalistic inquiry, which is defined as "a discovery-oriented approach that minimizes investigator manipulation of the study setting and places no prior constraints on what the outcomes of the research will be" (Guba 1978). In addition it is inductive to the extent that the research design allows important themes to emerge from patterns found in the data. A holistic perspective considers the phenomenon under study to be part of a system, not conducive to being reduced to a few variables with a clear cause and effect relationship. As the researcher, personal insights are part of the relevant data understanding the complexities of the micro-system and the organizations they are working within, the relevant processes, the interrelationships, and the impact on patient care outcomes. As the researcher it is important to approach the phenomenon under study, which in this research is the micro-system, with what Patton calls "empathic neutrality" (Patton 1994). That means that it will be necessary to approach the micro-system with a desire to understand it and learn about it by exploring the complexities of the interrelationships as they emerge. To be neutral to the findings means not approaching the phenomenon with a set of preconceived ideas to confirm.

In qualitative research, it is important to separate the description of the data from the interpretation of the data. Geertz (Geertz 1973) and Denzin (Denzin 1989) discuss "thick description" which depends on presenting descriptive data so that readers can make their own interpretations. "Thin description", on the other hand, is a simple stating of the facts without including any of the context. Thick description sets up analysis and makes possible interpretation (Patton 1994).

For this research, each micro-system studied is presented in sufficient detail so that the micro-system, or "case", can be understood in its local context. This has been the role of research for the traditional ethnographer in studying individual families, tribes, organizations, etc. A legitimate criticism of qualitative methods has been the focus on individual cases, which limits external validity of the research. In response to the lack-of-external-validity criticism, qualitative researchers have argued that generalizability is not a goal of qualitative research and to consider this to be a limitation of qualitative research is inappropriate (Guba and Lincoln 1981; Denzin 1989). However, this researcher thinks that external validity is an important concern, and generalizability is a goal of this research, because to understand micro-systems and the implication of the micro-system concept in health care, it is necessary to go beyond understanding each micro-system in its own setting. Cross-case analysis (Miles and Huberman 1994), which is the specific method used for my research on health care micro-systems, offers a way to reconcile the need to have "thick description" of uniquely individual cases while understanding the themes and patterns that hold across multi-cases. External validity, or the generalizability of the findings is assured if the emerging theory is applicable to micro-systems in general, not just the micro-systems in included in the study (Morse and Field 1995).

There are two basic approaches to cross-case analysis, case-oriented analysis and variable-oriented analysis (Ragin 1987) A case-oriented approach to cross-case analysis starts by considering each case as its own entity. Only after understanding the relationships, configurations, associations, etc. within the case does the researcher extend to a comparative analysis of multiple cases. The goal is to discover the underlying themes, similarities, and associations that hold across cases. Theories start to emerge from the analysis.

A variable-oriented approach to cross-case analysis starts with the framework of several variables or themes that cut across cases. For example, variables that may be relevant to a study of health care micro-systems may be use of information, role of information technology, coordination of patient care. Although the study starts with key variables in mind, the variables may evolve and be clarified as the study progresses and cases are included in the analysis. The variable-oriented approach is more conceptual and theory-centered from the start and less emphasis is placed on the specific details of any particular case.

Neither approach to cross-case analysis — case-oriented or variable-oriented — is necessarily better (Ragin 1987). As Huberman and Miles (1994) point out, the issue is one of alternating and/or combining/integrating methods as a study continues. They suggest a mixed strategy that combines the two approaches and uses a "stacking" technique. The researcher writes up a series of cases using a more or less standard set of variables. Matrices are used to display the data for each case. Without losing any of the individual case-level data, cases are then "stacked" in a "meta-matrix". Analysis continues by systematically comparing the stacked cases and condensing the meta-matrix.

III. METHODS

The aim of this research has been to learn how to form, operate, and improve a micro-system of health care. Three questions have guided this research:

1. How do micro-systems vary on factors related to more effective performance?
2. What are the strategies within high-performing micro-systems for maintaining and improving the quality of care for patients and populations with type 2 diabetes?
3. What are the perceived barriers and facilitators to providing effective care for patients with type 2 diabetes?

Defining the characteristics of health care micro-systems has been an important first step in exploring the micro-system concept. The Institute of Medicine (IOM) received funding from Robert Wood Johnson Foundation in May 1999 to specify a standard nomenclature of micro-systems and to analyze characteristics of specific micro-systems. The IOM asked me to participate in this research by assisting in developing the interview protocol, establishing the frame and criteria for determining which delivery systems and individuals were included in the interview, developing the project workplan, and conducting telephone interviews.

The raw data was made available for my doctoral research, which was separate from the analysis that was conducted within the IOM project. The IOM research and my doctoral research were contiguous through the completion of the interviews. My research diverged from the IOM research at the point of coding and analyzing data. From the IOM perspective, the study of micro-systems was used to provide case level examples of their suggested Aims and Rules for a new health system (IOM forthcoming). The IOM Subcommittee on Building the 21st Century Health Care System (part of the Committee

on Quality of Healthcare in America) developed the Aims and Rules, then looked to the data from the micro-system interviews to find illustrative examples of the Aims and Rules in practice. My research, in contrast, did not start with a set of preconceived constructs, such as the IOM Aims and Rules, but started with me examining the interviews and letting the concepts emerge. As the analysis continued, it became apparent to me that some of the concepts were more important or appeared more frequently, across multiple micro-systems. As discussed in the previous section on use of qualitative methods, the approach used for my research builds on naturalistic inquiry by being discovery oriented. As a researcher this provided on opportunity for me to experience the difference between research that is exploratory and research that is confirming a set of preconceived ideas.

A concern with this research was how my research would be differentiated from the IOM research. The concern is valid, but the difference became clear as the analysis evolved. In my analysis of the data, generalizable constructs were sought to define or shape the micro-system. The example provided in Table 2 shows three verbatim comments from three different micro-system interviews. In coding each interview it was necessary to take the list of IOM Aims and Rules and look for illustrative manifestations of the Aim or Rule within the micro-system interview. For some of the Aims and Rules, it was difficult to find examples. This could be expected, because the Aims and Rules were not developed to characterize the current health care system, but they were designed to guide a new health system for the 21st century. The Aims and Rules were essentially a filter for examining the interviews. When looking at the interviews without the IOM filter, frequently recurring themes that would give identity to the micro-system start can be identified. These themes, such as the ones shown in Table 2 — investment in

improvement, community connection, and organizational support — appeared repeatedly throughout multiple interviews. (The themes that emerged from the interviews are discussed in detail in Section 3.3., Cross-Case Analysis of Health Care Micro-systems.) Themes that continued to appear repeatedly indicated to me that the theme may be an important characterization of health care micro-systems.

Table 2 Example of Coding Process for IOM Research vs. JJM Research

Verbatim comments from micro-system interview	*IOM Aims or Rules*	*Generalizable Construct about the Micro-system*
"We had to do a lot of training for the MDs about open access. We looked at each MDs backlog and gave them options for how to work it down. For the staff training it was this is how you schedule for open access, this is how to present available appts to the patient."	Rule: Information is key to the human relationship	Investment in improvement
"Patients are well received. They are not hassled about lack of insurance or payment. It is our policy to give preferences for hiring to residents of the neighborhoods we serve. Sometimes that is a problem because patients are afraid that someone from the community might know about their health. We provide transportation, help solve childcare problems."	Rule: Anticipate needs	Community connection
"We did the project on dyspnea because many families reported this as a bothersome symptom during the last 3 days of life. We are now treating dyspnea as a 5th vital sign and flow chart it. Reports have gone from 50% to 0% reporting dyspnea lasting more than 8 hours. We could do this because the hospital CEO bought into it, the Patient Care Coordinators believed it, the nursing staff believed it was important."	Rule: Base decisionmaking on systematically acquired knowledge	Organizational Support

3.1. Selection of Research Sites

Theoretical sampling was used to select the research sites; that is, sites were selected based on ability to best inform the research (Patton 1994). Identifying appropriate sites was a process. First, members of the Quality of Health Care in America (QHCA)

Committee of the IOM were asked to identify high-performing micro-systems to participate in the survey. Additional participants were identified from the Institute for Healthcare Improvement's Breakthrough Series and from the micro-systems that participated in a graduate course (ECS 124) at Dartmouth in improving the health and value of health care for a population of patients. Finally, five people — Eugene C. Nelson, D.Sc., M.P.H.; Paul B. Batalden, M.D.; Donald M. Berwick, M.D., M.P.P.; Thomas Nolan, Ph.D.; and Stephen M. Shortell, Ph.D. — were asked to participate on a steering committee to help identify what they considered to be the best examples of health care micro-systems and to help develop the interview questions (described in Section 3.2. Data Collection). This is a "snowball sampling strategy" (Patton 1994) because micro-systems were identified from people who know which sites are rich in information or they know other people who know which sites are rich in information.

Seventy-seven (77) micro-systems were identified through this process. A matrix was created to show how the sample was shaping up based on geographic setting, population served, clinical target, and the practice setting. Those categories could be thought of as the initial criteria for selection, but the initial criteria were not specific enough to select the sample. So at that point it was necessary to become more specific about the criteria. Sites were chosen based on their reputation for innovative model of delivery, innovative use of technology, level of performance, and readiness to improve. Finally "recommendation by two steering committee members" was added to the selection criteria. This process resulted in selecting 45 sites to participate in the "characteristics" study. Two (2) sites later declined to participate in the study, so 43 sites were included in the study.

Overall, the outcomes of the snowball sampling were similar to what others have experienced using this strategy (Patton 1994). Initially, many possible sources were recommended. As the process continued a few key names, or in case of this research several key micro-systems, were mentioned repeatedly. A classic example of snowball sampling is Rosabeth Moss Kanter's study of innovation published in *The Change Masters* (Kanter 1983). For that research, Kanter began her search by asking experts in human resources to identify the most innovative companies. At first the list of innovative companies snowballed, but then converged into a small number of companies that had been suggested by numerous experts.

After identifying the sites that were included in the micro-system study, a subset of micro-systems (n = 5) were identified to address my second and third research questions about the strategies for maintaining and improving the quality of care for patients and populations with type 2 diabetes. It was necessary to use a subset of sites from the characteristics study because that sample was not limited to sites that provide diabetes care. More than 5 of the micro-system sites included in the study provided care to patients with diabetes, but only 5 sites characterized themselves as diabetes micro-systems, in that their aim was to provide care for patients with diabetes.

Table 3 summarizes the range of research sites included in this study.

Table 3 Range of Micro-systems Studied

			Geographic Setting						Total Micro-systems Studied
			Northeast	Midwest	South	West/Southwest	West Coast	Non-U.S.	
			15	8	4	5	9	2	43
		N							% of Total
Clinical Focus	Primary Care	15	6	2	0	1	5	1	35%
	Specialty Care	19	4	7	2	2	4	0	44%
	Hospital Unit	9	5	0	2	1	0	1	21%
									100%
Population Served	Pediatric	19	7	2	1	3	4	2	44%
	Adolescent	27	10	5	2	3	5	2	63%
	Adult	38	13	8	3	4	8	2	88%
	Geriatric	39	14	7	4	3	9	2	91%
	Rural	14	8	2	2	0	0	2	33%
	Urban	27	4	6	3	4	8	2	63%
	Suburban	15	4	3	2	2	2	2	35%

For distribution of population served, percents do not add up to 100% because sites may serve more than one type of population

As shown in Table 3, the micro-systems included in the study are diverse — geographically, clinically, and in terms of the population served. What the table does not show is that the sites also have a reputation for innovative model of delivery, innovative use of technology, level of performance, and readiness to improve.

There are always limitations to sampling strategies. A strength of this study is that the sample selection depended on input from a pool of recognized experts in the organization, delivery, and improvement of health care. However, even with a pool of

recognized experts, it is reasonable to expect that some high performing micro-systems were overlooked and some less than high performing micro-systems were included. In fact, a concern was how to ensure that the micro-systems included in the study were high performing or successful micro-systems. Although the intent was to study high performing micro-systems, "negative cases" — those micro-systems possibly defined as not high performing or unsuccessful — were actually an important addition to a study attempting to understand and characterize health care micro-systems. Examining similarities and differences across multiple cases — successful as well as unsuccessful — strengthened the analysis by clarifying what contributes to a successful micro-system.

3.2. Data Collection

Key contacts within each micro-systems were identified and were sent an introductory packet of information, which included a letter asking them to participate, a pre-interview survey, an IOM brochure, and a roster of the IOM Subcommittee members. The letter was on IOM letterhead and was from Donald M. Berwick, M.D, M.P.P., the chair of the Subcommittee. The letter explained that participation included completing a pre-interview survey and a 90-minute telephone interview. The introductory letter and pre-interview survey, are provided in Appendix A.

A follow-up phone call from an IOM staff member was made several days after the introductory packet had been sent to ensure that the letter had been received and to schedule a time for the interview. Participants were reminded to complete and return the pre-interview survey prior to the telephone interview.

The purpose of the pre-interview survey was to gather some basic information about the micro-system. This proved to be an effective method for learning, before the interview, what the micro-system does, the composition of the providers and staff, and

the demographics of the population served. Participants were asked to fax the survey to the IOM before the scheduled day of the interview. This allowed the person conducting the interview to review basic descriptive information about the site before the interview and to ask for any clarification of pre-interview responses during the interview. Also, based on the pre-interview responses, the interview format could be adjusted to delete questions that were not relevant to the site. For example, the interview contained a section on information technology, but some sites indicated that computer based clinical information was not relevant for their site. During the interview, the response would be confirmed, then questions were skipped that related to computer based clinical information. Deleting questions that were not applicable before hand helped make the most efficient use of time during the interview. Also, starting an interview by discussing what the interviewer knew about the micro-system site helped to quickly establish a rapport between interviewer and interviewee.

Table 4 summarizes responses to the pre-interview survey and, in general, describes who belongs to the micro-system, how it is organized, and what the micro-system does for three general types of micro-systems, primary care, specialty care, and hospital units. The five diabetes sites are included with the specialty care sites and are indicated in bold print.

Table 4 Micro-system Descriptions

Who belongs to your micro-system, how is it organized, and what does it do?

Primary care Micro-systems (n=15)
1. "We are a primary care practice with 5 physicians. Each MD makes 3 or 4 home visits each day."
2. "We are a multi-physician family practice office with 3 full-time and 4 part-time physicians plus 1 PA. We have 4 office staff to answer phones and make appointments, a 'fringe' nurse to handle emergencies, nurses and MAs to get patients to rooms, give injections, and draw blood. A medical secretary and several file clerks and an office manager. We also have a billing person and 2 managed care coordinators."
3. "We are an outpatient primary care satellite of a larger multi-specialty system. There are 3 smaller subgroups that are increasingly independent with the help of an area manager."
4. "We provide comprehensive primary health care to 28,000 patients annually through 5 neighborhood centers and an extensive Community Health Program. We employ a large number of our neighbors and patients as staff. 80% of our patients have household incomes below the Federal Poverty Level."
5. "We have 270,000 patients and 110 FTEs. We divided the geographic area into 15 teams with 7 different sites. Each team has 8-9 FTEs (doctors and nurses). Patients are divided equitably among the sites."
6. "We provide comprehensive primary care and hospital care to a small, rural town of about 15,000. We are a private practice with 5 GIM docs, 3 NPs, 1 PA, 6 RNs, 2 receptionists and 3 billing people."
7. "A community based practice with 4 MDs, 2NPs, 1PA, 3 MAs, 5 receptionists, and 1 office manager. We care for 6,500 patients."
8. "We are the largest family practice in the area. We have 25 physicians and 9 nurses (RNs, LPNs, and MAs). We are divided into 3 teams."
9. "We deliver primary care through a team of 4 physicians, 2 LPNs, a RN, a MA. We deliver care to about 6,000 people. We operate within a clinic of about 20 physicians"2
10. "10 Family Practitioners and 4 associate providers are divided into 3 teams with 2 RNs and 2 MAs per team. The teams share a phone center and a receptionist."
11. "We integrate acute and long-term care for frail elders into a single system."
12. "We have 7.5 FTE physicians and 26 FTE staff taking care of 14,000 patients. 75% of our patients are in managed care programs."
13. "We are a community health center with 2 primary care medical clinics, 2 school-based teen health centers, and 4 dental clinics. We have 8 FPs, 1 PA, 5 NPs, 3 CNMs. Teams include a provider, nurse, medical assistant, social worker, nutritionist, and outreach worker."
14. "We provide health care to indigent people. We have a large enhanced prenatal program. 11 board certified family practice physicians, 2 part-time pediatricians 8 mid-level practitioners, 3 PA's, 2 LCSW, 5 NP's, 1 RD), 3 RN's, 4 Prenatal casemanagers, 2 LPN's, 2 Referral casemanagers, 1 medical assistant, front office, and administrative support
15. "We focus on providing family medicine services. We are 1 FTE physician, 2 FTEs NP/PA providers, .5 FTE RNs.

Table 4 Micro-system Descriptions (continued)

Who belongs to your micro-system, how is it organized, and what does it do?

Specialty Care Micro-systems (n=19)	
1.	"We are an ob/gyn private practice with 5 MDs, 2 PAs, 2 NPs, 1 office manager and 25 employees. We have an in-house lab and attached outpatient surgical center."
2.	"We are a hospice composed of 3 outpatient (home-based) teams (corresponding to 3 geographic areas of the state) and a 10-bed inpatient unit. Each team has a patient care coordinator and medical director assigned to it."
3.	"We provide team-based, function-focused behavioral health care for adults with severe mental illness. 3 psychiatrists, 2 vocational specialists, 4 therapists, 8 nurses, 6 clinical case managers."
4.	**"The Diabetes Care Team consists of the patient, their primary care practitioner, a "Primary Care Coordinator" (RN), and a "Diabetes Self-Care Specialist" (LPN)"**
5.	"This is an outpatient endoscopy unit with 5 part-time physicians, 3 fellows, 1 NP, 6-8 RNs, 3 technicians, and clerical staff. We primarily care for adult patients."
6.	"A Spine Center with 18 MD's from 15 disciplines (all depts are represented from primary care to neurosurgery); multidisciplinary care for multidimensional problem - one stop shopping; diagnosis & care for patients with various spine maladies, acute, chronic, operative, non-operative."
7.	"We are a joint effort of two health systems. We assist and encourage adults to do advanced care planning and then make sure written plans are available and followed. This involves 500 MDs. in the community and many RNs, PAs, and social workers."
8.	"Breast Cancer Screening Program. When women come to our micro-system, it is a screening center that also has a radiology center, as well as all the necessary elements for coordination of care and follow-up of care."
9.	**"We provide diabetes management with Certified Diabetes Educators (Nurses) and endocrinology support"**
10.	"Breast Care/Screening in a breast center. Radiologists and support staff and general surgeons are integrated and comprise the system with some integration with the health system at large – primary care oncology, radiation therapy and pathology"
11.	"3 person congestive heart failure case management team which treats the patient as a whole. There are currently 150 active patients. 450 have been served by our program since it started on Jan. 1, 1995. Recently, in our clinic, I have been seeing 12-13 patients a day either in person or on the phone."
12.	**"Diabetes services are provided throughout the multi-hospital integrated health care delivery system with medical support for this continuum of care provided in partnership with primary care and specialty physicians practicing in many locations. 1 clinical psychologist, 1 PA, 6-10 RD, CDEs, 2200 primary care and specialty care physicians"**
13.	"We work with cardiac services on improving clinical and financial outcomes, decreasing morbidity and mortality."
14.	"We're a specialty clinic providing women's and newborn care."
15.	**Our medical group is responsible for a population of 240,000. There are 7000 patients with diabetes. The care team is the pcp, the diabetes resource nurse, the LPN, the endocrinologist, and the nutritionist. Diabetes care is integrated into primary care.**
16.	**"We're providing diabetes care at a county health department. We are working as part of a grant for the state."**
17.	"We're working on improving pain management, throughout the our hospital."
18.	"An ophthalmic consultation center specializing in the management/treatment of complex eye disease and surgery. The primary customer for care are patients and their referring eye doctors (mostly optometrists)."
19.	"We are a mental health department in a large multispecialty clinic – hospital system. The department provides medical, counseling and psychological testing services to all age ranges. We have 5 psychiatrists (4 adult, 1 child/adolescent), 2 psychologists, 6 registered nurses, 16 therapists, and 3 chemical dependency counselors."

Table 4 Micro-system Descriptions (continued)

Who belongs to your micro-system, how is it organized, and what does it do?

Hospital Unit Micro-systems (n=9)	
1.	"We are a geriatric unit in a large medical center."
2.	"We are a Level III Intensive Care Nursery caring for intermediate and critically ill newborns. It is staffed by a multidisciplinary team of neonatalogists, residents, NNPs, nurses, respiratory therapists, and others.
3.	"We are an Emergency Department with 10 docs, a slew of nurses, and other people."
4.	"We are a cardiothoracic surgical unit."
5.	"The Critical Care micro-system consists of 36 beds divided into the 12 bed Shock-Trauma-Respiratory ICU, the 16 bed Medical-Surgical ICU, and the 8 bed Respiratory Special Care Unit. All are open ICUs. The hospital is a academic referral center for a 400 mile radius and a Level 1 Trauma Center. The system integrates the activities of five full time hospital employed academic critical care medicine (CCM) physicians along with 6 private practice pulmonary/CCM physician with about 90 private staff physicians who admit and care for this population including the active Level 1 trauma and the neurosurgical services."
6.	"Critical Care Services: MICU (10 beds), SICU (14 beds), CCU (10 beds (total=34 beds), NICU, EC, and Critical Care Transport teams. 225 MDs, all specialties and subspecialties"
7.	"We do only [1 or 2 surgical procedures]. We have 11 surgeons, 8 assistants. The entire staff is about 75."
8.	"We are 5 surgeons doing cardiothoracic surgery. Private practice. 3 partners, 2 associates. We work at the hospital with 12 mid-level PAs and NPs who were hired by the hospital. We have 4 secretarial office staff"
9.	"We are a MICU and SICU. We have an open ICU --- any physician with admitting privileges can admit to the ICU."

Telephone interviews were conducted during a three-month timeframe, June 29, 1999 – September 3, 1999. Interviews were conducted with the person identified as the key contact for the micro-system. This was usually a physician, although several nurses were interviewed, as well as several administrative leaders. Three interviews included more than one interviewee on the call. A limit to this study is that the research was designed to include one person at each site. A more comprehensive look at micro-systems would interview at least one person from each of the key roles within the micro-system. Given the constraints of the study – time, financial support, and the desire to interview a broad range of sites – a tradeoff was made between the breadth and depth of the study. This is always an issue with qualitative studies. With the same amount of resources it would have been possible to study more micro-systems, which would have increased the breadth of the study, or it would have been possible to study fewer micro-systems but interviewed more people within each micro-system, which would have increased the depth of the

study. Patton (Patton 1994) points out that these are not choices between good and bad, but choices among alternatives, all of which have merits.

Appendix B contains the interview questions. The members of the steering committee who helped with selecting the sites also participated in designing the interview questions. The interview was designed to address five areas of the micro-system: (1) level of performance, (2) patient experience, (3) use of information and information technology, (4) investment in improvement, and (5) leadership and management. The interview questions were pilot tested with one micro-system site, revised, then pilot tested with a different site. The pilot tests were conducted with four people on the phone — the interviewer, the interviewee, and two listeners/note takers. After concluding the interview, the four people stayed on the phone to discuss the flow of questions, which questions should be revised, and the interviewer's ability to pick up on cues from the interviewee that additional information was there and should be probed. After two pilot tests and subsequent revisions, the interview format and questions were finalized.

The five sites that had a focus on diabetes care were asked an additional set of questions. These questions (included in Appendix C) were asked to identify specific strategies for maintaining and improving the quality of care for patients and populations with type 2 diabetes. Since the diabetes questions related specifically to my research, those questions were developed based on my review of the literature, guidelines from the American Diabetes Association, and input from people who provide diabetes care. The diabetes questions were pilot tested with several members of a diabetes care team and revised based on the feedback from the team.

A limit to this study was that the interviews were not tape-recorded. The IOM required that interviews not be tape recorded, so each interview transcript was based on

hand written notes taken during the interview. To assure the quality of note taking, the first several interviews were conducted as conference calls, with the interviewer, the person being interviewed, and two note takers. Immediately following the interview, the interviewer and note takers would transcribe their notes and share the documents for comparison. When assured that the interviewer could conduct an interview and simultaneously take good notes, the interview process was simplified to just include the interviewer and the person being interviewed. To facilitate interviewing and note taking, the interview was formatted with space for note taking after each question. This helped keep track of the context of the answers because the answers were kept with the questions, instead of having separate pages of notes. Transcripts were written up immediately following the interview, and most importantly, before conducting another interview. Three people conducted the interviews. Of the 43 micro-system interviews, I conducted 25, the Project Director from the IOM conducted 8, and a medical student working as a summer intern at the IOM conducted 10.

Not every interviewee was asked every question. For example, as discussed previously, the interview contained a section on information technology, but some sites indicated on the pre-interview survey that computer based clinical information was not relevant for their site. Therefore, during the interview, those questions were omitted. In addition, in responding to the open ended questions, an interviewee would often formulate a response that would essentially answer a question before the interviewer had an opportunity to ask the question. A decision was made early in the data collection process to transcribe the interview as it occurred and not attempt to break apart the transcript to put answers to questions that were not actually asked. Responses which answered the questions, but which arose in the interview around a different question were

frequent and are not reflected in this table. Table 5 summarizes the interview completion rate. For each question, the table shows the number of sites asked the question and the completion rate, which is calculated by dividing the number of sites asked by 43 (the number of micro-systems included in the study).

Table 5 Interview Completion Rate

Interview Question	Sites asked	% Completion (Sites asked / 43)
Level of performance	**43**	**100%**
Success	*42*	*98%*
Measures	*28*	*65%*
Patient	*37*	*86%*
Clinician	*28*	*65%*
Culture	*23*	*53%*
Professional	*10*	*23%*
How long	*22*	*51%*
Patient experience	**41**	**95%**
New Patient	*28*	*65%*
Scheduling	*15*	*35%*
Risk assessment	*17*	*40%*
Pt information	*23*	*53%*
Unusual problems	*24*	*56%*
Waits and delays	*25*	*58%*
Incentives	*9*	*21%*
Community	*16*	*37%*
Information and IT	**34**	**79%**
Improvement	**40**	**93%**
Specific projects	*28*	*65%*
Evidence of success	*4*	*9%*
Barriers	*26*	*60%*
Awareness of results	*2*	*5%*
Funded projects	*5*	*12%*
Leadership training	*6*	*14%*
Expert systems	*25*	*58%*
Clinical evidence	*12*	*28%*
Best practices	*15*	*35%*
Information sharing	*6*	*14%*
Error and patient safety	*21*	*49%*
What happens	*21*	*49%*
Culture	*3*	*7%*
Procedures	*3*	*7%*
Sources of error	*6*	*14%*
Leadership	**42**	**98%**
Macro-system helps	*19*	*44%*
Macro-system is toxic	*17*	*40%*
Ideal financial structures	*15*	*35%*
Replication	*30*	*70%*
Barriers	*23*	*53%*

A contact summary sheet (included in Appendix D) was used to summarize each interview (Miles and Huberman 1994). The contact summary sheet required that the interviewer think about the main issues or themes that emerged during the interview by identifying verbatim comments and then considering the general theme that the verbatim comment illustrated. This seems like such a minor addition to the transcription process, but completing a contact summary sheet was helpful in the transition from conducting interviews to coding data because it engaged thinking about the analysis throughout the interview process, instead of waiting until the completion of the interviews to begin analysis. The contact summary sheet also became a tool for communicating preliminary results of the study. Because the contact summary sheet captured the main issues that emerged from the interview, it was easy to quickly pull together the contact summary sheets to get a sense of the main issues emerging from the study overall.

3.3. Cross-Case Analysis of Health Care Micro-systems

After reviewing several qualitative software packages, Q.S.R. NUD*IST was selected to use in managing and organizing the data. Q.S.R. NUD*IST® 4.0 (Non numerical Unstructured Data Indexing Searching and Theorizing) is a multi-functional software system for the development, support and management of qualitative data analysis projects. In selecting a qualitative software package, it was necessary to choose software that was best suited to the research strategy. Data are multiple cases, but a single source from each case. It was important to be able to be able to revise the transcripts easily, within the analysis software. Since this research is exploratory, it was important to be able to code easily and make coding revisions. Also, it was necessary to be able to assign multiple codes to the same segment of text. No software takes away the work of

qualitative research, coding data, sorting and refining categories, and developing theories – but software can facilitate these tasks by helping organize the database, create logs of the changes that are made, and allow searching and retrieval.

Prior to conducting the interviews, data display matrices were created to display the case-level data. Figure 3 shows an empty data matrix for the first category of questions, micro-system level of performance. The headings of the columns are one or two word phrases that represent the interview questions. Micro-systems are listed along the left side of the matrix, identified as a code (MS01 – MS43) to represent the 43 micro-systems included in the study. There is a matrix for each of the five categories of questions.

Figure 3 Case Level Display: Defining Characteristics for Health Care Micro-Systems

I. Level of Performance: What does your micro-system do very well? How is it different from others that treat similar patients?

Success	=	*What is your micro-system successful at doing; How do you define success?*
Measures	=	*How do you know you are successful; What data are you collecting?*
Patient	=	*If I were a patient, how would I experience care at your micro-system differently?*
Clinician	=	*If I were a clinician, how would I experience it differently from another micro-system that treats similar patients?*
Culture	=	*How would you describe the day to day work environment? What does it feel to work at . . ?*
Professional	=	*What has your micro-system has done to support professional ethics, encourage peer feedback or skill development?*
How long	=	*How long has the micro-system been working this way? How is it different now from an earlier time?*

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS01							
MS02							
MS03							
⋮							
MS43							

As each interview was completed, the interviewer transcribed the notes. Everything was shared electronically, so that a complete set of interviews would be located in my NC office and a complete set of interviews would be located in the IOM's Washington, DC office. Transcribed interviews were entered as the data in the data display matrices.

The completed matrices are included in Appendix E. These can be thought of as meta-matrices, or master charts used to assemble multiple cases in a standard format (Miles and Huberman 1994). The basic idea is to include all the case-level data in one large matrix prior to summarizing, refining, and further reducing the data. The matrices in Appendix E are considered to be "partially ordered" because very little order is imposed on the display of the data. The completed meta-matrices are the first look at the cross-case data. The data included in Appendix E has had all identifying information removed.

The creation of the matrices required identifying variables that were thought to be relevant to the study. To avoid imposing a rigid framework on the data early in the analysis, initially the interview questions were used as the relevant variables. It makes sense to initially group the responses with the corresponding interview question. For example, because each interview is coded to interview question, it is possible to find all the micro-system responses to Question I.6. "If I were at _____ how would I experience the care differently?" Although the questions from the interview served as the initial relevant variables, additional variables emerged as the study progressed. Table 6 shows the responses to this question for three micro-systems.

Table 6 Sample Responses and Coding

If I were a patient at _____ how would I experience the care differently?	*IOM Aims or Rules*	*Generalizable Construct about the Microsystem*
"We have 7:00 am rounds and 4:00 pm rounds. Most hospitals just have morning rounds. We added the afternoon rounds. It doesn't cost us a dime. We did it because our goal is to send people home on day 4. Well sometimes on the morning of day 4 the patient is not ready. They would have to wait until the next day — but with the afternoon rounds we have another chance to look at them again late in the afternoon. Sometimes we can send them home. You can still be customer friendly and accomplish your goals.	Aim: Anticipate needs	Improvement Example
"We talk to the patients about psych/social support. We carry many patients to end of life care. We are with them until hospice care and sometimes even beyond hospice. We tell them about durable power of attorney, medications, shopping, eating less saturated fat, increasing activity, the importance of family, independence, etc. We do all of this during the first visit. We also always put things in writing or print it out for them. We highlight key words and phrases, like what an ACE inhibitor is supposed to do. We don't use very technical terms, but we explain what is happening to them and what the medications will do in "laymen's" terms. If a patient has ESRD, we try to prevent them from going on dialysis by working with the doctors. All the doctors know me and I know all of them, so I'm never out of the loop."	Aim: Patient centered Rule: Provide care based on a healing relationship	Alignment of role and training Multidisciplinary Team
"It would be experienced as different in a couple of ways. You would get more information about the services coming in so that you can make more active choices. You would meet the whole team, instead of one person. You would have a say in how the service is put together."	Rule: Patient is source of control	Multidisciplinary Team

Looking at the data by interview question is useful, but the data is much richer than just providing examples of how patients might experience care differently. So, the work in coding was to assign descriptive codes to each phrase, sentence, or groups of words that represent common concepts. This is known as "first level coding" (Miles and

Huberman 1994). This process began during interviews and was documented on the contact summary sheet (Appendix D) as "the main issues or themes that struck me during the interview". Table 7 contains a list of variables that emerged from the transcripts and that were used for the first level coding of the interview data.

Table 7 Micro-system Variables

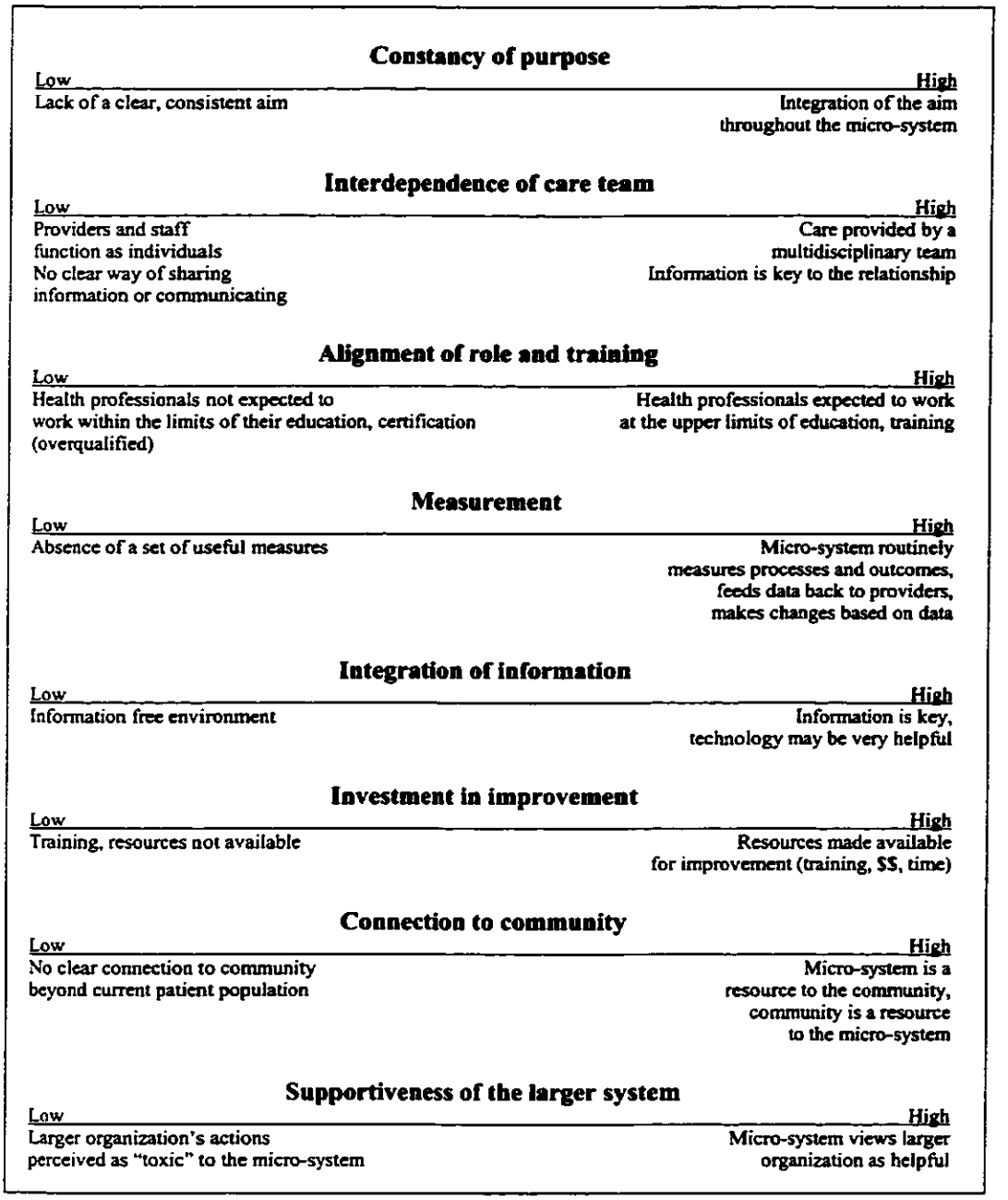
Variable	Working definition
1. Investment in Improvement	An effort ensuring improvement is part of the work of the micro-system.
2. Alignment of Role and Training	The match between the health professionals' educational training, certification, etc. and their work.
3. Constancy of Purpose	Integration of the aim throughout the micro-system.
4. Values	A set of beliefs that guide the work of the micro-system
5. Organizational Support	Ways the macro-system facilitates the work of the micro-system.
6. Multidisciplinary Team	The existence and recognition of the team approach to care.
7. Community Connection	Micro-system is a resource to the community / community is a resource to the micro-system.
8. Micro-system Measures	Variables high-performing micro-systems are monitoring (or think are important to monitor).
9. Use of Information and Information Technology	Information is key, technology can be very helpful.
10. Barriers	Challenges and constraints on the work of the micro-system.
11. Resources for Replication	Necessary elements to design a similar micro-system.
12. Evidence of the Micro-System	An indication the site is a micro-system.
13. Improvement Example	Examples of improvement projects made within the micro-systems
14. Leadership	Importance of leadership on the work of the micro-system

Cross-case analysis of these variables involved searching each interview for examples. This was an iterative process since the variables emerged and evolved throughout the coding. As the analysis continued, the factors listed in Table 7 were refined — some were grouped into categories, some were dropped because they did not rise to the status of a category that could characterize the micro-system. For example, "barriers" was a common theme found throughout the interviews, but barriers are not a

characteristic of micro-systems. How the micro-systems deal with barriers, perhaps through an investment in improvement or use of information and information technology did appear to be characteristic of the micro-systems interviewed.

Eight categories emerged and those categories became a framework for thinking about characteristics of high performing micro-systems. The framework is shown in Figure 4. Since the framework emerged throughout the analysis, once this framework was developed, it was necessary to return to the data and search each interview again to ensure that each interview was correctly coded.

Figure 4 Micro-system Framework



3.4. Reliability and Validity

In qualitative research, reliability depends on the rigor of the techniques for gathering and analyzing data and the credibility of the researcher. Careful documentation of the data collection methods and the process of analysis permits others to judge the reliability of the research.

External validity, or the generalizability of the findings, are assured if the emerging theory is applicable to micro-systems in general, not just the micro-systems included in the study (Morse and Field 1995). The diversity of the micro-systems participating in the interviews — diversity in clinical focus and population served — encourages generalizability of the findings to other settings (Miles and Huberman 1994). Furthermore, as is discussed in the results section, the findings are general in that they are applicable to other settings.

IV. RESULTS

This section begins with a summary of the responses to the micro-system interviews and then presents the results of the analysis as related to my research questions — factors related to more effective micro-system performance, strategies for providing care to patients with type 2 diabetes, and the barriers and facilitators to providing effective care to diabetic patients.

4.1. Summary of responses to the micro-system interviews

Representatives from forty-three micro-systems were asked a variety of questions. Interview questions were organized into these categories: level of performance, patient experience, information and information technology, improvement, and leadership. The interview is included in Appendix B and the transcripts from the interviews are included in Appendix E. The following paragraphs summarize the responses.

4.1.1. Level of performance

To determine the level of performance of the micro-system, interviewees were asked what their micro-system does very well and how do they know, that is, what data is being collected so that one would know the micro-system is doing well. The majority of micro-systems (70%) identified taking care of specific types of patients (e.g., the frail elderly) or providing a specific type of care (e.g., women's reproductive care or diabetes care) as what they do especially well. Other areas that were identified are working as a team (14%), using information technology (12%), conducting research (7%), educating and training providers and staff (5%), improving access to care (5%), and communicating (1%).

The connection between what the micro-system does very well and how we know was not so clear. Forty-nine percent of the micro-systems interviewed mentioned

measuring their success by looking at clinical outcomes or some defined set of measures that includes clinical, functional, and financial indicators. Seven percent of the micro-systems specifically identified measuring micro-system care against guidelines or protocols. For example, one micro-system measures which protocols are being used, by how many physicians, and what percent of time. Forty-four percent of the micro-systems mentioned measuring patient satisfaction and 7% of the micro-systems identified provider satisfaction as an important indicator.

Nine percent of the micro-systems identified benchmarking as a specific method for comparing their outcomes to others. However, one micro-system interviewee identified benchmarking as potentially problematic:

> *"We measure success against ourselves. We try very hard not to measure against benchmarks. We do 1400 hearts a year. We should be the benchmark. Success to us is any incremental thing that makes us better than yesterday. ... It is a mistake to benchmark pieces of your process against multiple other pieces of process. ... Just keep working on little projects to improve what you are doing. Benchmarks can limit you. Sometimes the benchmarking in and of itself becomes the goal."*

Finally, nine percent of the micro-systems interviewed acknowledged that measuring and collecting data is difficult work. Two of these micro-systems responded to the measurement question in a way that indicated that they are not high performing micro-systems, i.e., "negative" cases.

> *"Other people use surveys and other ways to benchmark. We just do it seat-of-the-pants. We figure that we will get feedback. We don't use any modern techniques to measure anything. It's very expensive. We don't have extra capital to invest in recreational data collection to prove how we are doing to someone else when we know how we are doing."*

> *"Our success is based on how we are looked at by the MCOs. Every physician says they practice excellent medicine, but you have to look at some other parameters. We look at HEDIS and NCQA measures. It's hard to look at other*

outcomes — no one knows how to do that. We look at the data and say 'What can we do to make this better?' But there is so much pressure to reduce the time we see with patients and see more patients every day."

When thinking about the micro-system concept, a common question is "How do we know that a micro-system is different? Is it just another word for a team?" In consideration of these questions interviewees were asked to describe how a patient would experience care differently in their micro-system. Similarly, interviewees were asked how a clinician would experience the micro-system differently from another micro-system that treats similar patients.

Interviewees reported most frequently that patients would perceive care differently because of the level of information that the micro-system gives to the patient. Interviewees mentioned making welcome calls to new enrollees, sending information about the services provided, and making sure the patient has a copy of the physician's note when leaving the appointment. One interviewee discussed how there are "no barriers to information." "Data on the measures we are monitoring are displayed on a wall — patients can see what the micro-system is working on." The level of information may include an increased use of information technology — some micro-systems are communicating with patients via e-mail and referring patients to web sites for patient education. Other differences that the patient would experience would be the team approach to care and the focus on building the relationship with the patient and family.

When asked how clinicians would experience the micro-system differently, one interviewee said, "the clinical part is not that different — it's the technology and the teams." Other micro-system interviewees also indicated that technology does have an

increasingly significant role. However, one interviewee articulated the importance of not confusing information with information technology:

> *"Frankly, all this stuff about information systems have been what is holding us back. That's all crap. Everyone is just waiting around for some kind of cure all information technology system, instead of figuring out how to track things themselves."*

Other differences that were mentioned were standardized care, cross-training of staff, and infusion of improvement into daily work.

To understand the culture of the micro-system, interviewees were asked to describe the day to day work environment of their micro-system. Most comments discussed the impact of a team approach to care.

> *"There has been a radical change since we introduced teams. You can see it even where they hang out. Before the docs were together, the nurses together, etc. But now the team hangs out with the team. At the morning meetings, you may see the medical assistants providing the leadership. The medical director calls it the 'fast break' — three people on the floor and anybody can finish the play."*

Other aspects of the culture of high performing micro-systems that were mentioned are the freedom to make decisions regarding own work, increased level of communication, and a commitment to improve.

Interviewees were asked to discuss what their micro-system has done to support professional ethics, encourage peer feedback and develop skills. Answers range from micro-systems that admitted that "we haven't done much" to one micro-system that has a full-time person who is responsible for organizing and leading sessions on the issues involved in working in teams. Other sites acknowledged the importance of this type of training, but lacked a systematic way of doing it. "We try to do this through the course of our activities. But we don't do it conscientiously. It's kind of on the job training."

The final question in the "level of performance" section asked how long the micro-system has been working this way. Answers ranged from one year to "since 1945". Of the interviewees who were asked this question (n = 22) three sites reported their micro-system as working this way for more than ten years (16 years, 22 years, and 55 years). All the others reported less than ten years.

4.1.2. Patient experience

Interviewees were asked to talk about the patient's experience in the micro-system. Specific questions were asked about a new patient's experience, scheduling, risk assessment, referral, waits and delays, and patient education. These questions were designed to determine innovations in delivery of care.

Six of the sites have moved to an open access model, where patients are seen the day they call.

> *"We assure that a patient can be seen that day if they can be seen by 5, other wise the next day. That is not a big problem because phone calls to be seen that day drop way off in the afternoon. There is some variation in how many patients will be seen in a given day — could be 25, 28, 32 or 20. The primary focus has to be: We are here for you."*

Others continue to carve out slots for same day appointments for urgent visits, which does not appear to eliminate barriers to access and, as the following comment suggests, may not be the best solution for providers, patients, or the health care system in general.

> *"We have quick access, but not open access. We take care of anyone who just walks in, but we don't advertise that. We try to triage based on urgency. Next available appointment slots may be a month out. The extenders have more open slots. The older, established MDs have a longer wait time for next available appointment. We maintain 10% open slots for same day appointments. Once a week or so a patient will triage themselves to an urgent care center or to an ER. We don't know how to stop this. I found out this week that a woman I delivered a few weeks ago went to the ER with pain. The ER MD called me 6 hours later — they had done all these tests and had found nothing wrong, of course. She could have just showed up here."*

Another comment from a micro-system with open access shows that they feel they have found the solution.

> *"In the old system, variation in quality was caused when patients went elsewhere to be seen, e.g., an urgent care center, or gave up trying to be seen. Now the variation in quality is based on the doctors. In the first generation of open access people carve out slots based on predicted urgent care demand. But you need to move beyond this and dispel the myth of "needs vs. wants where wants are seen as unjustified demands. This is the height of arrogance and b-s. In health care, what we sell is a relationship. But what we then do is put up a barrier in the form of 'we think you'll get better if you just wait'. If they come in for what we think is an 'inappropriate' appointment, so what? First, they'll find a way to get in anyway. Second, it destroys the relationship. Third, it is an opportunity to do other things — preventive care, to explain how they might handle the problem themselves the next time, and an invitation to them to call me. Incidentally, the notion of 'demand management' by forcing people to call a stranger is completely misguided. The way to manage demand is over time, not with a call to a nurse. You explain to the patient what to do next time.*

Other innovations in organizing and delivering care include building time into the daily work for teams to communicate, present cases, and learn from each other. Building in mechanisms for communication seems to be key to managing referrals too. Information technology can facilitate this communication.

> *"We started as a multi-specialty group. Now, if I pick up a phone I can connect directly to a specialist. This makes the transfer of care smooth. The Epic system generates referrals for non-urgent referrals. My notes go with the referral. It's the same method for getting information back to me. We are also connected via e-mail — we do a fair amount of communicating this way.*

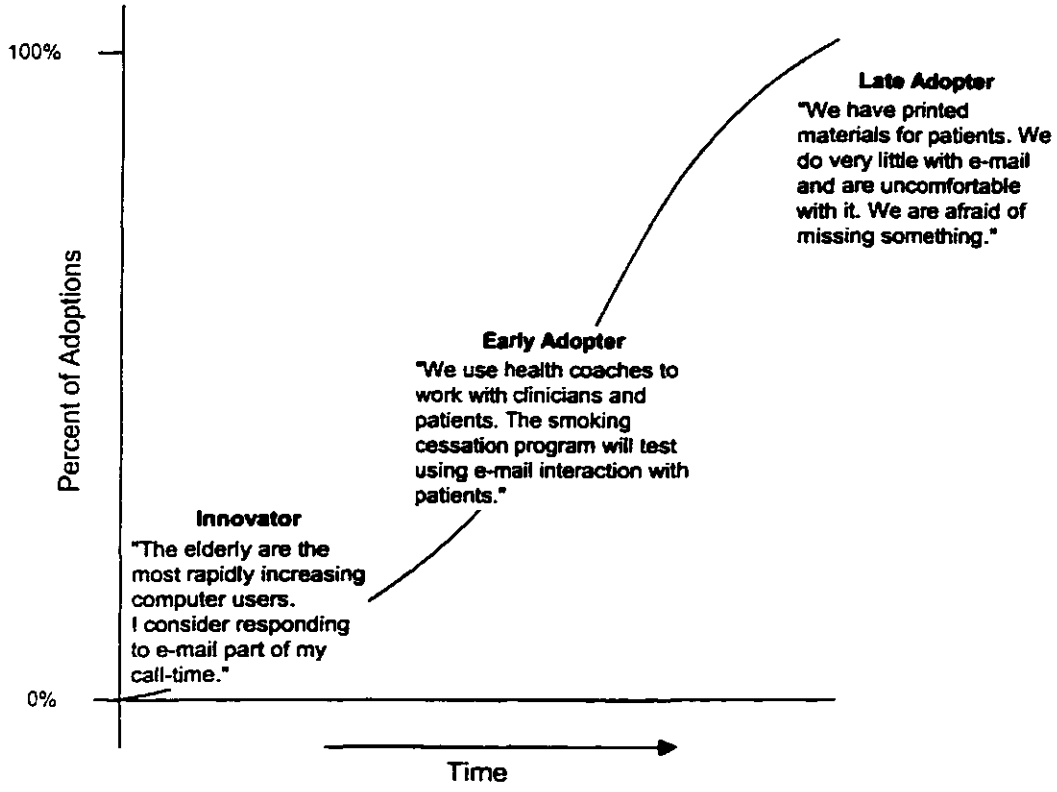
Many micro-system have specifically addressed improving waits and delays. Improvements include standard stocking of rooms, pulling up information about the patient visit prior to the visits, and adding a patient flow facilitator to the team.

In the micro-systems interviewed, how do patients get information about their health condition? Predominately, patient education is conveyed during one-on-one interaction

with providers, via printed materials, videos, and classes. There appears to be an increasing level of comfort with technology and the integration of technology into patient education. Everett Rogers framework for studying the adoption of innovation can be applied to this phenomenon (Rogers 1995). Rogers' findings from decades of research in the diffusion of innovation demonstrate that the rate of adoption over time follows an S-shaped curve. During the early stages of an innovation, such as use of computer technology in providing patient education, there are relatively few adopters. Rogers' refers to these as innovators. Early adopters are the next group to adopt an innovation, followed by the late adopters in the final stages.

Figure 5 shows Rogers' model for diffusion of innovation and includes three examples from the micro-system interviews regarding the use of e-mail for patient education.

Figure 5 The Diffusion of Innovation and the Use of E-Mail for Patient Education



Interviewees were asked about the incentives that reward management and staff for meeting and exceeding patient expectations. The responses fall into three categories, (1) no incentives, (2) incentives, and (3) misaligned incentives.

"The only reward is the knowledge that you are providing good personal care for each patient."

One micro-system talked about an Independent Development Plan (IDP) that recognizes successful efforts to improve with a raise.

"We just started this year and next year it will be mandatory to meet your IDP to get a raise. For example, one group wanted to improve patient satisfaction in

their team. One team wanted to decrease supply costs — they cut supply costs by 28%."

Two interviewees mentioned incentives that appear to be misaligned, that is the incentives do not promote the functioning of the micro-system because either the incentive is not connected to the work of the micro-system or the incentive is not given to all the people working in the micro-system.

"There are only incentives for high-level administrators to meet HEDIS measures. Nothing filters down."

"If at the end of a quarter, there are savings from the unit, the money is split one third to the facility, one third to the health plan, and one third to the physicians."

The final question in the patient experience section asked interviewees about things the micro-system is doing to seek input from the community and to keep the community aware of what the micro-system is doing. The micro-systems interviewed show that they interact with the community at two levels — acting as a resource for the patient population and acting as a resource for other clinicians and health care providers through providing education and setting the standard of care in the community.

4.1.3. Information and information technology

Micro-system interviewees were asked about use of information and information technology. Forty-nine percent of the sites included in this study indicated that patient records are paper based, 39% indicated that patient records and financial systems are computer based but separate, and 12% indicated that patient records and financial systems are to some extent or entirely integrated.

The majority (58%) of the sites interviewed is either linked or has access to data sources outside the micro-system, such as laboratories, pharmacies, or the emergency department. Of those micro-systems using a computer-based information system, they use them to generate reports about the practice (n=15), to support real time patient care (n=12), and to support clinical decisions (n=6). Only one micro-system indicated that the clinical information system includes direct data input by patients.

> *"You would be given a touchpad computer when you come in for your visit for filling out all the intake information. Your picture would be taken digitally. All this would happen, and the doctor would see it, before you see the doctor. The doctor would explain your responses — e.g., what the SF 36 score means."*

4.1.4. Improvement

The micro-systems included in this study provide rich examples of improvement projects. Interviewees were asked to comment on the types of things that the micro-system has done to redesign services and to improve the quality of care and how they know that these efforts were successful. Projects range from improving clinical care, e.g., improving diabetes or asthma care, to improving the more administrative parts of care, such as scheduling or waits and delays.

Interviewees were asked to talk about the barriers to making change and how they have overcome them (or are trying to overcome them). Time, financial resources, and lack of organizational support for improvement are barriers that were frequently mentioned.

> *"The amount of change in staff is huge. Staff changes are as frequent as every month. Second, building our team and dealing with the administration that deals with 20 physicians has also been tough. For example, our regular staff meeting is attended by our receptionist. The administration board doesn't want our receptionist attending the meetings. They say that other receptionists for the other docs then complain that they have to cover another person's work. So, on one hand, they say 'work as a team,' and on the other hand, they don't let the team*

meet or work together. The other barrier is inertia. People don't want to change. They don't want to do things differently until disaster comes through the door. Nurses also say that we have 'done it this way all the time.' It's hard to make change happen. The last barrier is still having a paper based medical record. This is the primary source of information. There is definitely a lag time before all the information is there."

One site addressed a potential barrier with using improvement teams — unless the micro-system is the improvement team, the team may have difficulty changing the micro-system.

"We did something wrong the first time. We created an ad hoc team to lower infection rates. They brought the change back to the unit. The unit didn't want to make the changes. The team was 'off-line'. ... Our goal is to make a unit that creates improvements."

Interviewees were asked if the micro-system uses any guidelines, protocols, or expert systems to help clinicians get up-to-date information. Most micro-systems have guidelines and protocols in place. However, most of these micro-systems also reported difficulty in integrating the guidelines and protocols into the daily work of the micro-system.

"There are a lot of guidelines in most institutions, but the way they are implemented destroys their usefulness. For example, the diabetes guidelines are 40 pages. As a physician, I look at them and decide on the 2-3 most important things that should be done and work on getting those done consistently. Work on the others later. Even this is very hard to implement consistently."

A few of the interviewees mentioned formal benchmarking arrangements with other organizations. Overall, among the sites interviewed, there appears to be a lack of a formal mechanism for learning about best practices and for sharing new information.

With the recent publication of the Institute of Medicine's report, To Err is Human, (Kohn, Corrigan et al. 1999) national attention has been focused on medical errors and

patient safety. As part of the micro-systems interview, participants were asked to talk about what happens when someone in the micro-system makes an error, the extent to which there is a blame free culture, procedures that have been implemented to improve patient safety, and what they believe to be the major sources of error or harm.

Several interviewees talked about formal mechanisms that are in place within their micro-system for addressing errors. For those without a formal mechanism in place, talking about errors appeared to be more difficult.

> *"It's hard to talk about 'error' because it is culturally not acceptable for fear of litigation. But we try."*

Several interviewees recognize the importance of a systems approach to reducing errors.

> *"If something bad happens it seems to me that the system has set the person up for failure. When you gather the data it almost never is what it seems to be. We had a patient who wasn't doing well. The physician ordered lidocaine. The nurse gave the patient a whole amp of epinephrine. We all thought 'how stupid.' But when we started looking at the medications they were beside each other in almost identical boxes. Still she shouldn't have made the mistake but you could see how it could happen the way we had things set up."*

> *"The system can be an advocate. It can be a reminder that a mammogram needs to be done, that there is a system in place to make sure it happens, that things go well. A system can empower the medical assistant to insist that a patient be seen, even if it means clashing with a provider."*

Medication errors and follow-up of abnormal lab results were the most frequently mentioned sources of error.

4.1.5. Leadership

It is important to explore the organizational context of the micro-system. Most micro-systems function within a larger system, or "macro-system", therefore, it is conceivable

that successful micro-systems would only be successful given a certain organizational environment. Or on the other hand, a micro-system could fail because of the organizational environment it exists within.

Focus at the micro-system level has implications for the macro-organization — this is not a minor detail. The Health Care Advisory Board reported that a common ingredient in successful organizations is a "tight, loose, tight" deployment strategy" (HCAB 1997). If you think about what that might mean in to health care micro-systems it means that the macro-organization would mandate that each micro-system align its mission, vision, and strategies with the organization's mission, vision, and strategies. That would be "tight" management. Then the macro-organization would back away to let each micro-system determine on its own how to get there. That would be "loose" management. Then the next "tight" management would refer to the macro-organization's accountability-based management system to achieve results (Caldwell 1998).

Micro-system interviewees were asked to provide examples about the helpful and toxic ways the macro-system affects the care provided by the micro-system. Overall, the interviewees provided examples of supportive macro-systems — supportive in providing resources, supportive in creating the environment or culture for the micro-system to work within. However, the tension between the micro-system and macro-system and between tight and loose management was evident in some of the responses:

> *"They have been very supportive in terms of wanting to do cutting edge work. The priority for the system is patient care. They identified areas where CQI teams were needed. That is where the Breast Care team came up. They supported us financially too. They have paid close attention to the results. They have identified breast care as an area where they want a center of excellence. It is a priority of the system."*

"The administration is a barrier. Sometimes I wish that they would just open the door and get out of the way."

Interviewees were asked to comment on what they would consider to be an ideal financial structure for improving the quality of care. This question was added early on during the interview process because so many interviewees were commenting that the financial structures were a major barrier to the work of the micro-system. Among the interviewees asked this question, a common response was to have some sort of capitated system, as suggested in the following comment.

"To encourage improvement, you need a structure that makes you responsible for a defined population — some sort of capitated system. In a couple of sections here, the payment scheme is fee-for-service — this makes people less involved in the team. The incentive is to maximize own profits. This hurts improvement efforts."

As the micro-system is explored as an important model for the organization and delivery of care, a logical next question will be "how do we replicate a micro-system?" The answer will come from those working in the most effective micro-systems. Interviewees were clear about the resources needed for replicating successful models.

"If you can have those three things in place before you start—the right team, the senior leader support, and the financial issues resolved—you can replicate what we have done. What we are doing is not undoable in other places. In many cases it's just common sense."

"It is helpful to have a clear sense of goals, a philosophy of the service. Line everything else up with that. Funding must be aligned somehow to make the model possible. It is helpful to have some leaders who are in the micro-system all the time working on the administrative and organizational support of the model of care. We get visitors a lot. It helps them see where it is happening. They are interested in how everyone involved understands the goal of care, the high level of communication. Productivity expectations, but paid on salaries, are helpful for improvement. Plus recognition for those working on improvements. There isn't a hierarchy of how much opinions are valued. Everyone's opinions are valued. The

meetings and care plans are done for a thought out reason. It isn't by accident that this is how we got here. It would help to have supervision from someone who has done the model. Our model has been replicated. Mentoring has helped. There needs to be a connection over time. Someone to talk to about difficulties and barriers as they occur. Talk it through with someone who has been there. It's hard to set up a model just by reading about it."

4.2. Factors related to more effective micro-system performance

Micro-systems vary on several factors. As previouly shown in Figure 4, these factors can be thought of on a scale of "low" to "high". Although these factors are based on the common themes and patterns that occurred repeatedly across multiple micro-systems, each factor was not present in each of the micro-systems included in the study. Table 8 lists each factor and the percentage of micro-systems that provided an example that indicated the presence of the factor. The factors are arranged from the highest to the lowest percentage.

Table 8 Percentage of Micro-system Sites Coded with Each Factor

Factor	% of micro-systems
1. Integration of information	100% (43)
2. Measurement	95% (41)
3. Interdependence of the care team	88% (38)
4. Supportiveness of the larger system	86% (37)
5. Constancy of purpose	70% (30)
6. Connection to the community	67% (29)
7. Investment in improvement	53% (23)
8. Alignment of role and training	40% (17)

The sites included in the study provided rich examples of each of the factors for high performing micro-systems as well as for low performing, or less effective micro-systems. The following paragraphs, arranged according to the percentages shown in Table 8,

discuss each factor and provide several examples to represent the high and low end of the scale for each.

4.2.1. Integration of Information

Universal among high performing micro-systems is integration of information. Micro-systems vary on how well information is integrated into the daily work of the micro-system and the role that technology plays in facilitating the integration.

Deming taught that knowledge is built on theory, not information (Deming 1993). According to Deming, information is static, whereas knowledge has temporal spread — put simply, with knowledge a theory can be developed that explains what happened in the past and predicts what will happen in the future. Expanding on this thought, in the micro-system analysis it became clear that in many of the sites, data is abundant, but data is not information. It is the integration of the information that creates knowledge among the high performing micro-systems. Furthermore, technology can be a useful way to help facilitate the integration of information within the micro-system.

> *"If you were a patient you would experience care differently here compared to the care you might receive elsewhere. You would be given a touchpad computer when you come in for your visit for filling out all the intake information. Your picture would be taken digitally. All this would happen, and I would see it, before you see me. I would explain what your responses mean."*

Other sites indicated that technology is not essential to integration of information.

> *"Most of the information is there, you have to find a way to harness it. Really all that is needed is a simple system to get back information quickly. Computers, lines, high tech come to mind but it doesn't have to be that way. Talking is a way to communicate too. Information technology doesn't have to be an elaborate system."*

> *"We reorganized into teams 2 years ago. An MD, RN, and Medical Assistant form a team. We have 6 or 7 teams, each team sees a panel of 1200 patients. Each*

team sees patients for a 4 1/2 hour block of time per day. The morning starts with a 30 minute meeting to review appointments that are scheduled for the day. Then the compressed clinic day. Then time for charting each afternoon. We have practice management time that is scheduled every week. Patients are not scheduled for that time. That time is for reviewing data, collecting data It's funny but you can see almost the same number of patients during a compressed clinical day as during a full day. We try to see 4 patients per hour. The teams are staggered throughout the day so that we can be open from 8 a.m. to 8 p.m. The number of teams is scheduled to match times when patient demand is the greatest. We have 3 exam rooms and have eliminated time in the waiting room. It's called express check-in. We verify insurance and demographic information the day before the appointment."

Table 9 provides several verbatim responses from the interviews that illustrate low and high levels of integration of information.

Table 9 Micro-system Examples of Integration of Information

Integration of information	
Low Information free environment	High Information is key, Technology may be helpful
"We don't have control over the information that we need. We need to be able to define who our panels are — we can't do that ourselves. Control of information is a barrier. It is hard to get the information we need. Change will be more rapid in the teams as we have more control over the information."	"I can show diabetics a graph of their HgA1-C and comment on how it has dropped along with their weight which is graphed on the same screen. I can also refer them to web sites, for example, if they are interested in alternative care, acupuncture, asthma management. One thing I have been concerned about is how to communicate using the computer without losing contact [when you put information into the computer]. By having the medical assistant enter the information, I can invite them to tell the whole story, and I can listen, so it actually increases communication."
"If you aren't going to have the same nurse working with the patient then you have to have better communication. Patients get the best care when you have health care workers who communicate very well and collaborate very well. One of the biggest problems I see is physicians not talking to each other. Also, so many nurses work part-time, varying shifts. We struggle with getting them to communicate. It's hard to get them to put equal emphasis on communicating, documenting, teaching and the physical tasks that need to be done before the end of the shift. You don't get the same negative feedback from your coworkers if you aren't teaching the patient as you do if you leave some of the physical tasks undone at the end of the shift. A nurse will prioritize and get every thing done before the end of the shift, but they don't look at the patient's care plan and do the teaching that needs to be done before discharge."	"The team that takes care of patients is a working group that meets daily for 45-60 minutes. We discuss the status of all the patients and we brainstorm treatments as well as discharge planning there. All patients are listed on this blackboard that is used to organize information on the care process for each of the patients."
"At 7pm one evening a person was giving care to a patient in a hospital who was receiving cancer treatment. The patient wanted an advance directive — if my heart stops, I don't want CPR. The person told the nurse at the unit desk about this request and asked that the nurse please tell the MD. The MD never heard this. At 6 am the next morning, the patient had a cardiac arrest and a code was called. 20 minutes into a code the request was seen in the patient's record that the patient didn't want this to happen. We saw that there was not a clear responsibility to report the request to the nurse, to report to the MD. The physician always decides whether an order will be written or whether to go talk to the patient before writing the order. The system worked a lot of the time, but it wasn't consistent."	"Sharing information with patients is the biggest safeguard (against medical error). The electronic medical record (EMR) does drug-drug interaction alerts. When the patient leaves the office, he/she gets a printout of their medication list. Once in a while a patient will call later and say, 'I was looking over the list, and I am not taking x anymore, but Dr. So and So has put me on y.' It takes all of us. Another safeguard is that the system we use forces me to consider all the possibilities. For example, if a patient comes in with headaches and vomiting, it has a structured sequence that makes you consider the causes, including cerebral hemorrhage."

4.2.2. Measurement

Effective micro-systems measure what they do and they recognize that the larger system measures are not always helpful at the micro-system level. Part of the work of the micro-system becomes developing a set of measures that are appropriate for the goals of the micro-system. Furthermore, the analysis revealed that all micro-systems, even the less effective ones, are measuring outcomes, but those with low measurement are lacking measures that would be useful in the daily work of the micro-system. As one interviewee said, "At the local level I don't get the measures that I need and the measures at the regional level aren't at the level I need." It may be that this recognition is important in developing a high performing micro-system.

Table 10 provides examples of low and high levels of measurement in the micro-system interviews.

Table 10 Micro-system Examples of Measurement

Measurement	
Low Absence of a set of useful measures	High Micro-system routinely measures processes and outcomes, feeds data back to providers, makes changes based on data
"I think we are deficient in measuring. We are measuring the more global outcomes."	"We have developed a radar screen that has 8 simultaneous processes continuously monitored. Each process is depicted in 15 minutes cut of data for the last 4 hours. We know where in the process not only the patient is, but where the system is. Each process measured is summarized on the screen by graphs. All we have to do to obtain data is touch the screen. When we obtain three consecutive 15 minute intervals going in the wrong way, we realize that something needs to be done."
"When it comes to collecting raw data, we have found it to be difficult. We have data on demographics, and length of stay, however we don't have data on outcomes of care. This will come soon in the future."	"We use a value compass. We can query a database at any time for individual patients, but also for all patients we serve. We are also hooked up to 26 other centers. We can look at data by the point of service or longitudinally. We measure functional status, health status, work measures, treatment, who you have seen (type of provider), age, sex, height, weight, SF36, satisfaction, clinical comorbidities, smoking, cost of lost work over time."
"Other people use surveys and other ways to benchmark. We just do it seat-of-the-pants. We figure that we will get feedback. We don't use any modern techniques to measure anything. It's very expensive. We don't have extra capital to invest in recreational data collection to prove how we are doing to someone else when we know how we are doing."	"We track our endpoints extensively and have been able to do 3-yr follow-up of 75-85% of patients. We have an annual banquet in January and invite all former patients to come. 80% of those whose surgery was in the last 2 years come to this banquet. We book a large hotel, and they are our guests. It is social but also an opportunity to do a follow-up check. We have 15 doctors doing exams. 700-800 people generally come. There is a lot of camaraderie among patients."
"Every physician says they practice excellent medicine, but you have to look at some other parameters. We look at HEDIS and NCQA. It's hard to look at other outcomes - no ones knows how to do that."	"The development of an instrument panel of measures has been very important, then feeding this back to the staff has really stimulated our thinking."
"There was a problem with how to track it [data about meeting open access goals]. There were problems because the physicians weren't getting feedback on time about how they were doing working down the backlog and meeting open access goals. Then the MDs wouldn't get the incentive because they hadn't met the goals."	"We can track process length through our real time 'flight simulator' system. By touching the screen, we instantly know such things as arrival to bed, bed to nurse, arrival to doctor aggregated cycle times."

4.2.3. Interdependence of Care Team

As discussed previously, one element of a micro-system is the key players – the providers and staff who work together on a daily basis. Table 11 provides examples of interdependence of the care team. The interdependence of the care team varies across micro-systems. In sites with a high degree of interdependence, the existence and recognition of importance of the team approach to care was evident in the interviews. Furthermore, it was clear that information was key to micro-system's ability to function interdependently.

Table 11 Micro-system Examples of Interdependence of Care Team

Interdependence of care team	
Low **Providers and staff function as individuals** **No clear way of sharing information or communicating**	**High** **Care provided by a multidisciplinary team** **Information is key to the relationship**
"Often physicians have difficulty working with non-physician providers, giving them the control. Some physicians don't do well sharing responsibility for patient care like this."	"We developed multidisciplinary rounds – everyone involved in caring for the patient. The major value is having everyone communicate directly with one another. Each person knows they may be asked about the patients and has to be prepared."
"It's always hard when we get new clinicians. They aren't used to working with para-professionals in the community. We try to illustrate what works. MDs focus on what they do in the exam room but that's not enough."	"It is impossible for one individual to take care of an elderly person. Older and frail people have many health needs that can only be met by a group of dedicated individuals."
"Finally, not all doctors like the interdisciplinary philosophy. They like to do whatever they want"	"There are just the three of us. We work very well together. M. is in charge of the office, I am in charge of the patients, and Dr. D. is the physician champion. He holds the key to resources and new patients."
"We created a phone center to handle problems with phone access. We have 6 people answering phones. I saw it as decentralization and didn't like that idea for the micro-system concept. My phone nurse knows my patients — she knows when a patient really needs 20 minutes instead of 10. This has been borne out with the phone center and it is still hard to get through [on the phone]."	"We believe strongly that in team care, staff satisfaction is very important. Everyone is not equal, but everyone is important and has a different responsibility. I try to make sure that the clinicians know that working here requires a balance of getting to do what you want to do and of doing things as part of a team."

4.2.4. Supportiveness of the Larger System

Supportiveness of the larger system actually overlaps with many of the other factors. In high performing micro-systems, the aim, or the constancy of purpose, is consistent with the aim of the larger system. The larger system often demonstrates that improvement is a priority by making the necessary resources available for the micro-system. Even though there is overlap with some of the other factors, it is important to recognize the importance of the larger system on the success of the micro-system. As an interviewee at a geriatric unit reported when asked about how the larger system has supported the efforts of the micro-system, "The administration has continued to support the geriatric unit by providing both staffing and general resources. Getting a 'yes' for a request from the administration depends on how they feel about you and department. On the converse, rarely do units exist in a vacuum. So, where there is a larger structure, there are always potential negatives." Table 12 provides examples of supportiveness of the larger system from the micro-system interviews.

Table 12 Micro-system Examples of Supportiveness of the Larger System

Supportiveness of the larger system	
Low	High
Larger organization's actions perceived as "toxic" to the micro-system	Micro-system views larger organization as helpful
"I think that there is a barrier at the institutional level. For example, the institution has launched a Clinical Consistency Program. Basically, they want every place in their system to practice the same way. However, this hurts us because we have found ways to do things efficiently here, and if we have to practice like the rest of the system, we feel that we'll be practicing 'mediocre' care. Thus, there is a philosophical barrier."	"They have been very supportive in terms of wanting to do cutting edge work. The priority for the system is patient care. They identified areas where CQI teams were needed. That is where the Breast Care team came up. They supported us financially too. They have paid close attention to the results. They have identified breast care as an area where they want a center of excellence. It is a priority of the system."
"At the system level the priorities for the system are not the same as the priorities for me in primary care."	"We had the commitment from top administrators — the Presidents from 4 systems set up the task force. The task force was to talk about ways to collaborate to improve healthcare. We set as a goal that at least 50% of adults in our community would have an advance care plan before a crisis. And that the program we implemented to do this would be accepted by the community. The endorsement from the administrators made the task force much easier. In other communities, that support may not be there. I could go to medical records and say this is what I need — and I need to report back to the 4 presidents. I met very little resistance. My organization in particular put a lot of importance in this and asked me to put a lot of time in it. I wasn't just asked to work it in to my other responsibilities."
"The corporate policy for open access was a barrier and facilitator at the same time. The way corporate defined open access wasn't really open access and they set incentives based on their definition. Some people had different views about what open access was. For us, it was 'doing today's work today.' For corporate, it was 'if your schedule is open 75% a week out you will get a bonus'."	"We can make changes quickly and are free to make investments and commit resources to change. We recently created a management services division here. We help other clinics and care sites to do marketing, quality improvement in patient flow, etc.. This is our entrepreneurial spirit. The larger organization provided us with some resources to allow us to do this."
"It is a mixed message. The organization talks about team care but then subverts their vision — they put in a centralized phone system with a nurse in charge of scheduling appointments. Well she has no way of knowing whether Doctor X and Y are on the same team. If a patient of Dr. X cannot go to Dr. X because he is on vacation, the nurse may send the patient to Dr. Z though Dr. Y is on Dr. X's team. So instead of the patient going to Dr. Y, they go to Dr. Z."	"The hospital system has shown great effort in helping us out with patient restraint protocols. Restraint management has been an area where they have excelled and this has made the ER a safe place to work. They are also helping us out in quality end-of-life issues and how cultural differences of people necessitate individualized care."

4.2.5. Constancy of Purpose

An important factor to high performing micro-systems is constancy of purpose, or an aim that guides the work of the micro-system. As Table 13 suggests, where constancy of purpose is high, the aim is apparent to the micro-system, but it is also communicated across the boundaries of the micro-system. In contrast, lack of a clear consistent aim may be destructive to the micro-system and, ultimately, to patient care.

One interviewee talked about participating in benchmarking with other neonatal intensive care units. The difference between a low and high level of constancy of purpose is illustrated in this comment:

> *"The thing that distinguished those places that are achieving excellence is the organizational culture. Our culture was 'of course babies get infections, they are not well to begin with'. But those other sites saw an infection as a failure, not entitlement. All the way to the bedside the unit knew that infection was a failure. The philosophy has to permeate the organization."*

Table 13 Micro-system Examples of Constancy of Purpose

Constancy of purpose	
Low Lack of a clear, consistent aim	High Integration of the aim throughout the micro-system
"There is some divergence in the practice. The original aim was that we would practice the best medicine we could, understanding that we couldn't be as financially successful. Now some of the physicians are compromising for the financial aspects. They are spending less time with patients, care is not as complete."	"What we do well is communicate the importance of diabetes care — up, to the senior leaders of the organization; across to other providers' and out, to the community. We are advocates for our own work. Whenever I walk into a room, people think diabetes."
"At the department level there are barriers. We try to make changes across departments because in the community we don't want to treat patients differently because of the department they go to for care (peds v. IM v. FP). The barrier is to get agreement for everyone to make the change after one group pilots it. Every group doesn't need to pilot it before making the change."	"Our principle is that all of today's work is done today."
"I feel strongly that if we could have more time with patients for coaching, behavioral changes, and attitude changes we could improve diabetes care. Nobody wants to do anything if it isn't reimbursed. Wherever the $ goes that is where the service goes. Now there isn't adequate time or resources for teaching patients in any setting. Patients are so sick now when they are in the hospital, they are often too sick for any teaching. So we end up teaching the family members. God help the person who doesn't have a family member at home to help them."	"The focus of this micro-system is improving advance care planning through systems of healthcare. This is a joint effort of 2 healthcare systems. They assist and encourage adults to do advance care planning and them make sure written plans are available and followed. These 2 healthcare systems are competitors — competing for the same patients."
"There are various ways that health care workers let patients know that we are busy — don't tell us that you are having a problem because we don't have time to deal with that. For a lot of nurses the reason for being a nurse was to relieve pain and suffering. But then we send the message that we don't have time to help you."	"A lot of our work is around controlling chronic illness, addressing the co-mordities, maintaining quality of life. We want the patient to maintain community residence for as long as possible. This is an HMO — we are the payor — if the patient goes to a nursing home we pay for that care and monitor the care. It makes sense for us, financially and philosophically, to maintain the community residence as long as possible. The best thing we can do is keep them out of the nursing home."

4.2.6. Connection to Community

High performing micro-systems define the boundaries of caring for a population of patients. They are connected to the community in a way that allows the micro-system to serve as a resource for the community. An unanticipated finding was that for several of

the sites included in this study, the micro-systems have also discovered that the community is a resource for the micro-system as well. Connection to community (as described in the examples in Table 14) represents a symbiotic relationship between the micro-system and the community that extends well beyond the clinical care of a defined set of patients.

Table 14 Micro-system Examples of Connection to Community

Connection to community	
Low **No clear connection to community beyond current patient population**	**High** **Micro-system is a resource to the community, community is a resource to the micro-system**
"Patient surveys are done periodically (so far we have only done 2). We have one page exit interviews. We haven't changed a lot based on these surveys."	"There has been a strong consumer movement recently on creating peer support centers. These are not run by our group but by consumers. We refer people to them and then we participate by providing some of the educational seminars. I invite the peer support groups in that are in the community to educate the residents. It really is an eye-opener for the residents. I think that as physicians a lot of us don't have any idea what it is like to live with a mental illness. And none of the education teaches that. The peer support centers let people with the illness teach the residents about it."
"The only way we get information about the community is from the managed care organization."	"The neonatology group has a commitment of being a resource to the region. We have a commitment to the health of a population. This is crucial to our success. As a resource, we provide education and review the quality of care for the whole region."
"The community used to look at us as leaders. But the hospital was taken over by a large system. So we aren't community leaders anymore. We need the healthcare dollars to come to the community and then we decide how to take care of the community. The trustees of the hospital have no idea about healthcare or affecting change."	"40% of our patients are self-pay. We use a sliding fee schedule. Our minimum fee is usually $8. Sometimes the patient asks us to waive this. In January, Social Services started asking them to use 'time dollars' — that's part of our MORE (member organized resource exchange) time dollar exchange. What are you willing to do for your neighbors? Some people don't have any ideas, so we show them a list of things people do — reading to children, etc. If they agree to pay their bill that way, someone will get in touch with them to follow-up. This has really been a shift in thinking — staff as well as patients. It's easier for the staff person to just waive the $8 fee."

4.2.7. Investment in Improvement

High performing micro-systems make improvement a priority by making an investment in improvement. Examples of this dimension are shown in Table 15. This investment comes in the form of resources, such as time, money, and training, but it also an investment in creating the philosophy of the micro-system. For example, an interviewee from a high performing neonatal intensive care unit said, "We charged the entire operating structure of the unit with improvement."

Table 15 Micro-system Examples of Investment in Improvement

Investment in improvement	
Low Training, resources not available	High Resources made available for improvement (training, $$, time)
"One change was to get people to carry medication cards in their wallets. We talked about it for 10 minutes or so and decided to do it. But it didn't work. We don't know how to implement it. We don't know how to flowchart. We don't know how to improve the system. We have closets full of good ideas but don't know how to implement them."	"We have a manager for staff development. She works on skill building and coaches the teams in how we get along. It's important to assign the role of staff development to someone."
"Our micro-system is a prisoner of our macro-system. If it isn't important for the macro-system, we have no incentive to do it and improvement hasn't been a priority."	"We put together a guidance team and the idea was that this team would tell us what to work on. But I saw most of the good ideas coming from the front lines. The front line needed to be empowered to make the changes. So, now the guidance team will become the quality council. It will have membership from each of the three teams. Changes that teams want to work on will be presented to the Quality Council — 'this is what we want to do, we want to use this method.' The Council's goal will be to provide guidance and facilitation. 'Yes, that project meets our overall goals, what resources do you need?'"
"We look at the data and say, 'what can we do to make this better . . .' but there is so much pressure to reduce the time we see with patients and see more patients every day. Now there is pressure from the organization to see patients at 10 minute intervals. They are going to start to tie incentives to that. Each physician will have to decide how to deal with that - more money, less hours, etc."	"Remember that even when it seems you have accomplished something, new people come who were not party to the original plans. Before you know it, you've fallen back. We used to think that people would learn the systems by osmosis. Now, they have a formal induction system to explain and show people how the systems should work."

Table 15 Micro-system Examples of Investment in Improvement (continued)

Investment in improvement	
Low Training, resources not available	High Resources made available for improvement (training, $$, time)
"We started looking at the data because we had a high rate of wound infection after CABG. We brought together all the different people and looked at all the different issues over 2 years. We found that there is a strong correlation between diabetes and infection, which the national data shows too. We decided that we should work on managing blood sugars before, during, and after surgery. As it turns out, there are so many primary care providers referring patients — we couldn't agree on a way to work on blood sugars before surgery and they didn't want to invest the resources that would be necessary to do this. We couldn't get any primary care providers to work with us on this because working on improvement impacts their productivity, which impacts how much they are paid. Even though it was clear what needed to be done, they chose the easier way and started working on just the peri-operative phase. Two years later we found that the staff wouldn't make the changes because they wouldn't buy into what we wanted to do. And the leaders had forgotten why they ever bought into it to begin with. As it turned out, some of the physicians were offended because we came to them with these changes and they weren't involved with planning the changes. But they had forgotten that when we started all this they didn't want to be involved because they didn't have the time to do it. I am sick and tired of hearing that people are too busy to work on this. When I was younger and less experienced I believed it, but I don't won't to hear that anymore."	"In a given week we are spending about 100 person-hours on teams. People are being paid to spend their time doing this, not just during their lunch hour. Someone said, 'You have to assume you'll be around here 5 years from now. Do you want to be doing things the same way?' Most of us don't. This requires a new attitude that results in understanding that industries must invest in change in these micro-systems. You have to tolerate pulling people off-line to work. This is a radically new way of thinking in medicine which traditionally views any sort of meeting as a waste of time. Traditionally, the view is that the only useful time is spent seeing patients. I think that unless you spend time considering how to deliver care better, much of that time seeing patients is wasted."

4.2.8. Alignment of Role and Training

Within the multidisciplinary team, several sites mentioned an alignment of role and training. That is, there was a deliberate effort to match the team member's education, training, and licensure with their role. While several sites indicated that this leads to increased staff satisfaction and lower turnover, some are uncomfortable working in what they consider to be an "expanded" role. As one interviewee articulated, "Casualties move on to other parts of the hospital."

There is only one example of low alignment of role and training in Table 16. Micro-systems without a high level of alignment of role and training (60% of the micro-systems included in the study) did not provide examples that indicate that this is an area they have addressed. However, the importance of aligning role and training and the potential contribution that this can make to the overall functioning of the micro-system is emphasized in the responses included in Table 16.

Table 16 Micro-system Examples of Alignment of Role and Training

Alignment of role and training	
Low Health professionals not expected to work within the limits of their education, certification (overqualified)	High Health professionals expected to work at the limits of education, training
"The system wants me to simply be a 'broker.' They want me to just do my CHF part and then make referrals. I want to be more involved in the care process."	"The receptionist talks them through the systems of the office. They are trained to follow through specific areas of care such as screening, childhood immunization, and antenatal care, so they have one person to contact. They have become expert in their areas."
	"We emphasize training medical assistants to a much higher level than most expect, use 2 NPs extensively. MAs trained in using technology, standardized triage functions, training patients in self-management. As a group they stay with the practice for long periods. We are trying to 'push the envelope' and rely less on credentialing and more on continually developing new skills."
	"The system can be an advocate. It can be a reminder that a mammogram needs to be done, that there is a system in place to make sure it happens, that things go well. A system can empower the medical assistant to insist that a patient be seen, even if it means clashing with a provider."
	"If the Respiratory Therapist notes an abnormal lab value, she is comfortable not just taking a blood sample and reporting it, but managing it. The technicians are caregivers. Expectations have changed. The ones that stay are good a adjusting therapy to within physiological parameters are cross trained so that they can take on nursing tasks, starting IVs when needed. When fully trained and confident they may tell an admitting doc that a patient is not ready to have a ventilator tube removed."

4.3. Strategies for providing care to patients with type 2 diabetes

Five sites in the micro-systems study were asked to participate in an additional interview that focused on diabetes care. The sites ranged from a program at a county health department that provides care to 485 patients with diabetes to a large multi-hospital integrated delivery system that provides care to approximately 25,000 patients with diabetes. The composition of the micro-system looks quite different in response to the volume of patients — the diabetes program with 485 patients cares for patients with one registered nurse and part time (.5) clerical support. They interact with the patient's primary care provider. The large integrated delivery system caring for 25,000 diabetics has 35 clinical diabetes educators (clinical psychologists, dieticians, or RNs), physician assistants, financial counselors, and a system program manager working with primary care and specialty physicians throughout the delivery system in many locations.

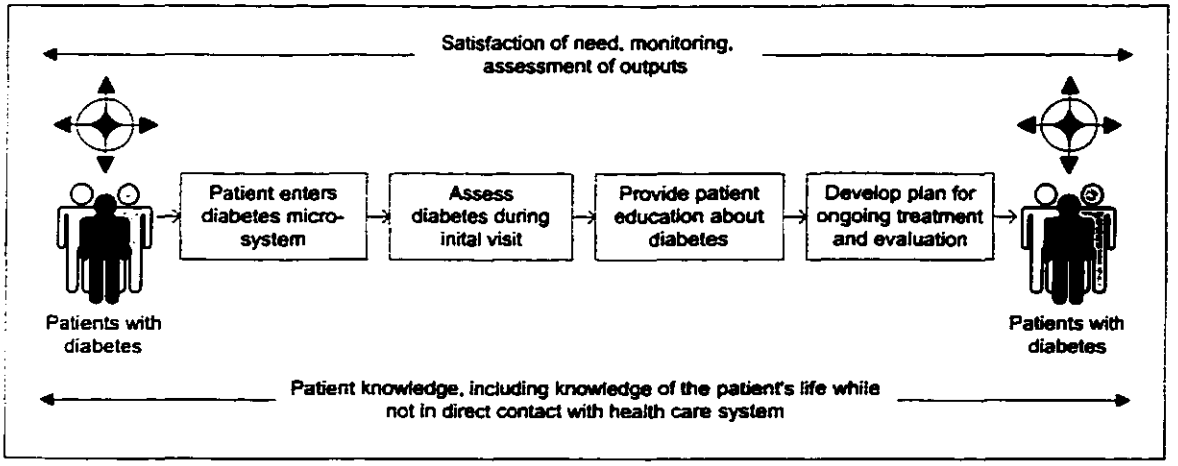
How many diabetic patients are in your practice?
- 485
- 4500
- 6000 - 7000
- 7000
- 25,000

The following sections discuss two approaches used to explore strategies in providing care for patients with type 2 diabetes. Section 4.2.1. presents a "micro-system analysis" to assess the process and outcomes of diabetes care at each of the five sites included in this portion of the study. Section 4.2.2. applies the eight dimensions of the micro-system framework that emerged from the comprehensive interview to the five diabetes sites.

4.3.1. Micro-system analysis of diabetes care

To understand the process and outcomes of care in the diabetes micro-systems included in this study, the micro-system model illustrated in Figure 2 was revised to more accurately reflect the process of care for patients with diabetes. Figure 6 shows a high level process of care for a diabetes patients.

Figure 6 Diabetes Process of Care



Next the data from each of the interviews was linked to the micro-system model shown in Figure 6. Tables 17 – 21 display the results. At the top of each table, the micro-system is identified by its relevant code (MS08, MS11, MS16, MS21, and MS40) and a brief summary of the micro-system. The supporting process (satisfaction of need, monitoring, assessment of outputs) is shown next. Below that, the care process is shown with the steps in the process across the top of the matrix and the data from the micro-system in each column. The final column contains the outcomes data. The supporting process (patient knowledge, including knowledge of the patient's life while not in direct contact with the health system) is shown at the bottom of the table.

Table 17 Micro-system Analysis for MS08

MS 08 – We provide care for 7000 patients. Our team includes the primary care provider, a diabetes resource nurse (LPN), a nutritionist, and an endocrinologist.

Satisfaction of need, monitoring, assessment of outputs

"Patients are asked to rate overall satisfaction with care at clinic, overall quality of care and service. Whether they would recommend clinic to friends or family, availability of medical advice or information by phone. Ease of seeing the doctor of your choice. Thoroughness of examinations. Explanations of medical procedures and tests. Amount of time the doctor spends with you. How well your doctor answers your questions and how well they help you understand diabetes."

Patients with diabetes	Patient enters diabetes micro-system	Assess diabetes during initial visit	Provide patient education about diabetes	Develop plan for ongoing treatment and evaluation	Outcomes of care
"We use the information system to determine which patients are at risk. At the system level we have the opportunity to combine our clinical and administrative databases. We use the information system to generate risk lists and stratify risk. We asked it to give us everybody with a diagnosis of diabetes and to give us everybody with a prescription for an oral glucose agent. Then we tested this way against a manual chart review and found that it was a very good, accurate way to generate a risk list. This list is sent to the MD quarterly. It helps the care team identify patients who are at greatest risk."	No data	"We have flow sheets around diabetes care for each patient record. We are using ICSI guidelines for decision support. For self-management we look at whether patients know what they need to know about diabetes. Assessing a patient's readiness to change is a new idea — putting the patient in the drivers seat. We aim efforts at motivating them based on their knowledge. We haven't completely made the leap of putting them in the drivers seat. 99.9% of the patients are involved in self-care."	"We use a wallet card that goes to the patient with a letter from their primary care provider. There is a newsletter that goes out 2 times a year — this year one of the issues focused on diabetes. For self-management we developed a wallet care, we standardized the diabetes education program, and we used our magazine to publish an article on diabetes. We aren't using a sage on the stage anymore in our diabetes education. We try to help the patient understand what the best practice is for diabetes care."	"Patients are included in developing care plans at 2 levels — at the medical group level, the steering group includes patients. At the care level it is a conversation between the provider and patient and family. We have planned visits — diabetes patients are scheduled for a certain half day. It changes it from a random event in a chaotic day to a planned visit. Everyone is geared and aligned for caring for patients with diabetes during those planned visits. We have group visits. We set up stations they go to — feet, etc. Then a group session on a certain topic and support groups. We have group clinics. When patients come in for any type of care we want to make sure that we take care of their diabetes too.	**HbA_{1c} Testing** In prior 12 months = 90% **Glycemic Control** HbA_{1c} <7% = ? HbA_{1c} <8.0% = 68.4% HbA_{1c} 8.0 – 9.9% = 24.4% HbA_{1c} >10% = 7.2% **Lipid Screening** In prior 12 months = 52.8% **Lipid Management** LDL < 100 mg/dL = ? LDL 100 – 129 md/dL = ? LDL > 130 mg/dL = ? LDL < 130 mg/dL = 51.8% **Retinal, Renal and Foot screening** eye exam in prior 12 months = ? Albumin/creatinine ratio in prior 12 months = ? Foot exam in prior 12 months = ?

Patient knowledge, including knowledge of the patient's life while not in direct contact with health care system

"The Center has a lifestyle change line to support patients — patients can phone in and talk with someone." Setting treatment goals with the patient can be difficult — you have to figure out what makes sense for the patient. The medical goals aren't necessarily the patient's first goal. If making cookies with a grandchild is their goal, we have to figure out a way for that to happen."

Table 18 Micro-system Analysis for MS11

MS11 — We have 25,000 patients enrolled in the program. We work in partnership with primary care and specialty physicians practicing in many locations. 1 clinical psychologist, 1 PA, 6-10 RD, CDEs, work together to support 2200 primary care and specialty care physicians

Satisfaction of need, monitoring, assessment of outputs

"Our system allows us to track who didn't come back for a follow-up each quarter. Then we use non-clinical people to make the calls. This would be impossible without computerized medical records. You can't drop out of the program without talking to us and letting us know why. This really is an important part of chronic care. We measure overall satisfaction of the program, usefulness of the information learned, written materials, instructor knowledge, instructor presentation skills, registration process, meeting space, and whether expectations were met."

Patients with diabetes	Patient enters diabetes micro-system	Assess diabetes during initial visit	Provide patient education about diabetes	Develop plan for ongoing treatment and evaluation	Outcomes of care
"We don't have a way to identify patients who have diabetes or who are high risk. Patients are referred to us. There are 350,000 - 500,000 people in the system — we have 25,000 patients enrolled in the program. I know that we don't have all of the diabetics, but we don't have a way to identify them."	"You would be referred by your physician. Who does what at what time is very fluid. There is some overlap. We consider ourselves, together, the consultant to the patient's physician. Depending on the priority, we can get someone in within a week — for example gestational diabetes. For most newly diagnosed patients, it's within 2 weeks. It really depends on the priority that the MD gives the referral. Immediate intervention is what it takes to prevent hospitalization."	"During the visit there would be an electronic medical assessment that would get an in-depth picture of your diabetes and lifestyle. We would input lab data, do a complete foot exam, take blood pressure and assess your knowledge base of diabetes. You can't assume they know much about diabetes — no matter how long they have had the disease. It is amazing the number of adults with type 1 diabetes who still have a child's understanding of diabetes. We assess whether they are still in denial — if so, we might make a referral to the psychologist. Really, it all depends on what the patient needs.."	"We may put them into a group class or provide one on one education. We assess what pieces are missing and then figure out the best way to get them."	"We give feedback to the physician. Then we follow-up."	**HbA_{1c} Testing** In prior 12 months = ? **Glycemic Control** HbA_{1c} <7% = ? HbA_{1c} <8.0% = ? HbA_{1c} 8.0 – 9.9% = ? HbA_{1c} >10% = ? 2% decrease in HbA_{1c} Ranges from 6.8% - 8.3%, down from 7.7% - 11% **Lipid Screening** In prior 12 months = ? **Lipid Management** LDL < 100 mg/dL = ? LDL 100 – 130 md/dL= ? LDL > 130 mg/dL = ? **Retinal, Renal and Foot screening** eye exam in prior 12 months = ? Albumin/creatinine ratio in prior 12 months = ? Foot exam in prior 12 months = ?

Patient knowledge, including knowledge of the patient's life while not in direct contact with health care system

"There is an ethnic barrier. A large Hispanic population in our area. Our relationship with Hispanics is not strong enough. We provide every service in Spanish as well as English. Latino males are the most difficult for us. The ADA has a specific initiative to address this but they don't have a solution yet."

Table 19 Micro-system Analysis for MS16

MS16 — 6000-7000 diabetic patients in the health plan. CDEs work with PCP and endocrinologist

Satisfaction of need, monitoring, assessment of outputs

"The patient satisfaction surveys we've done for our diabetic patients always look good."

Patients with diabetes	Patient enters diabetes micro-system	Assess diabetes during initial visit	Provide patient education about diabetes	Develop plan for ongoing treatment and evaluation	Outcomes of care
"We don't have a way to identify who in our population served has diabetes. That needs to be done, probably as a global screening. It would be too expensive to just look for diabetes."	"All patients are referred from their PCP after being diagnosed with diabetes. For newly diagnosed patients, they are referred to the program — the appointment is based on urgency."	"Patients are usually seen first in a class format then they are seen individually by a CDE. The philosophy is that the patient is the key person — CDE assesses where they are, what they need to learn."	"We use a wallet sized card that has some information pre-printed on it, but it also has space on it to provide individualized information for the patient."	"There are some things we tell them that they can expect, such as you will be back in every 6 months, but the focus is on self-management."	**HbA_{1c} Testing** In prior 12 months = 89.9% **Glycemic Control** HbA_{1c} <=7% = 30.2% HbA_{1c} >7% and <=8% = 20.5% HbA_{1c} >8% = 49.3% HbA_{1c} >10% = ? **Lipid Screening** In prior 12 months = ? **Lipid Management** LDL < 100 mg/dL = 25.2% LDL 100 – 130 md/dL= 35.3% LDL > 130 mg/dL = 39.5% **Retinal, Renal and Foot screening** eye exam in prior 12 months = 42% commercial, 50% Medicare Albumin/creatinine ratio in prior 12 months = 61.8% Foot exam in prior 12 months = 64%

Patient knowledge, including knowledge of the patient's life while not in direct contact with health care system

No data

Table 20 Micro-system Analysis for MS21

MS21 — There are 485 patients in the program. Of the 485 patients, 85% have improved blood sugar levels. There is me (the RN) and a .5 clerical assistant. We interact with the MD.

Satisfaction of need, monitoring, assessment of outputs

"We aren't doing anything to collect patient satisfaction data. I asked patients to write about their changes and the process. There was an article in the local paper, 'Patients are their own specialists' - it said that what our program is especially good at is helping patients take care of themselves. "

Patients with diabetes	Patient enters diabetes micro-system	Assess diabetes during initial visit	Provide patient education about diabetes	Develop plan for ongoing treatment and evaluation	Outcomes of care
No data	"Patients are referred from their PCP or self-refer. Initially, there were physician barriers. They didn't know what this program was all about. It's a good thing patients could self-refer, because that is how the MDs learned about it."	"Patients are treated with dignity. We've changed the mindset – we've made them realize that they are in charge. Traditionally, a patient would come in, the MD would say you need to lose 50 pounds and have a blood sugar level of 110. The patient leaves, feels at fault,and a wall goes up. Now I tell people that no one can ever fool you about your diabetes again. Each patient is interviewed — history, psychological profile — using one tool. Instead of traditional education, we ask a lot of questions. 'What are you doing? What are you willing to do?' We have also found that diabetics often think they are to blame for having diabetes."	"We knew that there was a gap between what the patient was told and what the patient did. We wanted to address this with an empowerment model of teaching. We havedeveloped a teaching model — it's an explanation of diabetes, energy, and carbohydrates — that is consistently understandable for a wide range of patients. I teach a course. There are materials in the waiting room. Knowledge passes between people and you learn by doing. After you get the patient to a certain level, you watch them learn by doing. The nurse educator needs to have an upside-down, inside-out knowledge of diabetes. I'm sure that I don't know everything about diabetes — you know, the technical, university level stuff. But I can teach patients what they need to know in a way that they can understand and relate to.	People learn by experience — the more ways they experience something the better they will learn and retain it. Each patient is given a diary. I tell them, 'Don't worry about anything. Just write down meals and blood sugars. At the next visit we will look at it.' Pretty soon they are drawing lines between what they are eating and their blood sugars."	**HbA_{1c} Testing** In prior 12 months = ? **Glycemic Control** HbA_{1c} <7% = ? HbA_{1c} <8.0% = ? HbA_{1c} 8.0 – 9.9% = ? HbA_{1c} >10% = ? Average HbA_{1c} = 9.49% **Lipid Screening** In prior 12 months = ? **Lipid Management** LDL < 100 mg/dL = ? LDL 100 – 130 md/dL= ? LDL > 130 mg/dL = ? **Retinal, Renal and Foot screening** eye exam in prior 12 months = ? Albumin/creatinine ratio in prior 12 months = ? Foot exam in prior 12 months = ?

Patient knowledge, including knowledge of the patient's life while not in direct contact with health care system

"I work with a wide range of patients — most are in lower paying jobs, 40% are uninsured. We provide monitors and strips to indigent patients. They only seek care when there is an emergency. It's hard to draw them into prevention. A lot of our patients are just surviving."

Table 21 Micro-system Analysis for MS40

MS40 — We care for 801 - 1200 patients per team of 1 RN and 1 LPN. There are 6.9 FTEs and 4500 patients listed in the registry. The team is the patient, primary care practitioner, a RN "primary care coordinator, a LPN "diabetes self-care specialist". That's the core team. The extended team includes endocrinology, nutrition, clerical/administrative support, podiatry, and opthalmology.

Satisfaction of need, monitoring, assessment of outputs

"Patients look at the amount of time spent with a clinician and if their questions are answered. We do a patient satisfaction survey by phone 2-3 weeks after visits. The diabetes care team scores higher in patient satisfaction than the primary care providers."

Patients with diabetes	Patient enters diabetes micro-system	Assess diabetes during initial visit	Provide patient education about diabetes	Develop plan for ongoing treatment and evaluation	Outcomes of care
No data	"They can be referred directly to us by PCP. New patients are diagnosed, the MD asks us for a consult, and we walk the patient down to our office. We also send letters to patients with diabetes asking them to come in."	"The RN or LPN assesses the demographics, what they do, risk factors, support available, medication, lifestyle, and barriers to making changes. We do a learning needs assessment. Order lab work-up, then plan for follow-up. The first visit is usually 45 minutes to an hour long."	"We have classes. We have trained the staff to teach when the patient is there for monitoring. We have found that one-size does not fit all. Patients attend 3 2-hour sessions on living well with diabetes. Lay volunteers teach a living well with a chronic condition class."	"We were very deliberate about the LPN title "diabetes self-care specialist". We tell patients, "We are here to help you with your diabetes." We wrote the protocols that the patient has a choice, within certain parameters. For example, before initiating a new drug for lipids we will ask, "Do you want to try some behavioral changes or should we start the medication?" Of course we have certain parameters in the protocols and if the behavioral changes aren't working or aren't enough we will start the medication. Preventive screening visits are done yearly — assess vital signs, behavior, willingness to make changes. Patients are very involved. We ask, 'Are you interested in working on lifestyle changes?' They rate their interest on a scale of 1 - 10. Less than 7 is low motivation. We recommend setting 3 goals and working on small changes. We help them set a timeframe — 'We will need to reevaluate this at this point in time.' We use a 'brief negotiation' format. Sometimes we may need to help the patient scale down their goals if they are overly ambitious. We tell them, 'We have an expectation that you will be in at least yearly, but we are available for you all the time.' "	**HbA_{1c} Testing** In prior 12 months = 80.1% **Glycemic Control** HbA_{1c} <7% = ? HbA_{1c} <8.0% = 48.0% HbA_{1c} 8.0 – 9.9% = 32.6% HbA_{1c} >10% = 19.4% **Lipid Screening** In prior 12 months = 67.5% **Lipid Management** LDL < 100 mg/dL = 32.2% LDL 100 – 130 md/dL= 35.3% LDL > 130 mg/dL = 32.6% **Retinal, Renal and Foot screening** eye exam in prior 12 months = 71.0% Albumin/creatinine ratio in prior 12 months = 54.4% Foot exam in prior 12 months = 40.7%

Patient knowledge, including knowledge of the patient's life while not in direct contact with health care system

"We have a resource list for every service area (weight watchers, YMCAs, etc.), we have support groups.

The micro-system analysis of each of the five diabetes micro-systems is a high level look at the care they provide, but it is a helpful way to start to identify potential areas to focus improvement. For example, this way of looking at the data reveals that these micro-systems could do more work to identify who in their population has diabetes. Only one site (MS08 shown in Table 17) indicated that they systematically identify patients who are at greatest risk. None of the sites discussed how they identify the undiagnosed diabetics in their population. It is estimated that approximately 5.4 million adults in the United States have type 2 diabetes (NIH 1995). Because type 2 diabetes is often asymptomatic, people with diabetes can remain undiagnosed for many years. The literature shows that the greater the number of risk factors present in an individual, the greater the chance of that individual developing or having diabetes. The major risk factors include family history of the disease, obesity, belonging to certain racial/ethnicity groups, age greater than 45 years old, lack of physical activity, history of hypertension or dyslipidemia, and history of gestational diabetes. Conversely, the chance of finding diabetes in an individual without a risk factor is low. This suggests that random screening for diabetes would not be appropriate. However, it would be appropriate to assess the risk factors of the population the micro-system serves and then screen the individuals who are at high risk. The American Diabetes Association recommends using verbal or written questionnaires as part of community screening programs (ADA 2000), (Herman, Smith et al. 1995).

The results from the micro-system analysis suggest that the best strategy for providing diabetes care is not clear. The outcomes of care are a result of the process of care (Batalden, Nelson et al. 1994), (Nelson, Mohr et al. 1996), (Nelson, Batalden et al. 1996). The data from the five diabetes micro-systems included in this study indicate that

the outcomes of care for patients with diabetes are unacceptable. This makes it difficult to point to one process or strategy and assert that it is superior to the others. Furthermore, the outcomes data suggests that it is not clear that all five sites included in the diabetes portion of the study are measuring the recommended set of process and outcome measures. Also, and more importantly, from the data reported from these micro-systems, it is clear that all diabetic patients did not receive the recommended services.

Recommended measures for patients with type 2 diabetes

Process measures
- Hemoglobin A_{1c} screening
- Lipid screening
- Retinal exam
- Monitoring for nephropathy
- Foot exam

Outcome measures
- Hemoglobin A_{1c} control
- Lipid control

Hemoglobin A_{1c} reflects mean glycemia over the previous two to three months. Measurement twice yearly is recommended to determine whether the patient has stayed with the target range. Normal Hemoglobin A_{1c} is less than 6% and the goal is less than 7% (ADA 2000). Only three sites reported percentage of patients with a Hemoglobin A_{1c} measurement in the prior twelve months — their results ranged from 80% to 90%.

Lipids are important to measure because of the increased risk of cardiac disease in diabetic patients. The most common cause of death in diabetic patients is cardiovascular disease. LDL <100 is considered low risk, LDL >=130 is considered high risk, and LDL 100 – 129 is considered borderline. Patients with diabetes should be tested annually for lipid disorders (ADA 2000). Within the five diabetes micro-systems interviewed, only two sites reported the percentage of patients with a lipid profile in the prior twelve months. These results ranged from 53% to 68%.

Diabetic retinopathy poses a serious threat to vision. The prevalence of retinopathy is strongly related to the duration of diabetes. After 20 years of diabetes greater than 60% of patients with type 2 diabetes have some degree of retinopathy. One of the main

motivations for screening for diabetic retinopathy is the established efficacy of laser photocoagulation surgery in preventing visual loss (Aiello, Gardner et al. 1998). Furthermore since diabetic patients with vision-threatening diseases may be asymptomatic, ongoing evaluation for retinopathy is a valuable and required strategy and is recommended yearly (ADA 2000). Only one site was able to report retinal exams — 71% of their diabetic patients received a retinal exam in the previous 12 months.

Microalbuminuria is the earliest stage of diabetic nephropathy, or kidney disease. Patients with microalbuminuria will likely progress to clinical albuminuria. Once clinical albuminuria occurs, the risk for End Stage Renal Disease is significant. Monitoring is recommended yearly and is done by testing albumin-to-creatinine ratio from urine samples (ADA 2000). Two sites reported percentage of patients with an albumin-to-creatinine test in the prior twelve months — their results were 54.4% and 61.8%

Foot ulcers and amputations are a major cause of morbidity, disability, and costs for people with diabetes. The early recognition and management of risk factors for ulcers and amputations can prevent or delay the onset of these adverse outcomes. Patients with diabetes should receive a thorough foot examination at least once a year to identify high-risk foot conditions (ADA 2000). Within the diabetes micro-systems interviewed, two sites reported the percentage of patients with a foot exam in the prior twelve months. In their micro-systems, 40.7% and 64% received foot exams.

These results are alarming. If these are the outcomes of care among the micro-systems included in this study — micro-systems that were included in the sample because they are considered to be high performing micro-systems — what are the outcomes for the low-performing micro-systems? What are the recommendations to micro-systems seeking to improve the care that they provide?

Further examination of the process of diabetes care will be an important part of the micro-system's ability to improve and to achieve optimal outcomes for their patients with diabetes. "Knowledge of the process, like outcomes measurement, can be a vital step on the path toward improvement. However, knowledge of individual processes within a system of interconnected processes may not provide clear understanding of how the system's operation affects key outcomes" (Batalden, Nelson et al. 1994). Translating that insight to this research, another important part of the micro-system's ability to improve will be to understand the operation of the micro-system. The next section addresses this by applying the eight dimensions of the micro-system framework to the diabetes sites.

4.3.2. Micro-system framework applied to diabetes care

Section 4.1. presented a framework for thinking about factors related to more effective micro-system performance. This framework can be applied to the five diabetes sites to explore the functioning of those care-giving micro-systems. The following paragraphs discuss how the diabetes micro-system vary across the eight dimensions of the micro-system framework.

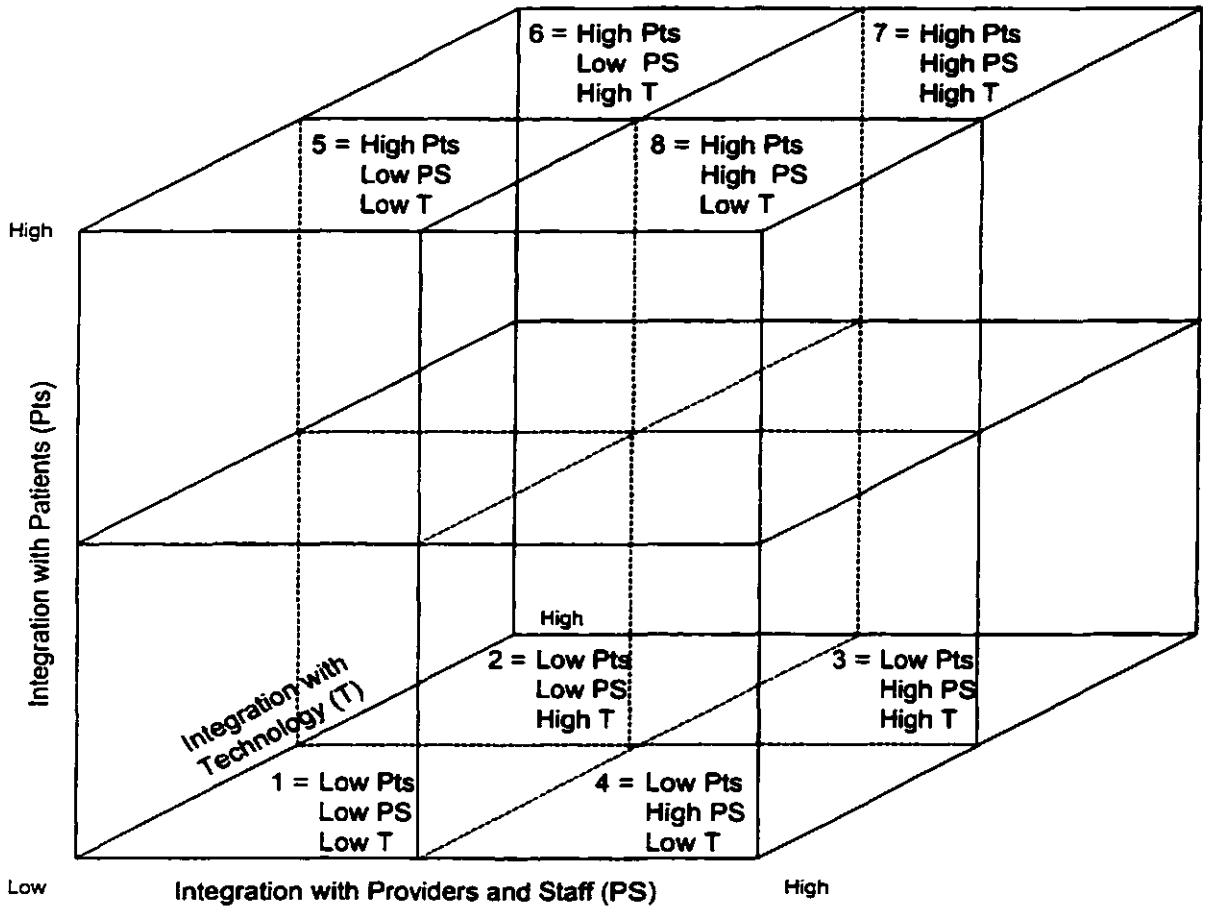
4.3.2.1. Integration of Information

As the analysis of the diabetes micro-system interviews progressed, it became clear that the category "integration of information" has three dimensions: (1) integration of information with patients, (2) integration of information with providers and staff, and (3) integration of information with technology.

As suggested by Quinn (Quinn, Baruch et al. 1997) information technology is one of the areas where true economies of scale apply. The data from the micro-systems interviews support Quinn's assertion — the micro-systems with larger commitment of financial resources had the highest level of integration of information with technology.

However, the data also suggest that information technology is only one dimension of the integration of information factor. Integration with information technology, integration of information with patients, and integration of information with providers and staff are the three dimensions that appear to form the integration with information factor. As shown in Figure 7, the relationship between the integration of information with patients, providers and staff, and technology can be represented on three axes.

Figure 7 Relationship of the 3 Dimensions of Integration of Information



By thinking about integration of information this way, it is possible for a micro-system to be in any of the quadrants. One could expect that the most effective micro-

systems would be in either quadrant 7 (high integration of information with providers and staff, high integration of information with patients, and high integration of information with technology) or 8 (high integration of information with providers and staff, high integration of information with patients, and low integration of information with technology). Conversely, high integration of information with technology would only meet limited success in a micro-system with low integration of information with patients and low integration of information with providers and staff (quadrant 2).

Table 22 summarizes the integration of information across the five diabetes micro-systems.

Table 22 Integration of Information Across the Diabetes Micro-systems

	Integration of Information
MS08	**with patients:** **High** "We use a wallet card that goes to the patient with a letter from their primary care provider. There is a newsletter that goes out 2 times a year - this year one of the issues focused on diabetes. We have group clinics." **with technology:** **Medium to High** "We use the information system to determine which patients are at risk. We have flow sheets around diabetes care for each patient record." "Our patient records vary from site to site - one site is totally paperless. For diabetes all the resource nurses are using a standard tool. These are manual — next year it will be computerized" "Information is available on our website. We have the capability of sharing information with the patients now but we don't want to do that yet because that would be going around the care team. They [the care team] aren't ready for that yet. It's all part of building mutual support." "We use the information system to generate risk lists and stratify risk." **with providers and staff:** **High** "We focus on giving feedback to the care team on patient outcomes - e.g., lipids and HbA1c." "The risk list is sent to the MD quarterly. It helps the care team identify patients who are at greatest risk."

Table 22 Integration of Information Across the Diabetes Micro-systems (continued)

MS11	**with technology: High** "During the visit there would be an electronic medical assessment that would get an in-depth picture of your diabetes and lifestyle. We would input lab data, do a complete foot exam, take blood pressure and assess your knowledge base of diabetes." "Our system allows us to track who didn't come back for a follow-up each quarter. This would be impossible without computerized medical records. You can't drop out of the program without talking to us and letting us know why. This really is an important part of chronic care. We are using a clinical algorithm that is computer based." **with providers and staff: High** "We define success at how we are doing by communicating data back to the providers. We can show them that by using our services they are getting better outcomes for their diabetic patients. We measure HbA1c, blood pressure, cholesterol levels, protein in urine, quality of life, and customer service indicators." "We give feedback to the physician. Then we follow-up." **with patients: High** "We may put them into a group class or provide them with one on one education. We assess what pieces are missing and then figure out the best way to get them." "We communicate the field of diabetes research to our providers and the community." "Whenever there are retreats or medical meetings we show up to talk about diabetes. We have community programs — 2000 people will show up. We push to be in front of people. Diabetes is always on the table. We make educational tapes that are sent to the MDs. We have newsletters."
MS16	**with patients: High** "We use a wallet sized card that has some information pre-printed on it, but it also has space on it to provide individualized information for the patient." **with providers and staff: Low to Medium** "We try to present the data in a way so that the physician doesn't think that the data is going to be used against them." **with technology: Medium to High** "We don't have a fully fledged electronic medical record. Every exam room has a terminal. We have a diabetes screen that can be pulled up as an interface on top of individual databases. The guidelines are available on screen too." "We try to make information available electronically."

Table 22 Integration of Information Across the Diabetes Micro-systems (continued)

MS21	**with technology: Low** **with providers and staff: High** "I've developed a checklist for the administrative assistant to use when creating letters to the MD. We send letters when they enroll and as follow-up. It reports results and problems, interventions. This is the type of information that needs to flow back and forth between the MD and RN. As long as I tell the MD what is happening with the patient, the MD still feels in control." **with patients: High** "I teach a course. There are materials in the waiting room. Knowledge passes between people and you learn by doing. After you get the patient to a certain level, you watch them learn by doing. The nurse educator needs to have an upside-down, inside-out knowledge of diabetes. I'm sure that I don't know everything about diabetes — you know, the technical, university level stuff. But I can teach patients what they need to know in a way that they can understand and relate to." "People learn by experience - the more ways they experience something the better they will learn and retain it. Each patient is given a diary. I tell them, 'Don't worry about anything. Just write down meals and blood sugars. At the next visit we will look at it.' Pretty soon they are drawing lines between what they are eating and their blood sugars." "Most of the chart is charting that the patient has done."
MS40	**with patients: High** "We have classes, we have a resource list for every service area (weight watchers, YMCAs, etc.), we have support groups. We have trained the staff to teach when the patient is there for monitoring. We have found that one-size does not fit all." "We also send letters to patients with diabetes asking them to come in." **with providers and staff: High** "New patients are diagnosed, the MD asks us for a consult, and we walk the patient down to our office. The RN or LPN assesses the demographics, what they do, risk factors, support available, medication, lifestyle, and barriers to making changes. We do a learning needs assessment. Order lab work-up, then plan for follow-up. If they are not newly diagnosed they can be referred directly to us by PCP." **with technology: Medium to High** "We have a diabetes registry that includes pharmacy, hospital, claims, and lab data." "Our other design features were primary care based use of diabetes case managers, behavioral aspects, ongoing staff training, and comprehensive information technology (that's the one we've never managed to get)"

The comments included in Table 23 indicate that integration of information appears to be one area where the diabetes micro-system are doing well.

4.3.2.2. Measurement

As discussed earlier, a set of standard measures have been recommended for diabetes care (ADA 2000) including:

- Hemoglobin A_{1c} testing (process)
- Poor hemoglobin A_{1c} control (outcome)
- Lipid profile (process)
- Lipid control (outcome)
- Retinal exams (process)
- Monitoring for nephropathy (outcome)
- Foot exams (process)

Furthermore, beginning in the year 2000 these measures are required for commercial and Medicare managed care plans. But it is clear that measurement among the diabetes micro-systems, as shown in Tables 16 – 20, is lacking. None of the five diabetes micro-systems were able to report outcomes for all of the recommended measures. Furthermore, measurement was not consistently reported across micro-systems, which makes it difficult to compare outcomes. For example, some of the micro-systems reported glycemic control as percentage of patients with $HbA_{1c} < 8\%$, HbA_{1c} 8% - 9.9%, and $HbA_{1c} > 10\%$ while some of the micro-systems reported average HbA_{1c} for their entire diabetic population.

The level of effort required to obtain information about outcomes also indicated to me that measurement is an area that requires further attention in each of the micro-systems. Interviewees were not able to report specific outcome measures, other than global statements, such as, "85% of our patients have improved blood glucose levels." One of the micro-systems referred me to a published article that reported their work improving diabetes care. Another micro-system sent me an abstract from a conference presentation. Finding outcomes from the other three micro-systems required detective work —

searching for web sites, making calls, finding people who might have access to the outcomes data for the site.

A recent edition of The Quality Letter for Healthcare Leaders focused on managing diabetes care (Larose 2000). Larry Staker, a physician at Intermountain Health Care was quoted as saying, "If you find a practice, clinician or organization that is not measuring specifically relative to improvement in diabetes, they're not likely to be making changes. But if they do measure and monitor, the change almost happens automatically." A potential problem with the requirements for measurement put forth by the Diabetes Quality Improvement Project is that monitoring will occur at the national level and not at the micro-system level. Monitoring at the national level will ensure consistent sets of indicators are measured and it will provide an opportunity to identify best practices. However, if improvement of diabetes care is a goal of consistent measurement, then the micro-system — the place where the patients are receiving care —must monitor the measures too. Micro-systems are measuring and monitoring when they are able to report, or at least have access to, the outcomes data of the care they provide.

4.3.2.3. Interdependence of care team

In the diabetes micro-systems included in this study, care is provided by interdisciplinary teams. The examples provided below indicate that each of the five sites have a high level of interdependence of the care team.

> *"The care team is the pcp, the diabetes resource nurse, the LPN, the endocrinologist, and the nutritionist. Diabetes care is integrated into primary care."*

> *"If you had had standard diabetes care somewhere else, you would be amazed because now you would have a team of people helping manage your diabetes. You would have people following up with you. You would have better outcomes."*

"Specialists can not do this on a one-to-one basis. We use certified diabetes educators (CDEs) as the intermediary. They are located in the PCP offices. It is a team approach to diabetes care.

"I've developed a checklist for the administrative assistant to use when creating letters to the MD. We send letters when they enroll and as follow-up. It reports results and problems, interventions. This is the type of information that needs to flow back and forth between the MD and RN. As long as I tell the MD what is happening with the patient, the MD still feels in control."

"We did focus groups of clinicians and educators. We came up with the key design features. Number 1 was a team approach. We need to support the primary care provider. We use the team. Some people talk about 'carve out' we talk about 'carve in'. It is one stop shopping. As many aspects as possible are there for the PCP. The team is the patient, primary care provider, RN, clinical diabetes educator, and LPN."

4.3.2.4. Supportiveness of the larger system

The supportiveness of the larger system is crucial to the success of micro-system working to improve diabetes care. Edward Wagner, MD, the Director of the McColl Institute for Healthcare Innovation at Group Health Cooperative of Puget Sound, suggests that if you want to improve care for chronic conditions, it is important to think about the mission and leadership of the organization. "If the organization doesn't give emphasis to diabetes and diabetes improvement, it's almost impossible to do" (Larose 2000).

Two of the diabetes micro-systems appear to have a high level of supportiveness of the larger system.

"In 1994 the system commissioned the design team. We had 1/2-day meetings every 2 weeks. We had lavish amounts of time. This was a major investment. We had a facilitator, a management engineer, 4 MDs, a diabetes educator, and

someone from behavioral medicine. Then there was the ongoing sponsoring of the team."

"Motivated, caring leadership is critical. Internally you have to keep the team cohesive; externally you have to give the team space. Must get the system interested in what you are doing. Must have a champion. I'm sure there are lots of good things going on here that I've never heard about because they haven't done enough to get the system interested."

Although, the larger organization appears to be supportive, two of the micro-systems indicated that this is an area that requires constant attention to maintain the supportive relationship.

"At various times they have pushed back and said that really what we were doing were just individual quality improvement projects. This has been a bump along the road. We prevailed in saying that this is system-wide disease management, not just individual quality improvement projects."

"At the top there have been a lot of changes. Hi turnover for CEO, CFO, COO. This is a real challenge for us. We have to prove ourselves again and again.

One micro-system did not provide any examples that indicated either a high or low level supportiveness of the larger system.

4.3.2.5. Constancy of purpose

The diabetes micro-systems included in this study provide rich examples of constancy of purpose. The importance of diabetes care has been carefully integrated throughout the micro-system.

"We need to have agreement among whoever is involved that these are our common goals, processes, roles. We need a shared vision - we will need to change the system to get there; and we need integrated, interactive changes at all levels."

"Population medicine is what we do well. Our notion from the beginning was to redesign care for diabetes."

Furthermore, the importance of diabetes care is a clear, consistent message that goes beyond the boundaries of the micro-system into the larger organization and the community.

"We are working as part of a grant from the University. Our goals are to: 1. Improve diabetes care for County residents. 2. Use an empowerment model of teaching"

"What we do well is communicate the importance of diabetes — up, to the senior leaders of the organization; across, to other providers' and out, to the community. We communicate the field of diabetes research to our providers and the community. We participate in clinical research projects. We really challenge our physicians and the greater community to provide better diabetes care. We are advocates for our own work."

"You must get the system interested in what you are doing. I'm sure there are lots of good things going on here that I've never heard about because they haven't done enough to get the system interested. You have to bring it to the forefront. Whenever I walk into a room, people think diabetes."

4.3.2.6. Connection to community

While the interviewees did indicate some level of connection to the community, this appears to be an area that micro-systems could address. People with diabetes have many needs that extend beyond the boundaries of the care provided within the micro-system.

Four sites provided examples of their micro-system's connection to community.

"We have a resource list for every service area (weight watchers, YMCAs, etc.), we have support groups."

"I work with a wide range of patients - most are in lower paying jobs, 40% are uninsured. We provide monitors and strips to indigent patients. They only seek care when there is an emergency."

"The Center has a lifestyle change line to support patients."

"Whenever there are retreats or medical meetings we show up to talk about diabetes. We have community programs — 2000 people will show up. We push to be in front of people."

4.3.2.7. Investment in improvement

It was not clear from the interviews that the diabetes micro-systems have a high level of investment in improvement. Three sites had no examples that indicated an investment in improvement. Two sites indicated an investment in improvement.

"There was an initial 3 week training — team development, brief negotiation, and motivational interviewing."

"For the 3rd starting point [collaborative care — redesigning 2 sites for team care, population management, and CQI] we are using a modified RFP approach. Sites have to respond to specific criteria for us to select them. We have 18 sites where we are starting to work. We picked those sites based on their readiness to change."

4.3.2.8. Alignment of role and training

Alignment of role and training looks like an area that could use more attention among the micro-systems included in this study. Interviewees did not say that roles and training were not aligned, but they did not provide comments that suggested there was an alignment as several of the sites pointed out.

One of the diabetes sites provided wonderful examples of alignment of role and training in diabetes care.

In C. they are disassembling the group — they have found that it is hard to take the teams apart because of the way we put them together. For example, the LPNs are dependent on the RNs in the team. LPNs are taking retinal photos and doing foot exams. RNs who haven't been part of the team aren't comfortable supervising that."

"The cohesiveness of the team is so important. The RN and LPN really work together as if they were 3 people. As an RN I don't waste time calling people on the phone – that's not part of my role. The clerical person is also important in updating the registry.

"The role that is played by nurses is at the limit within the state law. Some nurses had problems with this. They were nervous about what they were being asked to do, but it was all within the limits of their licensure. Nurses weren't comfortable working at the limits of their licensure. We had to address this in training. We had the endocrinologist work through case studies. We had the state licensure board come in and tell them that it was ok."

4.4. Barriers and facilitators to providing effective care for diabetic patients

What are the barriers to providing diabetes care? Conversely, what facilitates a micro-system's ability to provide diabetes care? Barriers and facilitators appear to impact the micro-system at three different levels — at a regulatory or policy level, at the larger organizational level, and within the micro-system.

4.4.1. Barriers and facilitators at the regulatory level

At the regulatory or policy level, reimbursement is a major issue for diabetes care, and for chronic care in general.

"There is a perceived barrier regarding finances. The implications of phone care, group care. The system has evolved to provide acute care and episodic care."

"Direct reimbursement cannot match salaries. In California they bill as educators, not as providers. The biggest barrier was that organizations didn't understand how to weave in the costs of diabetes management. Any outlay was seen as a loss. A success has been overcoming this barrier with the HMOs and getting them to use diabetes educators."

"I think that the single biggest barrier that can be present is around reimbursement issues. This isn't a problem for us because we have a capitated population. But without that, reimbursement for diabetes education becomes an issue. The financial barriers are the biggest barriers to replicating this somewhere else."

Reimbursement is an important barrier to providing effective diabetes care. One effort at the policy level to address this issue includes the Health Care Financing Administration's proposed rule calling for coverage of outpatient diabetes education and training services for Medicare enrollees. One requirement will be that these services be provided by an "entity deemed to meet certain quality standards" which implies that some process of accreditation will be necessary (Larose 2000).

4.4.2 Barriers and facilitators at the organizational level

As discussed previously, supportiveness of the larger system is an important factor impacting micro-system effectiveness, and it can be perceived as either a barrier or facilitator to providing diabetes care. Interviewees reiterated the influence the larger organization can have on the micro-system.

"We set corporate goals around diabetes (reduce complications by 30%, increase screening to 90% for those at risk for diabetes) without including the physicians. A lot of the rank and file physicians didn't even know that we had these goals. At times we've gone around the clinicians to the patients and that has been a big problem. One time we sent aspirin to physicians, saying 'here, you should be giving these out to your patients.'"

"We did have some barriers with the Provider Support Report. The same report can be viewed positively or negatively based on how it is presented. We tried to present it in a way so that the physician doesn't think that the data is going to be used against them."

As suggested in the following quotes, effective measurement appears to be one way for micro-systems to respond to the larger organization.

> *"At the top there have been a lot of changes. Hi turnover for CEO, CFO, COO. This is a real challenge for us. We have to prove ourselves again and again. We have to prove it by showing the data on readmits and unplanned admissions."*

> *"From the HMO, it is seen as over utilization when physicians send a lot of patients to diabetes services. Education emphasizes the importance of the initial outlay to reduce costs later on. This is classic for chronic illness —an upfront investment in time and treatment for down the road payoff. This is a real barrier in an HMO environment. To overcome this barrier you have to collect and feedback outcome data."*

The larger system is perceived as being supportive when it makes an investment of resources to facilitate designing and providing effective diabetes care.

> *"In 1994 the HMO commissioned the design team. We had 1/2 day meetings every 2 weeks. We had lavish amounts of time. This was a major investment. We had a facilitator, a management engineer, 4 MDs, a diabetes educator, and someone from behavioral medicine."*

4.4.3. Barriers and facilitators at the micro-system level

Within the micro-system, how well the micro-system manages change can be viewed as either a barrier or facilitator to providing diabetes care. Types of change that interviewees talked about were helping patients learn how to change their behavior, increasing the level of interdependence of the care team, and more closely aligning the care team's roles with their training.

> *"There are patient related barriers—getting patients to make changes that need to be made. There are a lot of fallacies about diabetes and diabetes care. There is a barrier of denial."*

"An initial barrier was getting MDs to sign standing orders. This was a wholesale change in physician practice patterns. But as we reduced work for the primary care provider, the barrier was removed."

"Some clinicians don't value diabetes education. They are lone rangers. Protective of their own world."

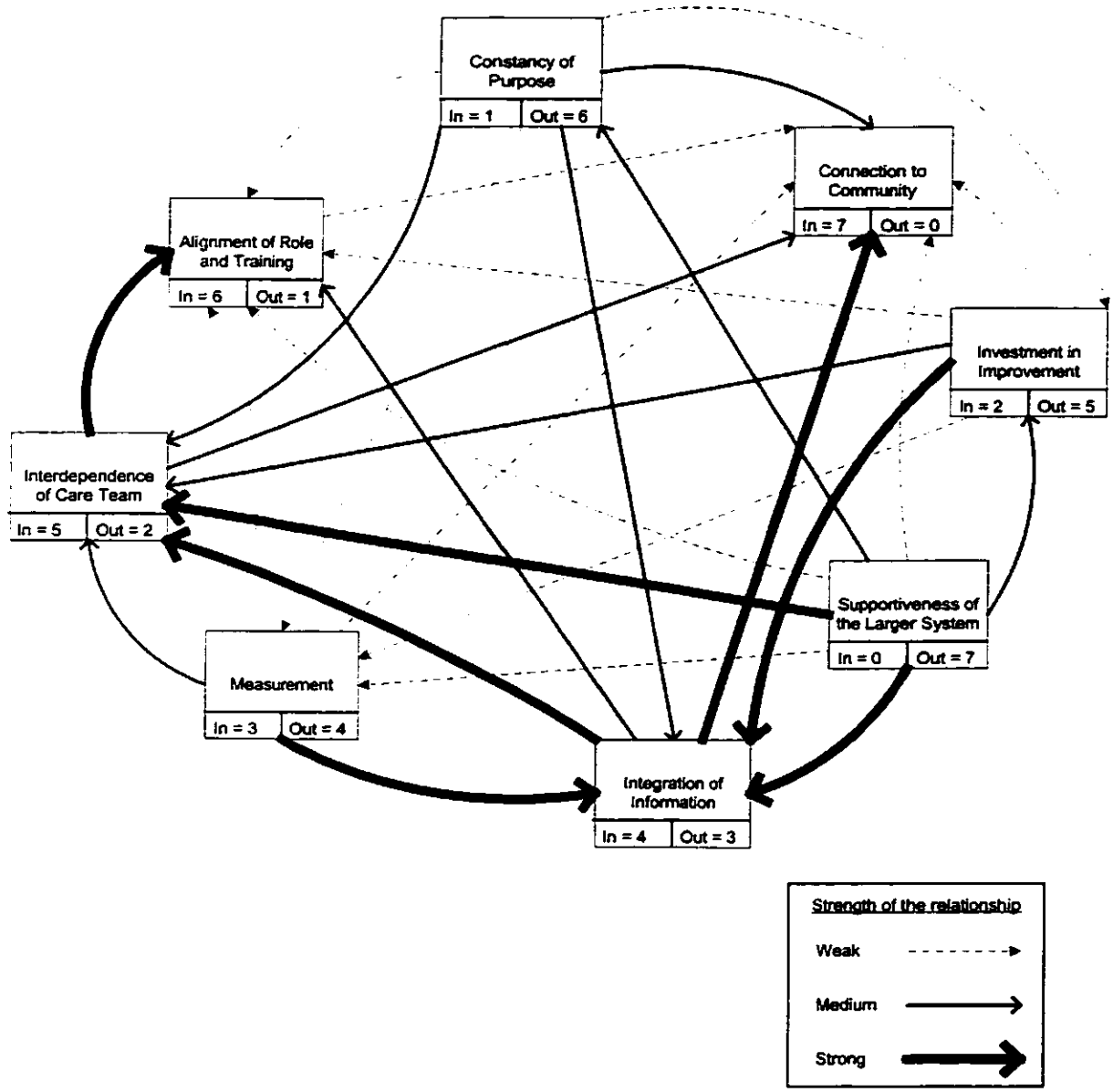
"Nurses weren't comfortable working at the limits of their licensure. We had to address this in training. We had the endocrinologist work through case studies."

These barriers that the micro-system has some control over, the barriers within the micro-system, do not actually tell us very much. This quote from a cardiothoracic surgical care micro-system summarizes the significance of the barriers that were reported by the diabetes micro-systems.

"Barriers are really funny. It's just like my two dogs. When we have a dinner party we have to block them in the back hallway with a little wooden gate. And the dogs just stand there. They see the gate as a barrier they can't get around but really all they would have to do is push. I think we are the same way. There really aren't any barriers — they are all just little wooden gates."

It could be that it is not clear to the interviewees what the real barriers are to providing diabetes care. To understand the barriers and facilitators to providing effective diabetes care, the relationship between the eight dimensions of the micro-system framework were explored. To do this, an interrelationship diagram (shown in Figure 8) was created. An interrelationship diagram can be a powerful tool for teams to use when identifying, analyzing, and classifying the relationships that exist among critical issues facing the team (Brassard and Ritter 1994).

Figure 8 Relationship Between the Dimensions of the Micro-system Framework



In the diagram shown in Figure 8, the relationships between each of the eight dimensions were determined by looking at how the 43 interviews were coded. For example, 12% of the text units from the interviews was coded for both constancy of purpose and interdependence of the care team. This indicated to me that there is a relationship between the two dimensions — if more than one code was assigned to the text unit, the codes seem to be related to each other. Each of the relationships was determined this way.

As shown in Figure 8, each dimension is related to all the other dimensions. But it is the strength of the relationships (as determined by percent overlap in coding) and the direction of the relationship that may be helpful for identifying areas that the micro-system should focus when starting to address potential barriers and facilitators for providing diabetes care. The strength of the relationship (as shown in the diagram by different line weights) is based on the percentage overlap in coding between the two dimensions, for example 12% for constancy of purpose and interdependence of the care team. Percentage overlap ranged from 2% to 53%. These were divided into three groups, with a weak relationship ranging from 2% - 9%, a medium relationship ranging from 12% -19%, and a strong relationship ranging from 23 – 53%.

One could argue that the strength of the relationship is not relevant here because to some extent the approach used to determine strength is arbitrary. But it is a helpful way to identify the dimensions in the micro-system that have received limited attention. The strength of the relationship is based on the relationship as it is now, which does not consider what the relationship should be. For example, measurement has a weak relationship with five of the seven other dimensions. This assessment of the relationship

supports observations made previously that measurement is one area where the micro-systems should focus attention.

Next cause/influence between each of the dimensions was identified to determine the direction of the arrow. For example, does constancy of purpose influence connection to community? Finally, the number of incoming and outgoing arrows were tallied for each of the dimensions. This is shown in Figure 8 in the bottom half of the box for each dimension. The rules for interpreting interrelationship diagrams (Brassard and Ritter 1994) suggest that a high number of outgoing arrows indicates that a dimension is a driver. This is generally the area to focus attention first. A high number of incoming arrows indicates that the dimension is a key outcome.

In the diagram in Figure 8, Supportiveness of the larger system has the largest number of outgoing arrows (7), followed by constancy of purpose (6), investment in improvement (5), and measurement (4).

To address the barriers to providing effective diabetes care, the micro-systems should systematically work on each of the dimensions of the micro-system framework. The interrelationship diagram shown in Figure 8 is helpful in determining where to start. Supportiveness of the larger system and investment in improvement are, to a large extent, outside the boundary of the micro-system, even though it is clear that these two dimensions are crucial to the ultimate success of the micro-system. Constancy of purpose and measurement are two dimensions that are within the reach of the micro-system and these would be logical places to start.

V. DISCUSSION AND CONCLUSIONS

The basic concept of health care micro-systems — small, organized groups of providers and staff caring for a defined population of patients — is not new. The key components of micro-systems (patients, populations, providers, activities, and information technology) exist in every health care setting. However, current methods for organizing and delivering health care, preparing future health professionals, conducting health services research, and formulating policy have made it difficult to recognize the interdependence and function of the micro-system.

The micro-system concept builds on (1) an understanding of systems and (2) the theory of the smallest replicable unit (Quinn 1992). Deming defines a system as a network of interdependent components that work together to try to accomplish a shared aim (Deming 1993). Quinn suggests the essential elements in a smallest replicable unit are: (1) the key players, (2) core activities, (3) micro-measures that help manage the core activities, and (4) combinations of activities and measures to meet individual needs (Quinn 1992).

The micro-system concept also builds on the idea of firms and teams. Firms were introduced over two decades ago at MetroHealth Medical Center in Cleveland, Ohio as a way to create and maintain longitudinal relationship of small groups of professors, students, and patients (Cebul 1991), (Neuhauser 1992). This was seen as a valuable approach to evaluating different innovations in patient care and organizational design. Research on teams has focused on functional and interdisciplinary workgroups and the systems that facilitate or impede the management of these workgroups (Kaluzny 1985). As research on micro-systems moves forward, it will be important to transfer what has been learned from research on teams to new research that will be conducted on micro-

systems. For example, research on teams that will be helpful includes information about the different stages of development of teams, creating the environment to support teams, socializing new members (clinicians and staff) to the team, and what happens when teams transcend organizational boundaries.

Building on an understanding of systems and the theory of smallest replicable units, and going beyond firms and teams, micro-systems offer a way to link process, structure, and outcomes. The micro-system does not focus exclusively on outcomes, but gives comparable attention to process and structure and to the linkages among them and how they interact to respond to and meet the needs of the patient population. Micro-systems provide (1) both greater standardization of common activities and customization of care to individual patients, (2) greater use and analysis of information to support daily work, (3) consistent, measured improvement in performance, (4) extensive cooperation and teamwork within the micro-system, (5) and for the larger organization the micro-system exists within, it emphasizes the spread of best practices across micro-systems (Nelson, Batalden et al. 1998).

5.1. Summary of results

Qualitative methods, specifically cross-case analyses, were used to explore, to describe, and to characterize health care micro-systems and to identify characteristics that are present across multiple micro-systems. Interviews were conducted with representatives from forty-three micro-systems. A framework for thinking about health care micro-systems emerged from the cross-case analysis of the interviews. Eight dimensions compose the framework — integration of information, measurement, interdependence of the care team, supportiveness of the larger system, constancy of purpose, connection to community, investment in improvement, and alignment of role

and training. Each of the factors can be thought of on a continuum that represents the presence of the factor in the micro-system. Table 23 summarizes the eight factors and provides an example of each end of the continuum for each factor.

Table 23 Summary of Micro-system Framework

Low	High
Integration of information	
Information free environment	*Information is key, technology may be very helpful*
"We don't have control over the information that we need."	"I can show diabetics a graph of their HgA_{1c} and comment on how it has dropped along with their weight which is graphed on the same screen."
Measurement	
Absence of a set of useful measures	*Micro-system routinely measures processes and outcomes, feeds data back to providers, makes changes based on data*
"We have data on demograhics and length of stay, however, we don't have data on outcomes of care."	"We have developed a radar screen that has 8 simultaneous processes continuously monitored."
Interdependence of care team	
Providers and staff function as individuals. No clear way of sharing information or communicating	*Care provided by a multidisciplinary team. Information is key to the relationship*
"Often physicians have difficulty working with non-physician providers, giving them the control."	"We developed multidisciplinary rounds – everyone involved in caring for the patient."
Supportiveness of the larger system	
Larger organization's actions perceived as "toxic" to the micro-system	*Micro-system views larger organization as helpful*
"If we have to practice like the rest of the system, we feel that we'll be practicing 'mediocre' care."	"They have identified breast care as an area where they want a center of excellence. It is a priority of the system."
Constancy of purpose	
Lack of a clear, consistent aim	*Integration of the aim throughout the micro-system*
"The original aim was that we would practice the best medicine we could, understanding that we couldn't be as financially successful. Now some of the physicians are compromising for the financial aspects."	"Those other sites saw an infection as a failure, not entitlement. All the way to the bedside the unit knew that infection was a failure. The philosophy has to permeate the organization."
Connection to community	
No clear connection to community beyond current patient population	*Micro-system is a resource to the community, community is a resource to the micro-system*
"The only way we get information about the community is from the managed care organization."	"I invite the peer support groups that are in the community to educate the residents."
Investment in improvement	
Training, resources not available	*Resources made available for improvement (training, $$, time)*
"We don't know how to improve the system. We have closets full of good ideas but don't know how to implement them."	"The Quality Council's goal will be to provide guidance and facilitation. 'Yes, that project meets our overall goals, what resources do you need?'"
Alignment of role and training	
Health professionals not expected to work within the limits of their education, certification(overqualified)	*Health professionals expected to work at the upper limits of education, training*
"I want to be more involved in the care process."	"When fully trained and confident they may tell an admitting doc that a patient is not ready to have a ventilator tube removed."

Five micro-systems were asked an additional set of questions to determine the process and outcomes of care provided to patients with diabetes. Diabetes was selected because focusing on a specific clinical condition helps make the micro-system model more concrete. Diabetes was a good choice because in the United States, an estimated 5.9% of the population are living with diabetes and it is the seventh leading cause of death (NIH 1995). Furthermore, although there is general agreement on appropriate treatment and outcome measures (ADA 2000), (NIH 1995) there are significant variations in the care provided and the outcomes of care (Wennberg 1999).

Two approaches were used to analyze the data that resulted from the diabetes interviews. First a micro-system analysis linked the micro-system model to the process and outcomes of care in the five sites included in the study. This analysis did not reveal a "best" strategy for providing diabetes care. However it is clear that not all the patients are receiving the recommended care and the micro-systems are not consistently measuring the care that is provided. It is not likely that management of diabetes is leading to these unacceptable outcomes of care for patients with diabetes, because there is not much disagreement about what constitutes high quality diabetes care and the impact of controlling glucose levels on reducing complications due to diabetes (UKPDS 1998). When aspects of care (for example care for people with diabetes) are examined, they are often found to be deficient, despite an overabundance of resources (Wennberg 1999). The solution for this, in part, lies in the details of the structure and process of care and the details of care are in the micro-system.

The second approach used to analyze the data that resulted from the diabetes interviews involved applying the micro-system framework to the five diabetes sites. This provided additional insight into two potential areas that all five of the diabetes micro-

systems included in this study could improve — measurement and connection to community. Regarding measurement, none of the micro-systems were able to report outcomes for all recommended measures. Furthermore, measurement was not consistent across sites so it was not possible to compare outcomes. For the connection to community factor, patients with diabetes have needs for many services that extend beyond the clinical visit into the community. Without a high level of connection to community, micro-systems are at risk of providing well-coordinated diabetes care that doesn't respond to or meet the needs of the patients in the community.

Combining the micro-system framework with an analysis of the elements of an individual micro-system offers a powerful way to visualize the link between structure, process, and outcomes. Furthermore, micro-systems working to improve the care provided to their patient populations and to individual patients need to pay attention to the dimensions that emerged from this research. It is possible that the most effective micro-systems will be able to demonstrate a high level of each of these dimensions.

5.2. Limitations of this research

There are always limitations to any research strategy. A limitation and strength of this study is that the sample selection depended on input from a pool of recognized experts in the organization, delivery, and improvement of health care. However, even with a pool of recognized experts, it is reasonable to expect that some high performing micro-systems were overlooked and some less than high performing micro-systems were included. Although the intent was to study high performing micro-systems, "negative cases" — those micro-systems defined as not high performing or unsuccessful — were actually an important addition to a study attempting to understand and characterize health care micro-systems. Examining similarities and differences across multiple cases —

successful as well as unsuccessful —strengthened the analysis by clarifying what contributes to a successful micro-system.

Another limitation is that one interviewee represented each of the forty-three micro-systems. A more comprehensive look at micro-systems would interview at least one person from each of the key roles within the micro-system. Given the constraints of the study – time, financial support, and the desire to interview a broad range of sites – a tradeoff was made between the breadth and depth of the study. This is always an issue with qualitative studies. With the same amount of resources it would have been possible to study more micro-systems, which would have increased the breadth of the study, or it would have been possible to study fewer micro-systems but interview more people within each micro-system, which would have increased the depth of the study. Patton (Patton 1994) points out that these are not choices between good and bad, but choices among alternatives, all of which have merits.

Another limit to this study was that the interviews were not tape-recorded. The IOM required that interviews not be tape recorded, so each interview transcript was based on hand written notes taken during the interview. To assure the quality of note taking, the first several interviews were conducted as conference calls, with the interviewer, the person being interviewed, and two note takers. Immediately following the interview, the interviewer and note takers would transcribe their notes and share the documents for comparison. When assured that the interviewer could conduct an interview and simultaneously take good notes, the interview process was simplified to just include the interviewer and the person being interviewed. To facilitate interviewing and note taking, the interview was formatted with space for note taking after each question. This helped keep track of the context of the answers because the answers were kept with the

questions, instead of having separate pages of notes. Transcripts were written up immediately following the interview, and most importantly, before conducting another interview.

The data that resulted from the interviews has limitations too because the data are descriptions by individuals who may have had an interest in making their micro-system sound good or bad.

Finally, it is not possible to make predictions about the relationships between the micro-system framework and outcomes of care. While conclusions about the strength of the relationship between the micro-system framework and outcomes of care are beyond the scope of this research it does point to a need for a follow-up, quantitative study.

5.3. Implications and further research

Focus on the micro-system as the "unit of analysis" corresponds with the "unit of practice" for those involved in the daily work of caring for a population of patients. While the focus of this research project has been on the micro-system and the people working within the micro-system, the results and conclusions have much broader implications. Research at the micro-system level can make a great contribution toward designing and redesigning delivery systems, improving care, preparing future health professionals, and formulating policy.

5.3.1. Designing and redesigning delivery systems

In designing and redesigning delivery systems, the micro-system model offers a way to integrate structure, process, and outcomes of care. Immediate research is needed to determine and quantify the relationship between the eight factors of the micro-system framework and outcomes of care. As more is understood about the relationship between

the micro-system framework and outcomes of care, it will be important to develop and test tools for assessing micro-systems based on this framework.

5.3.2. Improving care

The micro-system model can help focus attention on the gaps that exist in providing care for a defined population of patients. Future research is needed to determine how to fully implement the micro-system model in specific settings, for example micro-systems caring for patients with a specific clinical condition such as diabetes. As the micro-system model is implemented it will be important to measure improvement in clinical outcomes and improvement in performance outcomes of the micro-system.

5.3.3. Preparing future health professionals

The micro-system represents the unit of work in health care. Health professional education should be designed to recognize this unit of work and should prepare new graduates to work as part of a micro-system. Research in preparing future health professionals needs to determine the skills and knowledge graduates will need to work within a micro-system. Furthermore, it will be necessary to determine the most effective way for teaching the required skills and knowledge. Although not specifically designed with the micro-system concept in mind, the Interdisciplinary Professional Education Collaborative sponsored by the Institute for Healthcare Improvement has made contributions toward preparing health professionals to work in micro-systems (Headrick, Knapp et al. 1996), (Baker, Gelmon et al. 1998).

5.3.4. Formulating policy

Micro-systems may be part of a larger organization and are embedded in a legal, financial, social, and regulatory environment. There is a need for future research to identify policies that impede and facilitate the work of micro-systems. This includes

policies on financing, workforce, and health education. As the United States continues to struggle with ways to address equity in access to care and care for underserved populations, further research is needed to determine how micro-systems facilitate or impede meeting the needs of these and other special population groups.

5.4. Concluding Comments

This research has been exploratory in that it is the first systematic look at health care micro-systems. The power of this research is that it gave a voice to individual micro-systems and provided a way to explore individual micro-systems while creating constructs that are generalizable to other micro-systems. It has been important work to start to define and characterize health care micro-systems, but the greater value of this analysis will be to press beyond the findings of this research to develop tools to help existing micro-systems improve and to replicate effective micro-system models.

Appendix A

Introductory Letter

and

Pre-Interview Survey

Date

Internal Address

Dear ---,

I am writing to ask you to participate in a study to analyze characteristics of exemplary health care micro-systems. By the term micro-system, I mean a small, organized unit with a specific clinical purpose, set of patients, technologies and practitioners who work directly with these patients. A micro-system may be part of a larger organization and is embedded in a legal, financial, and regulatory environment.

This study is part of the Institute of Medicine's Quality of Health Care in America Project, which began in June 1998. The goal of the QHCA Project is to provide leadership, strategic direction and analytic tools that will contribute to a major improvement in quality in the health care industry during the next decade. Within the QHCA Project, The Subcommittee on Building the 21st Century Health Care System, which I chair, has been assembled to identify key characteristics and factors that enable or encourage providers, health care organizations, health plans and communities to continuously improve the quality of care.

The Survey of Health Care Micro-systems is funded by a grant from the Robert Wood Johnson Foundation. The Steering Group for this study includes Paul Batalden, M.D.; Gene Nelson, D.Sc.; Tom Nolan, Ph.D.; Steve Shortell, Ph.D.; and me. Over the next two months we will be asking a carefully selected group of micro-systems about their level of performance, patient experience, use of information and information technology, investment in improvement, and leadership and management. We would like to include your micro-system in our study.

Your participation will involve completing the attached pre-interview survey and taking part in a 90-minute telephone interview. Someone from the IOM staff will be calling you in the next few days to determine if you are interested in participating in the study and, if so, to schedule a telephone interview. I hope you will agree to join our study. Responses to the interview will be confidential. The committee will use the information from the study to make recommendations in its final report.

Sincerely,

Donald M. Berwick, M.D., M.P.P.

Enclosures:
Pre-interview survey
IOM Brochure
Roster of members: Committee on Quality of Health Care in America
Subcommittee on Building the 21st Century Health Care System

INSTITUTE OF MEDICINE
PRE-INTERVIEW SURVEY OF MICRO-SYSTEMS

Name of person completing this survey (*please print*)_____
Phone: _____ Title:
_____

If you would like to discuss more than one micro-system during the interview, please include a survey for each.

1. Your Micro-system
What is the clinical focus of your micro-system (for example, primary care, cardiothoracic surgical care, hospice care) (*Check as many as apply*) ❑ Primary care ❑ Specialty care ❑ Condition-specific (e.g., back, OB) ❑ hospital unit (e.g., ICU) ❑ Other, please specify:
Please provide a 1 to 3-sentence description of your micro-system—who belongs to it, how it is organized, what does it do? Please feel free to attach a diagram.
What are the number and specialty mix of physicians working in your micro-system?
How many and what type of non-physician practitioners does your micro-system include (for example, PAs, NPs, nutritionists, psychologists)?
What is the composition of the rest of the staff of the micro-system (for example, nurses, technicians, office staff)?
Does your micro-system include medical students, residents, or other trainees? If so, please indicate what kind and how many. ❑ No ❑ Yes, please specify: How often are they present?
Does your micro-system use any volunteers? ❑ No ❑ Yes, please describe how you use volunteers.
How would you describe the micro-system's patient population/practice location? Please check all that apply. Primarily: ❑ acute care ❑ chronic care ❑ palliative care **OR:** ❑ mixture of preventive, acute, chronic, palliative Age: ❑ pediatric ❑ adolescent ❑ working-age adult ❑ elderly/geriatric Other: ❑ minority ❑ underserved ❑ long-term care ❑ safety net Practice Location: ❑ urban ❑ suburban ❑ rural ❑ frontier
About how many patients does your micro-system care for? _____ / _____ Day, week, year, etc.

Is your micro-system embedded in a larger organization such as a hospital or hospital system, chain, university health plan or department, staff model HMO, or integrated delivery system?
❑ No ❑ Yes, please provide the organization's name: _____
What sort of organization is this?

2. Reimbursement Mix

Please provide the approximate proportion of patients in each reimbursement category:

% FFS____ % Prepaid ____ % Uninsured or self-pay ____ (Total =100%)
% Commercial____ % Medicare ____ % Medicaid ____ Uninsured or self-pay _____
(Total=100%)

Has this reimbursement mix been changing in the last year? If so, how?

Do you expect the reimbursement mix to change in the coming year? If so, how?

How is compensation for the physicians in your micro-system determined? (*Check as many as apply*)

❑ FFS/fee schedule ❑salary ❑ capitation ❑ bonus ❑ witholds
Are formulas based on:
❑ panel size ❑ productivity ❑ patient satisfaction ❑ clinical performance
❑ financial performance ❑ other?, *please specify*:

3. Computer-based Information Technology

Most offices have computer-based billing information, but we are particularly interested in this section in **computer-based-clinical information**. Does your micro-unit have computer-based patient records?
❑ No, Patient records are paper-based **(If No, Please skip to section 4 below)**
❑ Yes, Patient records and financial systems are computer based, but separate
❑ Yes, Patient records and financial systems are to some extent or entirely integrated

If you answered **yes** above, is the clinical information system linked to any data sources outside the micro-system, such as laboratories, pharmacies, or ER? ❑ No ❑ Yes, *please specify*:

Does the clinical information system include direct data input by patients ❑ No ❑ Yes
(e.g., blood glucose levels or blood pressure measurements)?

Our computer-based information system is used for: *Please check all that apply*
❑ generating reports about the practice ❑ real-time patient care ❑ clinical decision support (e.g., reminders, drug-drug warnings)

Do patients interact with clinicians by e-mail? ❑ No ❑ Yes
using web-based resources? ❑ No ❑ Yes

Who (or what organizational unit) makes information technology decisions for your micro-system?

4. Other

Who (or what organizational unit) makes human resource policy decisions for your micro-system (hiring, assigning support staff, etc.) ?

Who would you consider to be the leader of this micro-system?

Appendix B

Micro-system Interview Questions

I. LEVEL OF PERFORMANCE

1. What does your micro-system do very well?
2. How is it different from others that treat similar patients? Can you give me some examples?
3. How do you define success in _____? (what they identified as doing well)
4. From what I hear you saying, you define success along several dimensions . . .(repeat them for clarification.) How do you know you are achieving this?
5. What sorts of data are you collecting about (list the dimensions)
6. If I were a patient at _____ how would I experience it differently?
7. If I were a clinician at _____ I would I experience differently from another micro-system that cares for similar patients?
8. Working Culture--How would you describe the day-to-day work environment for those in the micro-system? What does it feel like to work at?
9. People sometimes say that it has become increasingly hard to be a professional nowadays. Can you point to some examples of what your micro-system has done in this area, for example, to support professional ethics, encourage peer feedback or skill development?
10. Optional: if newly developed program or processes: How long has the micro-system been working this way? How is it different now from an earlier time?

II. PATIENT EXPERIENCE

1. If you think about a new patient with a health problem could you walk me through a year's experience (or an episode of care) starting when they first come as a patient?
2. Have you put in place any special patient scheduling processes, for example, some practices have gone to open access systems?
3. How do you assess patients their needs and health risks? Are there particular surveys or other ways you have developed to do this?
4. How do patients get information about their health condition? For example, some clinicians give patients booklets, articles, web sites, or have health education groups they send patients to.
5. Sometimes patients have health problems such that they are referred to a number of specialists and find the information they get confusing, information is lost, or they are not sure who is in charge or where to ask questions. Are there particular ways you have addressed this coordinating issue in your micro-system?

6. If a patient has an unusual problem that requires expertise from people in a number of disciplines outside your micro-system, do you have any ways of bringing that expertise together?
7. Are you able to tell how long it takes a patient to move through your micro-system to definitive diagnosis and treatment? For example, a breast care center might track how long it usually takes for a woman who has a breast lump to be scheduled for a visit, receive a definitive diagnosis and therapy. Are you able to identify the sources of delay?
8. Optional Probe: Have you set objectives about what you is believe to be a timely process?
9. Are there any incentives that reward management and staff for meeting and exceeding patient expectations?
10. Optional: I like to ask you now about the community in which the micro-system practices.
11. Are there things you do seek input from the community about their health needs?
12. Are there things you do to keep the community aware of your results and what you are doing?

III. Information and Information Technology

1. On the pre-survey interview you indicated that your information system . . . . Do I have that right? If no . . ..
2. Is you information system home grown, vendor-supplied? Is it supported by the larger organization or is it free-standing in your micro-system?

IV. Investment in Improvement

1. Can you tell me what sort of things your micro-system has done to redesign your services and to improve the quality of care? Can you give me some examples of specific projects to improve quality, reduce cost or waste?
2. In what ways were they successful? Are there specific levels of performance you can point to? Are there changes over time that you have been able to document?
3. What are the barriers to making change? How have you overcome them? (or are trying to)?
4. Optional: How is everyone made aware of these results? For example, how do others (patients? clinicians? referring or referral physicians?) learn about your results?

5. Optional: Do you have any internally or externally funded quality-related research or quality improvement projects underway now? What are their objectives? What has been learned?
6. Within the micro-system have there been any specific efforts devoted to leadership training, such as creating effective teams, conflict management, change management, or the like?

Expert Systems, Knowledge-based medicine

1. We hear a lot about guidelines, protocols, and expert systems to help clinicians get up-to-date information. Do you use any such systems? What do you think would be ideal in helping your own practice?
2. Optional: How do you and others in the micro-system access and incorporate emerging clinical evidence? What triggers changes in clinical practice? (e.g., guidelines are issued, literature)
3. Optional: How do you identify "best practice" sites and processes?
4. Optional: How is new information shared among clinicians and incorporated into clinical practice?

Error and Patient Safety

1. I'd like to ask now about medical error and patient safety. What happens in your micro-system when someone makes an error--for example, abnormal lab results are not seen, or the wrong dose of medication is given?
2. Examples. Try to go beyond the mechanics of dealing with the error to the culture of safety or blame
3. Probe the extent to which there is there a blame-free culture, comfort in identifying and addressing errors, and efforts to learn from error. What would a nurse say, a technician?
4. Optional: Have you instituted any procedures to improve patient safety (e.g., standardize, simplify, training in teams, simulation, error reporting and investigation)?
5. What do you believe are the major sources of error or harm?
6. Optional: Do you have any information about rates of error or harm?

V. LEADERHIP

1. Can you give me some examples of particularly helpful ways in which (name of larger org) affects the care provided by the micro-system?
2. Can you give me some examples of particularly toxic ways in which (name of larger org) affects the care provided by the micro-system?

3. When you think about payment, what sorts of financial structures for payment and rewards do you believe would be ideal for improving the quality of care? For example, what mix of fee-for-service and capitation might be optimal?
4. Finally, I'd like to ask what you think it would take to replicate what you are doing? What do you think are the key factors to your success -- the key lessons for others who would like to replicate what you have done?
5. What are the major barriers to replicating this elsewhere? What barriers have you overcome?

Appendix C

Diabetes Interview Questions

Descriptive Information about the Micro-System

Patients/population

How many diabetic patients are in your practice?

Work group

On a daily basis, who works together to provide diabetes care?

Access to care

How do patients gain access to diabetes care?

Patient Focused Care

Patient experience, control, and involvement

What is the patient's role in their care in planning their diabetes?
How do you help patients develop expectations about diabetes care?
How do patients get information about diabetes and diabetes care?
What information do you collect about patient satisfaction with diabetes care?

Measures

Process measures

Last year, what percent of your diabetic patients received:
- An annual eye exam?
- HbA1c testing?
- LDL blood lipids testing?
- Monitoring for nephropathy?

Outcome measures

Of those receiving HbA1c testing, what percent had results <7? <8? <9.5? <10?
Of those receiving LDL blood lipids testing, what percent had results >130? <100?

Appendix D

Contact Summary Sheet

Contact Summary Sheet

Interviewee: **Interview Date:**
Site: **Today's Date:**
Written by:

1. What are the main issues or themes that struck you during the interview?

Verbatim comments from interview:	General themes:

2. Are any clarifications needed?

3) What additional questions do you have for this site?

Appendix E

Micro-systems Data Display Matrices

Health Care Micro-systems Interview Responses

I. Level of Performance: What does your micro-system do very well? How is it different from others that treat similar patients?

Success = *What is your micro-system successful at doing; How do you define success?*
Measures = *How do you know you are successful; What data are you collecting?*
Patient = *If I were a patient, how would I experience care at your micro-system differently?*
Clinician = *If I were a clinician, how would I experience it differently from another micro-system that treats similar patients?*
Culture = *How would you describe the day to day work environment? What does it feel to work at . . ?*
Professional = *What has your micro-system has done to support professional ethics, encourage peer feedback or skill development?*
How long = *How long has the micro-system been working this way? How is it different now from an earlier time?*

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS01	We are taking care of 14,000 patients. We have 7.5 FTE physicians, 26 FTE staff. A large % (75) of our patients are in managed care programs. We have been evaluated and have the highest quality in 15 states. We have a passion for excellence - it is a cultural phenomenon that addresses every aspect of our practice from the welcome brochure through diagnosis and treatment of patients. Our patient retention is 5 times greater than the region average. There is a lot in this retention - sicker patients leave more often, so over time we retain a higher proportion of sicker patients. [JM: he is suggesting that since they have high rates of retention, they are keeping the sicker patients instead of them moving on to other providers] This makes it more challenging. When you achieve that level of excellence compared to your peers, you see a model delivery practice. It takes energy and leadership - then everyone else has to embrace it.	No data	Not by any signage - you come into a waiting room, we have a patient/family bulletin board that's about 9'x4' that is kept current. You would see our mission statement and our welcome brochure. The physical plant is tuned into patients' needs, such as comfort. We have nice chairs, current magazines. The patient always has a right to choose the MD they want to see. There is a team responsible for reception, managed care referral, billing and lab function. 5 services are on site - lab, psych, physical therapy, radiology, podiatry). Most places cannot put it all in one place.	The culture here has always been health - as the cultures around us have experienced decline we look even better. The longer we maintain an independent practice maintaining their mission, we look better. Our MDs know what other cultures look like and the patients know it now too.	No data	No data	We have been at this level for 5 years. But we hope that we will not be comfortable with this level. Until the infrastructure is in place, our plan will not be fully realized, fully implemented. The Operational module can be tapped into by the macro-system. Others would need to customize what we do to make it work for them. The research and development is common [can be shared by all] the delivery is not common [has to be site specific].

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS02	1. Customer focus. We have long had a customer focus--since 1984 (before it was fashionable).We realized that patients perceive care very different from the way we do. We concentrate on care of the acute/chronic condition such as hypertension. Patients view those medical care events in a context of service-related issues. 2. Computer Technology. I've long been a proponent of the problem-oriented medical record (POMR) and had a strong interest in computer technology in primary care. I use the [Larry Weed's] Knowledge Coupler (KC), have lap tops in exam rooms, and use computers for triage when patients call. I've been using what is close to a paperless EMR since 1993. I've teamed up with someone who teaches at a local technical college who picked TQM as his niche. We trained the staff in quality improvement principles inhouse and sent them for formal training. We continually look for ways to use technology to help us become more sophisticated and integrated. The KC is not perfect--cumbersome to go back and forth to various windows, but very useful. 3. We emphasize training medical assistants to a much higher level than most expect, use 2 NPs extensively. MAs trained in using technology, standardized triage functions, training patients in self-management. As a group they stay with the practice for long periods. We are trying to "push the envelope" and rely less on credentialing and more on continually developing new skills.	No data	If a patient were to call the office with a new problem (say headache), he/she would be handled in a standardized way using the KC to screen by our patient representatives (receptionists) who are cross trained. The PR would explain that we use computers extensively in the practice, that a lot of care will be given by NPs, not the MD. When the patient comes in he/she is given an extensive questionnaire to complete on headaches. The medical assistant takes them through all the steps. When I come in, almost everything has been done, but the patient is invited to tell their story again. I don't need to take a lot of notes but can embellish on what is there. I can listen. We can then go over the options for care, looking at the screen together. I might say, "this looks like tension with elements of migraine." I share the degree of uncertainty I feel. The patient leaves with a copy of my note. At that point, all the work is done. There is no dictation to be done, and I have had time to deal with the problem. We have learned that we can keep the quality constant and use time as the variable. This seems to be true in every area outside medicine. Other fields can design quality in. We have not yet learned this. I also explain to the patient that we will need a more comprehensive database that includes information about their health habits, family hx. Patient returns for this, and we create a problem list. The important thing about this whole process is that it is standardized. Because of the KC I use the same rational approach for each patient and don't prematurely reach conclusions [or forget to ask or record some things].The KC is a flexible product. Although Larry Weed structures it, he invites comments about modification and he has a function to alert him about new articles. The KC also allows him to focus a review. For example, he was able to look at his last 1,000 physical exams, put it in a SAS file. (continued)	No data	Great!! People who leave are generally moving away, retiring, or leaving the workforce. The staff have a lot of freedom to make decisions, and I have a lot of confidence in them. They reorganize their own work. Example: We had appointment schedulers sitting out front. There was a lot of noise and distraction and it formed a big bottle neck. There was no privacy for patients. They reorganized it so most of the phone work is done in a back office, scheduling can even be done from home as telecommuting. They have only a greeter in front now. We try to make sure that whatever is done is in the framework of our basic values and behaviors. *Q: how do you do this, can you give me an example? A: For example, as we increase productivity, we have to make sure that staff understand the culture here. As new people come we have a detailed 3 month training (and trial) period where we try to convey the collaborative culture and that we have a systems orientation. We set up a special meeting to talk about this. *Q: Could you give me some examples of the values you are thinking about? A: customer service; teamwork, honesty; reliability; innovation, willingness to take risks. We need to think about what these mean in terms of our behaviors [referring to the values statement they are working on]. This is a timely issue because we are working on a budget to go to the Board in Sept., and it needs to be based on their strategic initiatives, underpinned by their mission and values. It puts what they do in a broader framework that has the assumption that people want to provide good care. We have such terrible systems. I like to say, "Lets get medicine into the 20th century before it is over!"	In the larger organization this sharing of values is just beginning, some collegiality. Some are just not comfortable with it. We'll see how it goes.	No data

			patient				
MS02 (cont.)	(continued) He found that the payoff of a PEs for someone age 30 or younger is almost zero. They will stop doing them. KC has 80 topics that provide guidance in dx and management. This is still growing. When they get to 150, most primary care topics will be covered.I have more time for the patient now. Usually 2/3 of a pcp's time is spent gathering information, a very small amount thinking. It also prevents the "30 second diagnosis." There is a study that shows that most physicians make a diagnosis in the first 30 seconds of a patient visit. KC prevents this premature closure. I can show diabetics a graph of their HgA1-C and comment on how it has dropped along with their weight which is graphed on the same screen. I can also refer them to web sites, for example, if they are interested in alternative care, acupuncture, asthma management. One thing I have been concerned about is how to communicate using the computer without losing contact [when you put information into the computer]. By having the medical assistant enter the information, I can invite them to tell the whole story, and I can listen, so it actually increases communication. *Q: Do you use e-mail with patients? A: This is growing. A nice aspect of my EMR is that if I have an e-mail exchange, I can paste it into the medical record. *Q: Do you have a paperless record? A: No, but we have done a number of things using technology that have changed [the way we structure information management.]. First, we use Microsoft Outlook for scheduling. We have a system to rollover to our answering service during peak hours, but appears to be our office. Messages get put on a bulletin board, and the patient reps can pick off, for example, messages about prescription refills or route messages to the correct person. Within the office, we circulate write-ups about problems. I follow the ID-COP listserv and sometimes send it to colleagues, sometimes to associates and other staff in the office if I think it is of particular interest. We also have a lab interface (since Feb) (the lab is hospital based) and are working on R-network fax for consultant. We looked into scanning in the consultant report, but most of it is junk and just as fast to type in a few sentences. For the time being, I just type in pertinent findings on consultant reports and x-rays. The EMR also provides pharmacy interaction alerts						
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS03	We have a multidisciplinary team that functions as the caretakers for the patients. Appropriate and timely placing of patients post-discharge is one way we define success. Another way we define success is obviously how we generally care for the patient and attend to the functional issues and comorbidities of our patient.	Let's say for example that we have an elderly patient with pneumonia. Most people would say success entails treating and alleviating the pneumonia. However, if we make the patient incontinent and non-ambulatory, it is a failure. Thus, we pay close attention to functional status. This takes special training and observation. When it comes to collecting raw data, we have found it to be difficult. We have data on demographics, and length of stay, however we don't have data on outcomes of care. This will come in the future.	We hope that a patient will experience care differently. It depends all on nursing; nurses are the most important part of the team. We hope that they are trained to deal with the many challenges elderly patients bring, including ambulation and toileting. Realistically, however, I don't think that patients experience care here differently. We have general patient satisfaction surveys at the hospital but this is only for the outpatient setting.	A clinician would probably have similar experiences here compared to elsewhere.	The multidisciplinary team that takes care of patients is composed of the house staff, attendings, nurses, nutritionists, physical therapists, etc. It is a working group that meets daily for 45-60 minutes. We discuss the status of all the patients and we brainstorm treatments as well as discharge planning there. All patients are listed on this blackboard that is used to organize information on the care process for each of the patients.	No data	The process has made small changes over the last few years. However, it has been run by the multidisciplinary team for about 2-3 years.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS04	Multidisciplinary team management. This teamdiscussion includes pointed, patient-oriented reports, social as well as medical needs (example, a migrant worker whose wife is 1,000 miles away and needs help getting visa to come); this is very efficient--all such issues can be dealt with or work begun at once rather than numerous interruptions all day. At 9:00 hospital assigns beds to floor, etc. based on priorities; it is very dynamic--they need to be able to move people in and out continuously to less acute beds.	1. Clinical outcomes: the bottom line is risk -adjusted mortality) The centerpiece of this is their participation in Project IMPACT, a national database supported by the Soc. for Crit. Care Med. It uses 3 predictive models of mortality: MPM, APACHE-II, and Simple Acute Physiology Scores. All 3 use physiologic parameters to generate scores of likely mortality. They do a quarterly download to compare themselves over time and to other, similar institutions. The database produces 4-quadrant scatter grams of their patients with predicted mortality on one axis and resource consumption on the other. When they began they entered 100% of patients, now that they are satisfied with the internal validity, they track 50%, random sampling.) Regular tracking within org. of mortality, admission and discharge rates, LOS, readmit to ICU and reintubation rates. With pressure to move patients out of CCU, this helps them know if changes that affect efficiency are affecting quality of care. They have found that although their admissions are up and the LOS down significantly, their reintubation rate is very low. Thus increased thruput is not adversely affecting patients (it answers the question: how do I know if a change is an improvement? You have to know what to look at)2. Patient and family satisfaction. They participate in Satisquest; they can track trends and compare to others (by state?) and by subpopulations3. They also participate in a VHA project (he didn't elaborate)	They put a premium on patient and family involvement, communication with them. The Medical Director knows who each patient is and can update family. Chaplain and case managers are part of the team at front end, looking at entire patient (example: son in service and needs to be brought home? 2 story house with stairs?) Although they have visiting hours as a fallback, they are very liberal, believe that best thing for someone who is confused is to have wife at bedside, not pharmacology.	They have lots of egress of nurses. Recently, several came back to the ICU. When asked why, they said because we respect them and their contributions. Reason: all caregivers are involved in implementing protocols; If the Resp. therapist notes an abn. Lab value, she is comfortable not just taking a blood sample and reporting it, but managing it. The techs are caregivers; some who do not feel comfortable in this expanded role are casualties and have moved to other parts of the hospital. Expectations have changed. The ones that stay are good at adjusting therapy to within physiol. parameters, are cross trained so that they can take on nursing tasks, starting IVs when needed. When fully trained and confident they may tell an admitting doc that a patient is not ready to have a vent. tube removed. Some MDs were also uncomfortable at first with protocols (by mentioning the "p" word, I was all but accused of being a communist; believed that anyone who follows a protocol is brain dead). He worked with those who were willing to, and didn't force the others but did keep score -- not to punish, but to find the best practices	No data	No data	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS05	I came to this department 3 years ago, under the VP of Medical Staff. We work on disease management projects, decreasing morbidity and mortality, improving clinical and financial outcomes. We work with case managers. I work with cardiac services. We choose what we will work on based on volumes. Cardiac services are the largest service line. We used to contract with ** so our volumes have decreased some as we stopped that contract.	We use an explore (HBSI) data base and a clinical data bases (Society of Thoracic Surgeons, American College of Cardiac Interventions). We used to look at care case by case. Now we look at the data to determine whether there is room for improvement based on the benchmark. For example, we looked at angioplasty --- emergent patients with CABG following angioplasty. We abstract the charts and create a verbal summary. This is by practitioner. We also discussed in the M&M meeting. Our long term aim is to be better than the benchmark. We used to look at cases one by one. But now we group cases. In September we will discuss deaths related to intervention. We give quarterly reports to the Chief of Surgery and the Chief of Cardiology. Our rates have improved dramatically. CABG has decreased 50%, PTCA complications have decreased by 75%, return to OR following CABG has decreased by 50%. We do a utilization report and a variance report. We can drill down by look at financial data. We look at a group of cases and identify patterns. Sometimes it's just increased attention to process. The numbers are monitored as a group and by individual physician.	No data	No data	It's a very collegial, supportive group.	No data	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS06	We handle high volumes of patients very well. We have done a lot to improve access. Our patient satisfaction is at 82 - 85%. We also measure contact hours, visits per panel member, encounters per hour, % time seeing own provider, physician satisfaction, pmpm cost, no shows, % same day appointment, time on hold, courtesy of phone staff. One of our problems is that we are measuring so much, it is hard to keep collecting data for our staff. No automation is available to us. Everything is done by hand.	We are creating chronic care guidelines for diabetes and asthma. We are just starting with the asthma guidelines. Diabetes will be implemented in October. We will go with a 4 visit plan (only 1 visit will be with a physician) and a checklist of what needs to be done. We will measure HbA1c levels. In asthma we will measure peak output.	Yes, because of open access mostly. Students called make appointments --- just as a test --- and both were offered an appointment the same day. Will mostly be seen by own doc --- our philosophy is that if your doc is here, you will see your doc. This is done by sheer will power of the physicians.	No data	No data	No data	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS07	It is made of three parts, a Shock-Trauma -Respiratory ICU, a Medical Surgical ICU, and a Respiratory Special Care Unit. The latter is more of a step-down that an ICU, the patients are not as severe. These are open ICUs, meaning that any doctor can admit patients. I think that one thing we do well and differently is using a medical information system. This system is now integrated throughout the hospital with a complete computerized medical record. People come in from around the world to take a look at our quality improvement projects, which are possible because of our extensive IT. Another reason we are different is because we have the ability to collaborate not only within the microsystem, but also at the hospital and health system level. Success is defined based on compiling and analyzing data to see how we are doing in patient care. Then, we create/implement protocols to help the microsystem in its tasks. Creating and implementing protocols is really a process of building relationships. First, we identify a problem area. This is usually done by front-line/management people, so you automatically have a "buy in." This is the motivation that you need. Second, we pull together a multidisciplinary group usually led by a nurse, because they follow through better than physicians. The group reviews evidence in the area and helps to sell the theme of the protocol. Next, we try to design a protocol based on the knowledge of how practice is conducted in our microsystem. We make a first draft, and this is given to the 55 physicians or so who usually refer patients to the ICU. The draft is also given to nurses, social workers, etc. We ask for comments, and usually 1/3 people give back comments. We get lots of feedback to us and we try to mold the comments into the new draft or negotiate with the staff. Everyone gets to participate in this process, so "ownership" is spread. We then usually do a trial of the protocol on a few patients in a clinical area. It is a "small rapid cycle." Protocols never work on their first try, never. You have to go through many iterations, usually 5 in the first day alone, until the protocol is functional. The clinical team understands that it is in charge of the protocol, and not vice-versa. Thus, this is all being done at a local level. Thus, when we have to debug, things are a lot easier, since not much has to be done. The protocol is a tool that doctors can use. We estimate that 80-90% of physician use these protocols. There is flexibility in the system for physician buy-in.	We collect data on the many protocols we have established in the microsystem. We collect data on which protocols are being used, by how many physicians, and what percentage of time. We are also collecting data on outcomes, such as how well we are able to control glucose levels, for example.	Most patients don't even remember that they have been in the ICU. Very difficult to compare.	A physician here finds much of the care as being automated. Populations are studied just as individuals are cared for. For example, I've noticed that an increasing number of CCU patients are maintaining high levels of potassium, thus I'm thinking to scale back the protocol a bit. We do the same thing for glucose monitoring. Overall, the attendings and staff like it because automation decreases hassle for them. If they need to take a patient out of protocol, there is enough flexibility for them to do so. A physician would also find a very collaborative environment here. A team approach is used that is very personal and depends on people listening to each other.	No data	We have 1 person who leads all efforts related to this. She organizes "Team meetings" twice a year that focus on communication skills. This is for nurses, therapists, physicians, etc. People are able to vent their emotions. The meetings are usually 4-days long so it is harder for physicians to make the meetings. However, in addition, physician participation is probably intrinsically lower. There is a professional hierarchy still, and some physicians view multidisciplinary care as a step down. We also have a "Human Dynamics" course which is from California. Every 2-3 years, everyone in the unit goes through this course. Since 1992, we also have a mini-quality improvement course. There is an 8 day or 4 week advanced course. Two of us took these courses and condensed everything into a 1 day course for our microsystem.	We started the protocols in mid-year 1992. Currently, there are about 25 frequently used protocols in the ICU.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS08	Diabetes care fits into a bigger initiative.	No data	No data	No data	No data	The collaborative care model is testing a cultural change. As we get some successes, people see the generic nature of what we are doing. There are some capabilities of the macro-system. They all have to be part of the same plan. We have all the pieces for a system, but they aren't integrated as well as they need to be. We have created a generic model regardless of the specific disease. 1) assess the population, 2) stratify the risk - who do we focus on first, 3) assess the individual, 4) set goals and develop a care plan, 5) deliver and coordinate care, 6) monitor and evaluate care. For each of these steps we have had to identify the roles of the care team - we have found that the roles of the care team may have to change. Our role at a macro-system needs to change too - the support systems we provide.	No data
	We are a staff model HMO with 800,000 enrollees. Our Medical Group is responsible for a population of 240,000. We wanted to work on chronic care. We had been doing some work on diabetes, heart failure, and asthma. We were being approached by companies wanting to do carve outs, but that isn't what we wanted to do. We [the two interviewees] staff this initiative. There are 3 starting points. 1) disease management for diabetes, heart failure, asthma, and depression, 2) the frail elderly and the over serviced/underserved (those people who use the system but it's not aligned with their needs), and 3) collaborative care - redesigning 2 sites for team care, population management, and CQI. There are 3 starting points but they will all end up at the same place. For the 3rd starting point we are using a modified RFP approach. Sites have to respond to specific criteria for us to select them. We have 18 sites where we are starting to work. We picked those sites based on their readiness to change. We have had an ADA credentialed program for 15 years. A couple of years ago we wanted to take that to a new level. We joined the IHI breakthrough series on diabetes. We used a chronic care model and had 6 areas of focus - health plan support, supporting community, delivery system design, information services, self-management, and decision support. Health plan support and supporting community are areas of focus that are outside the care team. We had corporate goals around diabetes. We wanted to decrease complications of diabetes by 35%. Also diabetes is high cost - that's a reason for to pay attention. At the community level all three plans in the community are focusing on diabetes. Within the care team you have to make sure that the other points [delivery system design, information services, self-management, and decision support] are in place. We are using ICSI guidelines for decision support. For self-management we look at whether patients know what they need to know about diabetes. We use a wallet card that goes to the patient with a letter from their primary care provider. There is a newsletter that goes out 2 times a year - this year one of the issues focused on diabetes. We have group clinics. We use the information system to determine which patients are at risk. We have flow sheets around diabetes care for each patient record. The delivery system design focuses on using teams effectively. We focus on giving feedback to the care team on patient outcomes - e.g., lipids and HbA1c. When patients come in for any type of care we want to make sure that we take care of their diabetes too.						

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS09	We provide exceptionally good women's reproductive healthcare. We also do good primary care. We do clinical research and publish, which is unusual for private practice. For example we've done research about c-section rates and the differences of care between physicians in the community. We have access to all the outcomes in the community through the two hospitals in the community. Our c-section rate has gone from 16% to 11%. One hospital in the community went from 15% to 9%. That really is a benchmark, nationally. We shared c-section rates with individual providers. We shared a profile of practice techniques that achieved success. (continued)	I think we are deficient in measuring. We are measuring the more global outcomes.	We are competitive. Our patients know about the low c-section rates, but we don't advertise that. Local papers have picked up the news. We also tend to be low intervention. We practice a technique that is close to nurse midwifery practice. We offer many choices to the woman. Our referrals are word-of-mouth, primarily. Comfort measures are very important to women.	Yes, electronic monitoring is usually ingrained in experience. Some people are actually nervous do to low intervention care. Our philosophy is to not intervene unless we need to.	Not too much different. We meet every week to discuss clinical care. We analyze literature as necessary to keep up with clinical evidence. We have a one-on-one relationship with a NP or PA. Each MD, NP/PA works as a team. Usually a patient sees the MD one visit and then the NP/PA on the next visit. The patients all know this is a team approach.	We haven't done much. I think the HMOs in the area have started doing some of this.	No data

	success						
MS09 (cont.)	We were not formal in saying do this, do this. Really we just demonstrated the variation and the outcomes. We continue to do that type of research, e.g., breech births, use of epidurals. It is a very low-key approach. We use paper displays of data, present at department meetings, which are almost monthly. Shown by provider and/or by economic groups of patients. It is all presented in a closed forum with blinded data --- but the MD knows which data is own. It's a small community --- you can figure out which data is whose. We look at LOS as far as hospital stays. We look at c-section rates, perinatal mortality and morbidity, maternal outcomes.						
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS10	The NICU is the micro-system and it is "a cohesive administrative work group that shares a common goal of 1) clinical care, 2) teaching, and 3) research. Taking care of sick babies; the quality of clinical care. The neonatology group has a commitment of being a resource to the region. We have a commitment to the health of a population. This is crucial to our success. As a resource, we provide education and review the quality of care for the whole region. Clinically, it's based on an individual case basis --- taking care of the patient and supporting the family from pre-admission to post discharge. And then, how do we do against some comparison? We participate in a regional network. There are 300 participants --- everyone contributes data. We can compare how we do with very low birth weight (<1500g) babies. We can compare our outcomes to similar institutions (level III nursery, teaching institution). Outcomes are adjusted for good comparison. The new project that is part of the Network is NICU 2000. 34 nurseries working more closely together to improve care (reduce cost of care, improve quality of outcomes).Then as a resource to the community, it is really a continued willingness of hospitals to work with us. What we've accomplished is getting the different regions to work together. This is shown by the state-wide research projects and active participation of hospitals in the project.One big difference, statistically, is our rate of back transfers of babies to their home hospital. The key philosophy is that babies should be in their own community if their needs can be met safely. We are in the top 5% of all NICUs for back transfers. This is a big deal for us because 90% of our patients are secondary and tertiary referrals. Also, we have a multidisciplinary approach --- a respect of all roles is applied.	No data	It's hard to tell --- most people don't have a comparison. The preconception of NICUs is highly technical and families aren't part of it. We want to astound them --- full participation of families --- no barriers to access, no barriers to information	There are a lot of different models. Peds is generally more multidisciplinary and respectful. You would see more cohesion, the design of the nursery is state of the art. The clinical part is not that different.	No data	No data	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS11	Surviving has been a challenge and we are doing that well. What we do well is communicate the importance of diabetes --- up, to the senior leaders of the organization; across, to other providers and out, to the community. We communicate the field of diabetes research to our providers and the community. We participate in clinical research projects. We really challenge our physicians and the greater community to provide better diabetes care. We are advocates for our own work. We define success at how we are doing by communicating data back to the providers. We can show them that by using our services they are getting better outcomes for their diabetic patients. We measure HbA1c, blood pressure, cholesterol levels, protein in urine, quality of life, and customer service indicators.	No data	If you had had standard diabetes care somewhere else, you would be amazed because now you would have a team of people helping manage your diabetes. You would have people following up with you. You would have better outcomes.	The participation in clinical research. The level of detail of practice. The ongoing relationship that is developed with diabetic patients --- we really encourage that.	Low turnover. We are an old team --- a cohesive, unified team.	No data	We started this program in May 1984. In 1983 it was accepted treatment to hospitalize diabetics to manage their care. Now everything is outpatient. In 1984 at any given time there were 10 - 12 people in the hospital just to manage their diabetes. The team is 35 diabetes educators. Some are RNs, dieticians, social workers, clinical psychologists. They work with individual physicians. Motivated, caring leadership is critical. Internally you have to keep the team cohesive, externally you have to give the team space. Must get the system interested in what you are doing. Must have a champion. I'm sure there are lots of good things going on here that I've never heard about because they haven't done enough to get the system interested. You have to bring it to the forefront. Whenever I walk into a room, people think diabetes.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS12	The focus of the micro-system is primary care. We are a group of 25 family physicians. We are the largest family practice in the area (there are a total of 3 in the area). Before we opened there was no primary care training base. The 25 physicians include 8 faculty members and 17 residents. We have a total of 9 nursing staff, made up of RNs, LPNs, and MAs. We have been talking about adding "extenders" but so far have made the decision not to go in that direction. We don't use any volunteers.	We don't have a measure to track adequacy of information flow. We do have a clinical instrument panel. We measure cycle time, patient satisfaction, phone calls (incoming and outgoing), treatment to goal hypertension, completeness procedure to charge capture, operating cost per visit, proportion of patients seeing provider of choice, weekly 3rd available appointment, team morale, practice size, adequacy of pap smears in eligible women.	You would see it in a couple of different ways. First we have a data wall with all the indicators displayed. Patients are asked to participate in a fair amount of surveys. We discuss with patients the improvements we are doing --- at the end of each visit, I ask every patient what we could do better. A lot of our improvements come from that type of feedback.	We have an improvement idea box for staff. Faculty are involved in different aspects of improvement. We have an interdisciplinary guidance team that we put together from the ID-COP participation that we are transforming into a quality council to guide and facilitate improvement work. We have a requirement of scholarly research --- everyone must do process research of the care they give. We do a systematic review of evidence in our journal club.	No data	No data	In July 1999 we moved to 3 teams. Our goal is to develop an open access model and to provide continuity of care and better education of residents. We couldn't do this without teams. Our lines of communication need to be strengthened. Before we had residents on one hallway and faculty on another --- there wasn't much interaction between the two. There has been resistance. An initial concern was about a loss of continuity with patients (my patients now become the team patients). This is just a misconception. Also, we don't have control over the information that we need. We need to be able to define who our panels are --- we can't do that ourselves. We are sending a practice manager to EPIC for higher order report generation training. We have support from the larger system --- they have funded 3 research projects: 1) develop an open access model, 2) create a disease registry model, 3) improve telephone access. We decided to make this a full clinic activity instead of pilot testing 1 or 2 teams.
	We provide a mixture of preventive, acute, chronic, and palliative care. 45% of the patients are >65. 15% are less than 30. Many of the older patients are snowbirds --- visits drop off during the summer. We care for approximately 11 - 12,000 patients. As of July 1, 1999, we have divided into 3 teams. So far we have formed the teams and are looking at the team's sub-practices. We have been computer based since inception --- We have never had a paper record. The whole clinic chose "Epic" as the clinic-wide system. (Epic is a corporation based in Madison, WI --- they have a clinic system and an appointment system.) Epic didn't have a hospital package and when the larger system decided to add a hospital, they went with an integrated IDX system. This gave them two systems that couldn't communicate. It has taken 9 months, but by fall we will be fully integrated. Manage information in terms of patient and operational information. It is real-time. Patient encounters are dictated and go directly into the computer. The information flow is seamless. We are also very responsive and attuned to patient needs. Our patients are well-satisfied. We have been doing weekly patient satisfaction surveys at the department level. The larger system does quarterly satisfaction surveys at the corporate level.						

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS13	It's an emergency department. Currently, there is a project underway to construct a pediatric ER adjacent to the regular ER. We have a few physicians who are double-boarded in pediatrics and emergency medicine. We have a few benchmark measures. First of all, we have the highest patient satisfaction rating in the United States for an ER most months of the year.. Satisfaction scores are measured by the largest physician polling group out there, Press Gainey. We hover around the 96 percentile most quarters. There has been a process of radical reengineering around customer voice There has been process improvement and rigorous cycle time analysis. The outcomes we measure include cost, quality of life, patient satisfaction. The quality of life not only for patients but also for providers is important. (continued)	In terms of the operational ones, we are able to show through our fast track program for less urgent patients, cycle time has dropped from 92 minutes total to 47 minutes total, in terms of the process length for complete care. We are able to show that the cycle time between the arrival of a patient to a doctor seeing that patient has dropped from 32 minutes to 18 minutes. We are also able to show that the "decision to admit" on the floors of the hospital has dropped in cycle time from 3.5 hours to 1 hour. We have also reduced pharmacy cycle time. We have bedside registration. Each room receives a portable computer rolled in on a cart. Computer orders for lab and pharmacy are made from the bedside. In terms of clinical data, our philosophical bias puts clinical issues first. We can show a reduced lytic cycle time from 66 minutes to 16 minutes. Many states such as Wyoming and Connecticut have replicated our reengineering approach. Our reengineering approach in a nutshell includes first forming a task force, which in this case, is headed by a cardiologist. We needed a baseline measurement of how we were doing. We then compared this to a registry which included state norms, hospital norms, etc. We then used a very clever theoretical construct created by the NIH which centers around subintervals, i.e., breaking the processes down. We borrowed the 4Ds concept, "door, data, decision, delivery." We introduced the idea to our staff of multi- processing or "parallel processing." We then looked at the four sub-intervals to see where we could improve care. If "data" is needed for a "decision" to be made, a nurse can go ahead and order an EKG, for example. We have done a similar thing with antibiotic prescription and care for pneumonia patients. Using parallel processing, we have empowered and educated our nurses to go ahead and get a CBC, or chest x-ray. Our pain management program is trying to increase the team's sensitivity to loss and focus on quality of care at the end of life. We have also focused on stroke management, noise management in the hospital, etc. We consistently try to have empty beds and engage in parallel processing. We have embraced the concept of "real time tracking." We have developed a radar screen that has 8simultaneous processes continuously monitored. Each process is depicted in 15 minutes cut of data for the last 4 hours. We get information on the census in the ER, the status of the patients, the x-ray cycle, etc. We know where in the process not only the patient is, but where the system is. Each process measured is summarized on the screen by graphs. All we have to do to obtain data is touch the screen. The graphs are equipped with goal lines, not control lines, but goal lines that are based on some sort of customer satisfaction, e.g., people don't like to wait to long, etc. The most exciting thing I can tell you in this interview is that we have identified the "pathophysiology" of a microsystem. It is powerful and yet very predictable. Think about two downstream processes, x-ray cycle time and getting patients to the floor. If the downstream graphs go out of control, there are predictable changes in the system. What happens? Occupancy in the ER goes up, the number of new patients in the ER goes down, the number of free beds in the ER goes down, the cycle time between arrival to a bed goes up for a patient. Eventually, every measurement goes up. What is the intervention in this case? The intervention is a series of algorithms built into people's behavior. When we obtain three consecutive 15 minute intervals going in the wrong way, we realize that something needs to be done. Other microsystems would use a 1 size fits all approach with monthly quality improvement meetings or something like that. We use the "President Truman" response. Once, an advisor came into the President Truman's office and said, "Sir, we have an unmitigated disaster approaching." Truman told him to leave and come back and try that again. (continued)	No data	Frankly, all this stuff about information systems have been what is holding us back. That's all crap. Everyone is just waiting around for some kind of cure all IT system, instead of figuring out how to track things themselves. We built our tracking system here from the group up. We designed the software. All hospitals could change tomorrow. But they don't because they don't understand the pathophysiology of microsystems. By definition, a hospital is a collection of overlapping microsystems, so they should understand this pathophysiology but they don't! They don't understand that all systems have some type of feedback mechanism or loop.	Volume has dramatically increased here. On the busiest day, it's crazy. On other days, it is more peaceful. We have 10 docs, a slew of nurses, and other people. We have had to change the way we work. For example, most ER's have 12 hr. shifts. But this is very out of sync with patient satisfaction. Patients don't want physicians who can barely keep their eyes open. So we slashed the shifts to make them shorter, like 9 hours. Thus, physicians find themselves having more shifts in a month, but at least it's in line with patient satisfaction. Physician have also agreed in advance that in our tracking system if the arrival of a patient/seen by a doctor cycle time is past a specific threshold, then they are required to stay longer, even if more help is there or on its way. This was signed by everyone in a contract. Thus, we have a system where there is "virtual on-call." We have also found the busier the doctor is, the more productive they are!	No data	No data

	success	*measures*					
MS13 (cont.)	This is our"selling feature" to obtain physicians. We have been recognized by HCFA as having the best thrombolytic therapy. We received the North American Gold Standard award for our lytic cycles. We received the American Hospital Association award for process engineering of our x-ray cycle time. Success can be defined with a reference to outcomes. It is a victory against a problem. There has to be a quality management formula. We should be able to recognize many possible outcomes for a process, and then pick the one "fit for use."	Basically, Truman told him that it might be disastrous, there might be nothing we could do, but by golly, someone will do some mitigating! So our response is similar. We try to mitigate. For x-ray cycle time, we dropped it from 72 minutes to 23 minutes around. We reengineered processes so that the ER docs see x-rays first, that old x-rays are quickly taken away, that twice as many x-rays and techs are present in the ER. Our x-ray tech algorithm allows us to get more people to help out when we are very busy. Our techs are trained to call up other techs off duty at home and tell them to come in. They don't have to ask anyone or talk to human resources or talk to their manager or anything. They do it automatically, without asking management. Basically, what I am getting at is that the microsystem is not really like a chassis or automobile as you think. It is more like the human body. The key word to describe a microsystem is homeostasis. A microsystem is always changing, molding, adapting, just like the human body, always in homeostasis. At the end of the day, we look at our data patterns based on risk and severity issues and we say, there are three ways of responding and reengineering. A bad way, a good way, and a world-class way. People come up with processes for all three ways. I try and make sure that everyone contributes and that everyone has some type of uniquely qualified way to approach the care process. Thoughts are shared, and things happen. But, this is only the data stuff, the beginning..... then you move on to rewards and recognition....This is one of the most controversial areas. There is a fine line between giving someone an incentive and not rewarding someone so they won't work. We don't have a ton of money. We are "whimsy." Basically what we do is have lots of contests between doctors and nurses. We give out movie tickets, put in good letters in people's files, send thank you cards, different perks. In terms of formal reviews, the staff and doctors have performance reviews. They are evaluated either by me, in the case of doctors, or by the nurse manager, in the case of nurses. The data that our tracking system spits out is fed back to individual physicians. We are focused on the bad as well as the unexpectedly good. In society, I think sometimes "sentinel" events are only focused on the bad, not enough on the good. Things do go well. In other cases, people need to respond. All the data for an individual doctor is correlated into a "physician report card" that is generated each quarter. Their reimbursement and bonuses are linked to their clinical performance. Our system not only looks at outcomes but also "learns" things about processes. Outcomes of encounters are systematically aggregated into high risk-interactions. For example, the system flags back pain as a high-risk interaction because it is so common, time-consuming, and painful. This is called dilemma-based learning.					

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS14	We provide excellent patient care and excellent patient services. Patients get a feeling that it is good. We are almost constantly doing a patient survey. We use them to measure patient satisfaction before and after doing an improvement. We make our own surveys using Autodata Survey --- it's a software package. We scan responses and get reports --- numbers and graphics.	We are just getting started measuring disease outcomes ---- we're doing asthma and diabetes. This is aligned with our corporate goals. In the diabetes project we're focusing on education of the physician, standardizing work, and documentation. We are creating a registry for entering data on a real-time basis and measuring the patient's perception of care.	We have created care teams. We have been working on what is needed as far as care teams. Last October we started the teams. We have 3 teams --- IM team, FP team, and Peds.	No data	It feels a lot different. Before people generally got along. Now there is much more of a feeling of working together, especially the nurses and receptionists. There is much more learning and communication.	We had to wait until some of the issues came up. But now with new teams we can be more proactive. We know some of the things they are going to run into as far as working in teams	We started the ideal practice project. First we rolled out open access then rolled out care teams. There was a lot of skepticism. Once they started and then saw the benefits that really helped.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS15	We provide primary care. There are 5 GIM MDs, 3 NPs, 1 PA providing comprehensive primary care and hospital care. We are community-based physicians. We are the physician of first encounter. They function like a multi-specialty group. The Medical Group is located at the Community Hospital. The hospital includes a rehab hospital, an extended care facility and 2 primary care practices --- the Medical Group which is a private practice and another primary care practice that is a satellite of a large academic medical center. The Medical Group has connections to the medical school. We use paper medical records. Two MDs use computers to track their own patients. All of us choose to be personal care physicians. We value a long-term relationship with patients. We're all the same generation and philosophy so we can cover for each other. We are accessible. We have been a group for 15 years. We give good healthcare because we were trained in internal medicine and give good care to adults. We were chosen to be a teaching site for residents.	Other people use surveys and other ways to benchmark. We just do it seat-of-the-pants. We figure that we will get feedback. We don't use any modern techniques to measure anything. It's very expensive. We don't have extra capital to invest in recreational data collection to prove how we are doing to someone else when we know how we are doing.	We know our community. We live here. We're involved in community activities. Patients tell us that we are different. We're accessible and give personal care. A group of people 25 - 40 may value technology more, so we don't capture that market.	We are adding 1 new MD this fall. She just completed her residency. She will join us as a equal partner. We are a democracy, which is one of our great faults. No one is in charge. So we are like a family. Which is a problem because you can't get rid of a family member. A lot of things don't get done because there isn't a boss. Three students spent time with us last term. They were all over us. They assessed us and gave us feedback. We didn't pay any attention, of course. One change was to get people to carry medication cards in their wallets. We talked about it for 10 minutes or so and decided to do it. But it didn't work. We don't know how to implement it. We don't know how to flowchart. We don't know how to improve the system. We have closets full of good ideas but don't know how to implement them.	No data	My partners and I don't understand leadership. The community looks at us as leaders. But the hospital was taken over. So we aren't community leaders anymore.	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS16	We are trying to bring a high level of diabetes care to the population we serve. Specialists can not do this on a one-to-one basis. We use certified diabetes educators (CDEs) as the intermediary. They are located in the PCP offices. It is a team approach to diabetes care. The endocrinologists don't see the patients face to face. It is a mechanism to diffuse specialty resources.	No data	You probably wouldn't unless you had experience somewhere else. Patients do perceive the team approach. We try to make information available electronically.	No data	No data	No data	Since 1993. Before, we had an active diabetes program - all the CDEs were located in the main building. Once patients were in the program they appeared to be disconnected from their PCP. That is why we decentralized them.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS17	Our mission is to work in disadvantaged neighborhoods to create strong, healthy, helping communities by encouraging and supporting neighbors as they help others. 30 - 40% of our employees are neighbors. There are 5 different agencies that are part of our health center. We are not just a community health center. Our system functions very well in neighborhood settings. We relate to patients in their neighborhood. Care is accessible --- we are welcoming and caring. There are a number of different people who get care here. We have a transient population and it is easy to lose track of patients.	No data	Patients are well received. They are not hassled about lack of insurance or payment. It is our policy to give preferences for hiring to residents of the neighborhoods we serve. Sometimes that is a problem because patients are afraid that someone from the community might know about their health. We provide transportation, help solve childcare problems.	No data	No data	No data	No data
	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS18	The focus of this micro-system is improving advance care planning through systems of healthcare. There are 500 MDs in the community. This is a joint effort of 2 healthcare systems. We assist and encourage adults to do advance care planning and then make sure written plans are available and followed. These 2 healthcare systems are competitors --- competing for the same patients. There are two areas of collaboration, health care education and advance care planning. The micro-system is a fairly organized effort to assist patients to do advanced care planning. To make sure it is in the record. The micro-system is not embedded in one organization. Two people form the leadership. We educate and set standards for others in the community that aren't part of their system. We have a great ability to set the standard of care throughout the community. We look at advance care methodologically, as a system. What we do doesn't happen anywhere else (according to what I've heard and read in the literature). If people go through the process of advance care planning, the advance directive gets in the record, stays in the record, can be retrieved, and can be transferred with the patient. We put the advance directive in a green plastic sleeve in the medical record. We define responsibility for who puts it in, what happens to it. Our program involves setting practice policies, developing education materials, and training. Advanced directives are put in a green sleeve in the patient record. If the patient is admitted to the hospital, it is put into the unit record, because this is what the doctor sees. This was only done 60% of the time. But there is no reason why it shouldn't be 100% of the time. The unit secretaries were responsible. The way the policy was written was saying two different things. We rewrote the policy. A study published in the Archives of Internal Medicine showed that 85% of adults who died in one geographic region had an advance directive 96% had an advance directive in the medical record. 98% of institutions were consistent with the decisions made in the advance directive. Does this improve care for the patient? Well we do know that people don't want to die in high tech environments. The literature shows that people don't want to be in a hospital they want to be with familiar people. We did a nested case-control study. We matched 74 people with advance directives with 74 people without advance directives. They were matched on gender, age, cause of death and type of MD at death. In that study, those with advance directives were 7 times less likely to die in hospitals.	No data	First, we looked at advanced care planning as a system. Then we asked, "how could this work in this community?" We defined responsibilities. We checked with QI to make sure it was happening.	No data	No data	No data	In 1991, we commissioned a task force. It took 2 years to plan. In 1993, we had a fully developed, implemented program. It seems so simple and straightforward, but my life has become crazy because of requests to talk about this everywhere. We had the commitment from top administrators --- the Presidents from 4 systems set up the task force. The task force was to talk about ways to collaborate to improve healthcare. (Now these 4 systems are 2 systems through mergers.) We set as a goal that at least 50% of adults in our community would have an advance care plan before a crisis. And that the program we implemented to do this would be accepted by the community. The endorsement from the administrators made the task force much easier. In other communities, that support may not be there. I could go to medical records and say this is what I need --- and I need to report back to the 4 presidents. I met very little resistance. My organization in particular put a lot of importance in this and asked me to put a lot of time in it. I wasn't just asked to work it in to my other responsibilities. Here's an analogy I find helpful --- it strikes me if a patient has a drug allergy it is seldom that we wouldn't report it. We ask about it repeatedly. We know that it is a failure of the system if an error occurs. Why is advance care planning any different? Another important factor is how people prioritize quality of care at the end of life. We made it a top priority. An advantage in collaborative work is that we share resources, training. It's like CPR --- it doesn't matter where you get the training.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS19	We are an ophthalmic consultation center that manages and treats complex eye disease and performs eye surgery. We are a referral center for a vast network of optometrists and ophthalmologists. Every practice in the network is independent. The size of the network, as we define it, is the number of different places that refers us a patient. We estimate that currently we have 130 different eye care sites that refer care to us. These are mostly optometrists, though some are medical ophthalmologists. We are very focused on the customer. We define the customer as being the optometrist as well as the patient. We try to create a culture that we care for our entire network. We are operationally strong, technically strong, and we are good at starting and maintaining relationships. We know detailed information on eachof the practices in our networks, what equipment they have, their strengths, their weaknesses, etc. I have to personally know 130 doctors and know which one of them will do what. We want the optometrists who refer patients to feel like that they are in charge. Our backup system for knowing the optometrists includes a manual database which we keep in each exam room. This database is full of index cards for each optometrist and has information regarding their practice specifics. We have a few different customers. We define success overall as superb treatment, a high level of patient delight, increasing referrals and optometrists, profitability, and financial growth. If our patients are happy, our referring optometrists will be happy, and we will see increased revenue. Our mission is to combine optometry and ophthalmology to provide "better" care. We are passionate behind our mission.	We track patient satisfaction regularly using a survey. After patients have had a visit, we send out surveys. We look at complaints and we see who is happy. We look at things like how we greeted the patients and how they felt about the care they received. We probe to see whether patients feel the waiting time is excessive. We try to reduce cycle times. Our backup to the patient satisfaction surveys is our "caring alert system." Basically, this means that we follow-up when someone is upset. We have a number of categories of patient dissatisfaction, and we track instances of poor service back to our categories and likely causes. At weekly staff meeting, instances of patient dissatisfaction are handled. Less frequently, these issues are discussed in management team meetings and doctor's meetings.	A patient of an optometrist is usually referred to us. We send out information to the patient before they arrive. We hope that this amazes the patient that there is no repetition of paperwork, that care is organized, and that the clinical communication and transfer of data is smooth. This doesn't always happen in many care settings. Basically, we want the patient to feel good about their own optometrist while they're here as well. We want to create a "seamless system." We want and think that patients come here and say, "Wow, these people are friendly, professional, and answer all of our questions respectfully." We hope that patients see that we are also very focused on clinical outcomes of care. We ask about this area in our annual surveys.	A clinician would be surrounded with people who make fewer excuses for the staff. We believe strongly that in team care, staff satisfaction is very important. Everyone is not equal, but everyone is important and has a different responsibility. I try to make sure that the clinicians know that working here requires a balance of getting to do what you want to do and of doing things as part of a team.	This is a busy place, fast-paced. Everyone is accountable for their actions. We try to build relationships with patients and referring doctors. Everyone has lots of responsibility.	We try to make sure people feel important in what they are contributing. But, we don't support silos. At the time of signing contracts, we make sure that the doctors working here understand this work culture. This is often difficult. Many of us on the staff have taken courses on leadership training and management. Everyone in the staff tries to have the mentality that each job requires different skills, but that everyone's job is important. We have a 360 degree review of our leadership and management.	This practice has been running this way since the late 80's, about 10 years.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS20	We do heart surgery. We developed a highly efficient system --- I mean "lean." A lean system that took all the waste out. We standardized everything that we do. We have a process improvement team that meets once a week. We try to add value to everything we do. We are committed to not just talking about it. We are more in the doing than the talking.	We measure success against ourselves. We try very hard not to measure against benchmarks. We do 1400 hearts a year. We should be the benchmark. Success to us is any incremental thing that makes us better than yesterday. LOS is a good example of why benchmarking is a bad thing. Someone can have low lengths of stay but high readmission rates. It is a mistake to benchmark pieces of your process against multiple other pieces of processes.	We try to run our medical practice like a business. Ten years ago if you were on the team you probably wouldn't care how good you were. We took the attitude that we only wanted the most motivated best staff. If you weren't, then we asked you to leave. By motivated we mean motivated to give excellent care. We live by this principle. It has to be a patient driven system. We have 7 00 am rounds and 4:00 pm rounds. Most hospitals just have morning rounds. We added the afternoon rounds. It doesn't cost us a dime. We did it because our goal is to send people home on day 4. Well sometimes on the morning of day 4 the patient isn't ready. They would have to wait until the next day --- but with the afternoon rounds we have another chance to look at them again late in the afternoon. Sometimes we can send them home. You can still be customer friendly and accomplish your goals. In our program QI is infused into what we do. It isn't just an add on program. To infuse that spirit into the group you have to drive everything to it. A lot of people would be thrilled to be lean and efficient. But they don't know how to organize to do that. If you act dictatorial about it, it won't work. We put together a team that makes the decisions about how we are going to do things. You have to make people feel like they are contributing to the group. We can make changes on the spot. We have meetings once a week, but you don't have to wait until then to discuss it if it makes sense to do it. For the intuitive things we can make immediate changes.	No data	It is just the opposite of high stress. When you are on a winning team people love it. I'm sure the women's soccer team doesn't complain about practicing. It's the same way here.	No data	No data
		Developing a process improvement team is more important. If you develop these teams you don't need to benchmark. Just keep working on little projects to improve what you are doing. Benchmarks can limit you. Sometimes the benchmarking in and of itself becomes the goal. Sometimes you don't have to measure it. You just know it. For example, in our hospital we go home at the end of the day. There isn't a team there for emergencies. Emergencies mean that we call people in. I felt that it takes too long for people to show up --- even a few extra minutes is too long. So, we developed a rapid response team. Before when there was an emergency you called someone --- not always the same person. Now there is a designated person to call and that person sends out a "gang page". We have cut response by 8 - 10 minutes. We didn't really measure how it is better, we just know that getting here sooner is better. Some things we measure more carefully. We have a high population. Before it was managed in multiple different ways. So we standardized the process. We measure HbA1c levels and infection rates. Essentially we did PDSA cycles. We measure blood usage after surgery.				

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS21	We are working as part of a grant from a large university. Our goals are to: 1. Improve diabetes care for county residents. 2. Use an empowerment model of teaching. We knew that there was a gap between what the patient was told and what the patient did. We wanted to address this with an empowerment model of teaching. Each patient is interviewed - history, psychological profile, -- using one tool. Instead of traditional education, we ask a lot of questions. "What are you doing? What are you willing to do?" We have also found that diabetics often think they are to blame for having diabetes. We have developed a teaching model - its an explanation of diabetes, energy, and carbohydrates - that is consistently understandable for a wide range of patients. People learn by experience - the more ways they experience something the better they will learn and retain it. Each patient is given a diary. I tell them, "Don't worry about anything. Just write down meals and blood sugars. At the next visit we will look at it." Pretty soon they are drawing lines between what they are eating and their blood sugars.	On average, one year after starting the program, HbA1c levels are 1-2% lower.	Patients are treated with dignity. We've changed the mindset - we've made them realize that they are in charge. Traditionally, a patient would come in, the MD would say you need to lose 50 pounds and have a blood sugar level of 110. The patient leaves, feels at fault, and a wall goes up. Now I tell people that no one can ever fool you about your diabetes again. A knowledge test is given - that's part of the grant. I don't like it because some people feel threatened by taking a test.	No data	No data	No data	The program started in 1995 and ends in Sept. 1999. The state will continue the program for 1 year. We are trying to develop a sliding scale fee structure. A maximum of $35 for the program down to a donation.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS22	We treat the patient as a whole. We look at more than just the cardiovascular part. We just don't refer right and left if it doesn't deal with CV. When a person comes in, all organ systems are checked, including the psych/social part. I just had a patient yesterday who came in with a 35% ejection fraction and an umbilical hernia protruding as well as fluid in his abdomen. I started him on Lasix to reduce the fluid accumulation, put him on a diet regime, and physically walked him up one floor to the (continued)	The company likes good numbers. They want to see the costs low. For patients, we want their quality of life to improve and for patient satisfaction with the care process to be high. We have seen that by keeping patients out of the hospital and ER, we can align both of these objectives. We used to use the Minnesota Quality of Life survey, but now that they charge us, we don't. I have created my own Quality of Life patient satisfaction survey. It has psych/social indicators, unlike the Minnesota one. (continued)	We talk to the patients about psych/social support. We carry many patients to end of life care. We are with them until hospice care and sometimes even beyond hospice. We tell them about durable power of attorney, medications, shopping, eating less saturated fat, increasing activity, the importance of family, independence, etc.. We do all of this during the first visit. We also always put things in writing or print it out for them. We highlight key words and phrases, like what an ACE inhibitor is supposed to do. We don't use very technical terms, but we explain what is happening to them and what the medications will do in "laymen's" terms. If a patient has ESRD, we try to prevent them from going on dialysis by working with the doctors. All the doctors know me and I know all of them, so I'm never out of the loop. The system wants me to simply be a "broker." An example of a broker is the nurse I talked to at the other clinic. They want me to just do my CHF part and then make referrals. I want to be more involved in the care process.	No data	There are just the three of us. We work very well together. M. is in charge of the office, I am in charge of the patients, and Dr. D. is the physician champion. He holds the key to resources and new patients.	No data	No data

	success	*measures*					
MS22 (cont.)	(continued) surgery floor to personally make sure that he received a surgery appt. soon. Now, it turns out the surgeons didn't think the condition was too	(continued) I send it out to all the program participants. We are in touch with all the patients. The microsystem secretary calls all the patients at least once a month. We also ask basic questions during this phone call. When patients come in, they get a sheet of questions we want them to answer as well as their recommendations on how we can improve the care we give them. We ask them questions like, "Do you understand your medications?" or "Do you feel like you are in control?" or "Are you comfortable with what is happening in your life?" or "Are you a source of happiness to your friends?" Though our microsystem lacks a dedicated social worker, we try to talk with our patients as much as possible.					
	severe and said it was all right to wait two or three weeks before surgery.However, I am bringing up this example because I was talking to my counterpart at another clinic and she said that she doesn't do anything but treat the CV part. She would have just referred a patient like that to surgery and ended her involvement in the care process.We are able to improve an individual's functional status very well. The New York Hospital Association has a measurement scale from 1-5 that they use for functional status. A "4" represents symptoms experienced when sitting, a "3" represents symptoms during exertion of some kind, a "2" represents symptoms during heavy exertion. We are real good at getting the 3's and 4's down to 2's. We "pay attention" real close, that's Dr. D's favorite phrase. We are dealing with fragile people. Many of them react badly if you wean them off something too quickly. We like to "graduate" our patients so that they can go back to their primary care physician. Sometimes, the primary care physicians get upset when we give their patients back to them. It ends up that 1/2 the patients we send back to the PCP come back to me. So, we may graduate 60, but we get back 30. We did a quality improvement study on how those who graduated are doing. We found that many patients did not feel that their PCP was able to communicate with them in a timely manner.Another example of a recent patient is one who is in the hospital every week for CHF. He was transferred to me because he had a real difficult time breathing. His PCP never called him. He had a functional status of 4. I called him everyday, and I visited him often.Education is the basis of what we do. We have a goal of trying to increase the independence of our patients. Then, they can adjust their medication, like Lasix, on their own. Then, they can come and go.					

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS23	Let me tell how we got where we are. In 1990	No data	We have had a designated breast center since 1995. It was built with women in mind — comfort and design are very important. A team is there to address the needs of patients. You would also see the difference in the timeliness and the caringness of the staff.	Some clinicians are surprised that we handle so much here. Radiologists have become clinicians—	It is really a positive thing. The only difficulty is that we are so busy	No data	No data
	a group of clinicians met to improve diagnostics of breast screening. At that time it took about a month for abnormal results on a mammogram. We started streamlining the process for breast screening. We got together primary care, radiology, and surgery. We had physicians and nurses from different areas. We identified "sleepless nights" as what we wanted to improve. The team was a CQI team. We agreed that a woman needs to have good access to mammography screening so we 1) increased the number of satellites with screening, mammography, 2) increased ultrasound units,			responsible for more patient contact and treatment. We have a close connection to the surgeon. Instead of the primary care provider having to coordinate everything we do it from here. Sometimes it happens so quickly they complain, "It's already done by the time I get the path report." They recognize the timeliness more than anything. Putting responsibility in the hands of the radiologist was a major improvement.			
	3) surveyed the clinicians to see if radiology could be the coordinator of care around breast images without going through the primary care provider. This would save a lot of time. Also, there was new technology available --- starting in 1991 biopsies could be done with a needle. So we started doing that. We streamlined the biopsy process. The CQI team decreased the process to a few days. We went from 2 - 4 weeks (from abnormal test result) to 3 - 7 days, on average. That is very reassuring — the patient gets the answer quickly. That means fewer sleepless nights. We also looked at how well individual MDs were doing in getting screening for the patients who needed it. We started giving them feedback about their rates and their rates started getting better. All we had to do was give them the feedback. Over the years we have improved the stage at diagnosis. 98% of our patients are diagnosed at stage 1 or stage 2. Our goal was to improve outcomes and improve the experience of the patient.					

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS24	I was interested in end of life, but it really	No data	No data	No data	No data	No data	No data

started as an interest in pain and pain management. Before working on end of life we put together a pain steering committee. Physicians weren't convinced that pain and pain management was an issue. They wanted us to do more baseline data gathering. Which was fine, but we just confirmed what others had found. We had to convince them that this was an issue for us too. So, we did that, but then they started questioning our data. We had to get through that before we could design any interventions. I struggled with nurses and physicians to get them to appreciate work that had been done elsewhere and not reinvent the wheel. We got to the point where we had all this data but we weren't doing anything. We couldn't get anybody to move. A lot of the steering group members started to drop out because they couldn't see any value in what we were doing. It's hard for smaller departments to give the people and the time to work on projects. This was making it hard for our steering committee to be interdisciplinary. So we ended up joining the end of life collaborative. In the end of life project we worked on getting the physicians involved in the process. They don't mind having things passed in front of them for review but they don't want to come to the table to work on the planning. We started out with a pilot unit. It's hard to get people to work on special projects but I thought that it would be a good unit to work with. But the first few months were really hard because they thought they really did a good job with pain management already. We tried to emphasize that it wasn't that they weren't doing a good job, but they were very resistant, almost angry. It took a long time for them to see that we were not criticizing them. It was hard to convince them that they could improve without insulting them. Then they would get defensive. But the fact was that we weren't managing pain very well. There are various ways that health care workers let patients know that we are busy - don't tell us that you are having a problem because we don't have time to deal with that. For a lot of nurses the reason for being a nurse was to relieve pain and suffering. But then we send the message that we don't have time to help you. Now, we have pain scales in every room in the hospital. The nurses didn't want the pain scales in the room because they thought that it would be worse for the patient if we brought it to their attention, but we know that just isn't the case. We graph pain on the vital sign sheet just below temperature. We have a place on the vital sign sheet to document pain and whether the pain management is effective. But really you have to listen to patients. Sometimes people don't have a realistic expectation about pain. A lot of the nurses get stuck on getting a number - that may be hard for a patient. So I get them to listen to what the patient says about the pain, not just a number. We can look at the pain rating, but also look at what the patient is doing and is able to do. The patient needs to understand that there are things that we can do, but sometimes we can't eliminate all pain. The pain scales have #1 - 10, but they also have word attached to the scale. 2 = mild, 5 = moderate, 8 = severe, 10 = worse possible. So if a patient gives words, a number can be attached and it can be graphed. We work on non-pharmacologic as well as pharmacologic interventions. A conversation with the patient assesses what level of pain is acceptable. A post-surgery patient should be able to breathe deeply and get up and walk and do more for themselves each day. A terminal patient should be able to eat and visit with people. When a person has pain that is a 5 or more we have to talk with them to understand what that means. The nurse is learning and the patient is learning too. This is not about how much pain can you stand. We struggle because physicians and nurses want something quick. They have to take the time to get to know the patient to be able to know what the pain rating means. If the nurse changes in 8 hours, then it starts all over again. Yesterday I was getting on the elevator and a patient got on too. She noticed my nametag and started talking to me. She asked me how she could get a patient concern form. I don't know all the history, but basically she has some chronic pain issues and takes a lot of medications at home. She was here for surgery. A person like that may need more pain medication than usual. As it turns out she had been telling the nurse that she was in pain, but the nurse was giving her less than she needed. We often don't want to belief a patient when they say they are in pain. We basically try to punish them. We've spent so much time talking about pain, pain management, and how much pain is acceptable. Sometimes we can talk and talk about pain and pain management but the clinician has an attitude about pain. We can't change things just by giving knowledge. You have to make it easy to do the right thing. It has to be easy to manage pain. We developed some algorithms - we worked on them for about a year and a half. Putting them out on the unit won't be enough. The algorithm can jog someone's memory, but they have to have a good foundation about what to do. I'm trying to develop pain resource nurses - nurses on every unit that are knowledgeable about pain, collect data, and work to improve pain management. I'm just starting to put this together but I've wanted to do this for 3 years. I'm meeting a lot of resistance to do this, but we have to get this down to the people who are doing this every day. Otherwise they aren't going to buy into the changes. Some people think that the pain management steering committee won't need to exist much longer. That is very frustrating for me because without the steering group pain won't be a priority. We have a strategic plan and goals around pain management. Without that focus, the daily, weekly, and monthly issues will start to take over. Eventually pain will only get attention when something bad happens. I've been able to put more time and energy into it, but I don't think I want to keep doing that. The patient has been the most important thing for me for so many years, but now I want more time for my own family. If you aren't going to have the same nurse working with the patient then you have to have better communication. Patients get the best care when you have health care workers who communicate very well and collaborate very well. One of the biggest problems I see is physicians not talking to each other. Also, so many nurses work part-time, varying shifts. We struggle with getting them to communicate. It's hard to get them to put equal emphasis on communicating, documenting, teaching and the physical tasks that need to be done before the end of the shift. You don't get the same negative feedback from your coworkers if you aren't teaching the patient as you do if you leave some of the physical tasks undone at the end of the shift. A nurse will prioritize and get every thing done before the end of the shift, but they don't look at the patient's care plan and do the teaching that needs to be done before discharge.

(continued)

	success						
MS24 (cont.)	It doesn't do any good to have one great nurse - you have to have a great system. Having one great nurse for 8 hours only makes you see how good it could be, and that's even worse. Even though I think we are all working for the same things, I'm always amazed at the hidden agendas. What I think should be fairly simple I find isn't because of other people's agendas. For example, we started looking at the data because we had a high rate of wound infection after CABG. We brought together all the different people and looked at all the different issues over 2 years. We found that there is a strong correlation between diabetes and infection, which the national data shows too. We decided that we should work on managing blood sugars before, during, and after surgery. As it turns out, there are so many primary care providers referring patients - we couldn't agree on a way to work on blood sugars before surgery and they didn't want to invest the resources that would be necessary to do this. We couldn't get any primary care providers to work with us on this because working on improvement impacts their productivity, which impacts how much they are paid. Even though it was clear what needed to be done, they chose the easier way and started working on just the peri-operative phase. Two years later we found that the staff wouldn't make the changes because they wouldn't buy into what we wanted to do. And the leaders had forgotten why they ever bought into it to begin with. As it turned out, some of the physicians were offended because we came to them with these changes and they weren't involved with planning the changes. But they had forgotten that when we started all this they didn't want to be involved because they didn't have the time to do it. I am sick and tired of hearing that people are too busy to work on this. When I was younger and less experienced I believed it, but I don't won't to hear that anymore. The HMOs won't pay for teaching about diabetes. I feel strongly that if we could have more time with patients for coaching, behavioral changes, and attitude changes we could improve diabetes care. Nobody wants to do anything if it isn't reimbursed. Wherever the $ goes that is where the service goes. Now there isn't adequate time or resources for teaching patients in any setting. Patients are so sick now when they are in the hospital, they are often too sick for any teaching. So we end up teaching the family members. God help the person who doesn't have a family member at home to help them. In the diabetes program we have found that sometimes the clinicians are more punitive or scolding which makes the patient drop out of the program. Our nurses want patients to use one particular meter because that is what they are used to and it is easier to download the data. But there are other meters that are easier for elderly and young children to use. But the healthcare workers are more concerned about the ease of use for them in downloading data once every 3 months.						
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS25	We have a funny micro-system. We started as a private family practice. Then we were bought by a hospital and later put into a part of their corporation. Individually, as physicians, I think we are successful. However there is some divergence in the practice. It depends on your focus. The original aim was that we would practice the best medicine we could, understanding that we couldn't be as financially successful. Now some of the physicians are compromising for the financial aspects. They are spending less time with patients, care is not as complete. The issue becomes if we want to do good family medicine, you have to have time allocated to do that. This has been a major source of conflict. In the past we tried to make decisions on a consensus basis. But now the parent organization makes the decisions and lets us know.	Our success is based on how we are looked at by the MCOs. Every physician says they practice excellent medicine, but you have to look at some other parameters. We look at HEDIS and NCQA measures. It's hard to look at other outcomes - no one knows how to do that. *** has started giving us more specific information on disease management, e.g., asthma, diabetes, etc. We look at the data and say, "what can we do to make this better . . ." but there is so much pressure to reduce the time we see with patients and see more patients every day.	We care for 15,000 patients. The only way to care for such a large population is ancillary help. We use 2 triage nurses. They work by protocols. Many of the patients entering the system go through the triage nurses. The patients aren't rushed, they don't have to wait. We leave a lot of open slots. If a patient calls in sick they can be seen that day. For preventive care visits we leave 45 - 60 minute slots. The difference is that we leave time for talking to the patients - that is part of our original mission. Now there is pressure from the organization to see patients at 10 min. intervals. They are going to start to tie incentives to that. Each physician will have to decide how to deal with that - more money, less hours, etc.	It doesn't feel the way it used to - a lot of that has to do with the market pressures. Practices bought by hospitals, hospitals bought by larger organizations.	No data	No data	I've been here 22 years - since the beginning Changes that I've seen include the pressure to see more patients in less time. Another thing is that we no longer see patients in the hospital, so the transition back to the office from the hospital isn't as good. The care the patient gets at the hospital is quite good, though. It's probably better, but you lose something when we don't see our patients in the hospital. Another thing that has changed is the relationship between the PCP and the specialist. At first we had a really good relationship with them. We were working together for the patient. As the economics changed, it became a competition. It many ways we stayed the same or got better. We use our ancillary staff more. There is more paperwork now. The MCO said that there would be a "paperless" system. The information has to be entered and transported whether it is on paper or on the computer. It takes time either way. There are more people in the practice now and more paperwork per person. Even if you wanted to be innovative there isn't money for that.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS26	The focus of this interview will be on the division of gastrointerology, specifically the endoscopy unit. This is an outpatient unit with 5 part-time physicians,	We have a patient satisfaction survey (I think it's from Picker or someone like that). I don't really know about data about clinical care. I'm sure they are collecting something.	You wouldn't see it as different	You wouldn't see it as any different if you are	No data	No data	No data
	3 fellows, 1 nurse practitioner (1 more will be added), 6-8 RNs, 3 technicians, and several APRs (clerical staff). We primarily care for adult patients although they share the space and equipment with the pediatric unit. We care for 25-30 patients each day. Reimbursement is almost 100% fee-for-service and I do not see this changing in the near future. Physician compensation is based on a percentage of FFS revenue. There is a "floor" for compensation, but not a "ceiling". Health care delivery, research, medical approach to care are all excellent. What we are rotten at is service. It is really anecdotal, personal report of the physician. What I hear from physicians is that "we are proud of the care we deliver"			from an academic medical center. It is slow, there are long waits. There are layers of complexity that come from being an academic medical center.			

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS27	History: This process began in the early 1990s. We were desperate. There were huge waits and delays (av = 55 days) for appointments, patients were unhappy, staff were unhappy- practices seemed to be chaotic, schedules always filled - which meant there was a thriving urgent care center. Nurses and receptionists faced the choice of having to "lie, cheat, and steal" to get patients in or keep the doctors happy by keeping them out. They couldn't please	match rate, patient and staff satisfaction, costs,	No data	I would see my own patients. This means I experience a lot more flexibility and to some extent, more uncertainty. We assure	For the receptionists this is much easier. They don't have to argue with patients to find out if they are sick enough to be seen. They don't have to lie, cheat and steal anymore. We changed the supporting staff so that each doctor has a medical assistant.	No data	Since the early 90s
	both. We were losing membership but knew it cost more to bring in a new member than retain a member. Worse, the patients we were losing were young and healthy, and we were experiencing adverse retention. We knew we must rebuild the system and decided to start from scratch based on what we learned (from external and internal surveys and focus groups) about what patients want. We learned: 1. Patients want to choose their own primary care doctor 2. They want access to that doctor 3. They want to be treated with dignity and respect- which means not having to wait all day. Process: 1. We decided to rebuild the system based on what patients want. 2. We had 270,000 patients and 110 FTEs. We decided to deploy supply against patients' needs. To do this we divided the geographic area into 15 teams with 7 different sites. 3. Each team had 8 - 9 FTEs (doctors and NPs). 4. Patients were divided equitably among the sites 5. We were lucky in that this worked out and disparate sites had similar need. 6. We learned that the system had been built around what the docs wanted, not what was best for the patient. 7. We decided that if patients really want to see their (continued)	compliance with USPTF guidelines all mentioned during interview. We measure success from the patient perspective as the match rate-the linkage likelihoood which can be described as: How likely is a patient to see his/her own doctor vs teamate, an NP, or be diverted to an ER? When we began it was 47%. Now it is 75%. Given that the average doctor is only in the center 72% of the time, this is terrific. I like to debunk the myth that patients must choose between convenience and seeing their own doctor. Don't take demand and put it in the ether with left messages, waiting, etc. The patient is able to book in one call. If the waiting time for the 3rd available appointment is none, you can't beat that [this is not a goal to be improved on] This meets my requirement for patient delight. But remember, the only way to make this work is to see patients today or if you can wait tomorrow (w/in 48 hours).	that a patient can be seen that day if they can be seen by 5, other wise the next day. That is not a big problem because phone calls to be seen that day drop way off in the afternoon. Usually, patients call in the morning. There is some variation in how many patients will be seen in a given day -- could be 25, 28, 32 or 20. In the old system, variation in quality was caused when patients went elsewhere to be seen (the UCC) or gave up trying to be seen. Now the variation in quality is based on the doctors. The primary focus has to be: We are here for you. You are the one who pays us. We will not institutionalize dumping you. The team structure involves a doctor and nurse practitioner leader. We meet weekly with the team leaders in two groups (1/2 Monday and 1/2 Tuesday) and set parameters for the practices. But they can work out with their own teams how to organize themselves to meet the parameters which include: all today's work is done today. 2 Doctors should be available each night, time off policies that include that if there are 8 FTEs, there are never more than 3 gone at one time. If they are part-time, their match will be lower than others The whole team meets 1/month. I go as an observer.		

	success						
MS27 (Cont.)	doctors, a mini-team composed of a doctor and NP who worked together just doesn't work even though a) they prefer to work together b) the patients knows both, and the idea is that c) if one is not there the other covers for them. 8. Reason this doesn't work: MD has 2400 patients, NP has 1200 (1/2 MD) = 3600 patients; it is clear when you look at this that if one is gone, the other cannot possibly manage. This fulfilled the preference of patients to choose their MD, but did not meet their access criteria. Nor did the urgent center, which met their access criteria but not to see their doctor. Patients don't want to go to an urgent care clinic. When they are sick they want to see "my doctor." The reason they needed to go to the UCC was because of the backlog problem, which made it increasingly unlikely they would see their doctor. I call this the urgent care death spiral. The only way to solve this is to get rid of the backlog, which I call the "appointment debt." (doctors see it as "all those people who are demanding to come in).The mathematics of the appointment debt: We knew that the number of patients seen daily were about the same as those calling to be seen. But of those who called, some were seen the same day as an urgent visit. Most could wait and were given routine appointments. We adopted the principle: If you call today, we will see you. If your own doctor is here, she'll see you. Process: 1. We closed the urgent care clinics and distributed the urgent care doctors to the various offices. That decreased work for the doctors in those centers. 2. We decided it was a big mistake to divide people into the streams: well, acute, and chronic because: a) the patient doesn't see him/herself that way. They divide themselves by their doctor. b) Wellness, acute illness, and chronic care are dynamic-needs related to all 3 exist at various times and often simultaneously. c) It is a waste of time to try to get them into the right category, and we don't get it right anyway. d) It increases work in the system because all the UC clinic does is acute care and they have to make another appointment for chronic and wellness care. e) It turns nurses and appointment staff into antagonists of patients who have to fit into the correct category of urgent or not be allowed to come in. They become barrier enablers. These people have paid for services. It is the height of arrogance to make them meet a test to be allowed to come in. We had a steady state-constant input and output and with a "lake of waiting" in the middle.3. We were very lucky because Davis is a small community -- 7 docts, 16,000 patients. There is a homogeneity in panels at that number (not a lot of medical variation)4. We used a carrot and stick approach: The carrot: You get to take care of your own patients. The stick: You have to take care of your own patients. Rules to make it fair: a. If a doctor is missing, all others share equally in caring for his/her patients b. we have age/sex/acuity adjustment and assure ASAME equivalence among the panels. 5. We set up the panels by supply and demand equation: we had 270,000 patients/110 providers = Panel size. Note: we did not determine a "correct" panel size. The equation told us what we had to do. 6. People who partially adopt this system with "carve outs" still require that patients be divided into urgent vs routine visits. The message is, "if you think you are sick, prove it." Those who qualify are seen in the reserved acute visits. It turns out this doubles the wait time for the others. On the other hand, we don't care why you called, we will see you today. There are no categories of visits.7. It turns out this has decreased the number of patient visits by 8% Why? The answer is that if they see their own doctor, he/she has an incentive to do all that is needed because if they come back, I am the one they see!8. We changed the use of nurse practitioners. They are the 1st line of defense for absentee docs, and they see their own (smaller) panel of patients. Because we abolished the urgent care clinic but wanted patients to see their doctor, wanted to work out a way for this to work on evenings and weekends also. KP has gone to a hospitalist system, so the docs do not have to make hospital rounds. We instituted a plan where the team of doctors work 8 weekend days/month (Sat or Sunday 8:30-5:30) and we generally have 1 or 2 people on each weekend. We also have after hours appointment care in which the doctors work 1 evening per 8 (3 nights/month) so that at the worst, patients see someone on the team they are familiar with (all the names and pictures are posted in the centers). Satisfaction goes down when patients have to see a stranger. This replaced the old UC clinic in which the doctors were swamped and knew they wouldn't see the patient again. They dealt only with the acute problem and had no accountability for anything else. Now, if the patient is due for a mammogram, flu shot, or cholesterol check, whoever sees that patient is accountable to her doctor who will challenge him/her, often with a note. This is a system Q: Does this mean you no longer need to do separate physical exams with preventive screening? A: No, some people want them, we don't try to "educate" patients [dissuade them from wanting something. The education involves seeing the patient and explaining, "Next time when you have these symptoms...." Here is what you can do. "In this system, everyone wins - the doctor, the patient, and the organization. When you design a system in which the patient must come back for another visit, everyone loses [under capitation]. You must align all the incentives for this to work. Using this system all our preventive care numbers went up - pneumovax, pap smears, mammograms. We stopped blaming others or the patient (for going to the urgent care center) and accomplished the preventive care guidelines. Q: did you have to change the rest of the support systems to make open access work? A: Let me give you an example of what we did with the chart room. We asked the people who worked in the chart room, What would you have to do to make this work. It turned out that if a patient makes an appointment for 3 months later, the chart is pulled the same time as if the appointment is 3 hours later. The difference is that we have to go and look for fewer missing charts (which are always in the doctors' offices). All we did was to increase the frequency of delivery to 3 times/day.							

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS28	We have a long track record of working on improving care for people with ischemic heart disease. We have integrated the medical and surgical opinion. We have integrated a clinical database for decision support. From the identification of heart disease to the conclusion of treatment we have seamless care. In the late 80s there were some quality of care issues. The data gave us a high level look and our mortality was too high. We looked at the data and realized that our greatest opportunity was with low risk patients, not the high risk patients. We started with surgical care and developed critical paths and guidelines. We quickly saw the outcomes change. It took 2 1/2 years to develop our critical pathway. At the same time databases were becoming more powerful. We started using mathematical models to improve our decision making abilities. We use data as a way for us to communicate with each other. It has made our lives easier and our outcomes more predictable.	No data	Patients judge care by their own expectations. Most people haven't experienced heart surgery before. I don't think you would know that it's different.	Our system pretty much runs on its own now. It's remarkable from the clinician perspective because more work gets done here. People leave and say that other places are a joke compared to what we are doing here. We try to learn as much as we can from the people who leave.	No data	You have to continually collect data and "watch".	Many of the barriers now are bigger than they were back then. In terms of moving forward, it's harder when you are doing well. Our biggest barrier 10 years ago was ignorance. Now it is complacency. We've stayed within our benchmarks, but now we are being criticized for staying within our benchmarks. Data acquisition and display is the most tangible thing we've done. We have been supportive of the work. We've supported it by letting it work and not interfering with it.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS29	Our program started 27 years ago to address the needs of frail elderly living in single occupancy hotel rooms who couldn't remain in their housing. We provide community based long term care services. A series of small grants provided funding. 800 frail elderly are enrolled, with approximately 150 enrollees served at each location. We are licensed as an HMO. The approach is interdisciplinary care. The care team assesses needs, provides services, and assesses outcomes of care. The bulk of our work is maintaining quality of life. Our annual mortality rate is 12%, so end of life care is only a small part of what we do.	No data	We have a personal way of taking care of people. It's a lot about the relationships. We create and sustain caring relationships with vulnerable people. We help them through a difficult time in their life with dignity. A lot of our work is around controlling chronic illness, addressing the co-mordities, maintaining quality of life. We want the patient to maintain community residence for as long as possible. This is an HMO - we are the payor - if the patient goes to a nursing home we pay for that care an monitor the care. It makes sense for us, financially and philosophically, to maintain the community residence as long as possible. The best thing we can do is keep them out of the nursing home.	Our PCP works as part of an interdisciplinary team. We use our clinics for interventions that are often done in a hospital setting, for example IV hydration and wound care. We provide dental care in our clinics. We do a lot to coordinate the services so that it can be provided in the community.	It's hard work. In a fragmented system the most problematic issues will go away. Here we live with the most problematic issues, there is no where else to send them. That's the good news and the bad news. The good news is that when people come to us with complex problems we figure out how to address them. The bad news is that this is very challenging. We problem solve on a one to one basis. For example we might see someone who has a complex ethical issue. But each of these problems represent problems from the larger health care system. We work in small units - each team has a set of providers that care for their patients from the time they enroll until the die or leave. Death is the major reason for disenrollment, of course, relocation is the next. Our disenrollment rate is 1 1/2%. The team is the primary care provider (MDs and NPs) registered nurses, social workers, occupational therapists, recreational therapists, registered dieticians, and geriatric aides. We provide transportation services. The average length of stay in the program is 4 - 5 years. We only serve a nursing home certified level of frailty. This is not a senior center that serves meals. We provide care for frail elderly with complex medical problems. The state determines whether someone is eligible to enroll.	No data	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS30	Three current strategic goals are:1) Maximum use of IT. We are trying to create as paperless an office as possible. We have PC summaries of patient records (problems, meds, consult records) that can be called up on laptops for remote access. 2) Increasing individualized care Q: Can you tell me more about this? A. Well, our practice is getting bigger and bigger, and we didn't want people to come to an anonymous place where no one knew them. We felt that the usual patient satisfaction survey asked general questions of all the patients. We believed that patients should be asked questions based on their particular problem. For example, for diabetes, you don't want to know how satisfied they are with the phones, the waiting time, the convenience; you want to know if they understand their disease and what, in particular, patients with diabetes might want. We've developed 3-5 people who are specially trained to deliver diabetes care and can focus on improving care in that clinical area. We can't spare people for all important clinical areas, but we also have a focused approach to asthma [they had received an award for their asthma care]. Their admission rate for patients with asthma is only 57% of national average. Their ratio of use of preventive inhalers to bronchodilators is appropriate. Their goal is to have 100% of patients self-manage their care and intimately understand their disease. To achieve this, they identify patients who do not come to the clinic by identifying them when they request refills of medication. They are asked to attend the asthma clinic and get the refill at the clinic They are seen and get refill the same day if needed. They see nurses when they come. He rarely sees patients with asthma, hypertension, epilepsy, with lipid management because they are managed by the nurses (unless a problem arises). For diabetes, the patients are older, usually not working, and are willing (and enjoy) coming as a group. The other patients resist this group approach because they have strong preferences about when they want to be seen. Q: are the nurses employed by you or by the NHS? (continued)	We have a Practice Executive meeting each Friday. If this is a big goal (such as maximizing the use of IT) we also have an IT project team meet for several months. It includes receptionists, nurses, and others who are involved. Formerly we tracked morbidity and mortality in detail using 10-year's accumulated statistics. This was condition-specific -- neurological conditions, CCA, CHD (we have a high incidence). These data were collected automatically for the national database and allowed comparisons among practices. But this has been discontinued under the current govt. as it was viewed as too much of a market force in health care. It as a useful data mechanism rather than a market mechanism per se. Now, they are beginning a fundholder system that will manage the budget and purchase secondary care. It will provide referral data on each MD each month. It will provide data on prescribing and by referral type and costs. If they use less than the expected amount, the practice pockets the savings.	It begins when I register and come for care. We do a minimedical while waiting for patient records to come from London (records go to doctor when patient moves). The receptionist talks them through the systems of the office. The receptionists in his practice are trained to follow through specific areas of care such as screening Paps, childhood immunization, and antenatal care, so they have one person to contact. They have become expert in their areas. Second, we try to help the patients form a relationship with their nurse and doctor, but let them choose who it will be. Our satisfaction ratings indicate we are achieving this. We also take every complaint seriously. They are sent to the office manager and then to the Practice Executive meetings. The patient will be called and interviewed about their complaint and told they will receive a reply in so many days. They are also told, "These are your rights should we not satisfy you."	This is very difficult to answer since I helped build it up over the last 12 years. People tell me it is more structured in terms of the direction of travel. They know where they are going. They are struggling now with how to plan downtime. At one time they could meet informally over lunch or coffee, but now they try to have someone always available for patient care (even over lunch time), so it is much more difficult to find time. They will have an Executive Day away and will address this. Q: It sounds to me as though you take more of a population-based approach to your practice than is usual. Is this right? A: Well, we try, but are very busy. We see 18-20 patients in and surgery each clinic. This means we need to make maximum use of IT to manage the panel. For example I can identify my patients who are male, 40-50 years old, have a first degree family history of heart disease, smoke, and are overweight. Q: How do you use such computerized information in your practice? A: Well, an example is that one day I heard on the radio that there was a scare associated with a particular kind of contraceptive. When I got into the office, I had the office manager search for all patients who were using this contraceptive and within 1/2 hour drafted a script for the receptionists to use when patients or family called (we had many). We were also able to send letters to each patient. The product was subsequently withdrawn from the market. More usually, however, we can identify patients with diabetes or heart disease who should get flu vaccinations. When a patient is called up in the computer, the first screen provides alerts about outstanding preventive care needs. Although the screeen is provided by their vendor software, he actually developed such systems in 1983.	No data	There is a lot of anxiety at present about loss of autonomy and stifling practices. There is a great state of flux. Three months down the line, we will know more about the effect of these changes. I am concerned about changing health care systems by political decisionmaking.	No data

	success						
MS30 (cont.)	Do you have the freedom to make decisions about what they will do? A: The community nurses who go out to homes are employed by the Community Trust (which runs the hospitals). We employ our nurses (NPs). Their roles are based on our strategic goals. For example, when they examined their referrals to ENT, they found that a large number were for chronic otitis externa, and the referrals were for cleaning the ear. They trained an NP to do this, and they no longer have to refer patients. Every member of the staff has an annual performance review (not tied to salary) which reviews their skills in relation to the requirements of the practice. Staff members are given a copy of the appraisal. They train or send for training those whose skills in a particular area and needed, and they are interested in acquiring these skills. 3)Increasing panel size						
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS31	I am not sure it is different from others, but it is a lot different for us than the way it was (until last November). We recognized the need to respond to aggressive managed care penetration, increased volume, a shortage of ICU beds. We have an open ICU--any physician with admitting priv. can admit to the ICU. Depending on the specialty, patients commonly stay longer than we feel is appropriate or they may not appropriate	We have decreased LOS by 25%. We apply admission criteria. Before 60% of patients met our criteria; now it is over 90%.We also measure mechanical ventilator days and post it weekly. We measure mortality rates which are down 8.9% since Nov. We measure patient satisfaction. We measure total los (not just in ICU). We also have improved staff	Shorter los, fewer ventilator days,	No data	Q: could you tell me more about the	No data	Since Nov '98
	for the ICU at all. Although we met the letter of JCAHO standards, we felt that the management of these units was laissez-faire. The paper-only medical directors (all in private practice) could help some, but did not confront other MDs about inappropriate admissions or los. We had to do something. About that time the pulmonologists offered to work with the hospital to manage the ICUs, though the private MDs would still admit and manage their patients. The pulm. group were appropriate because in both units they are likely to be involved in almost all the patients' care. We consulted on ~30% of MICU and 30-50% of the SICU patients. With that as a base, we developed multidisciplinary rounds on everyone and added suggestions to the charts about care (for example, a GI patient might be receiving the same drug IV and enterally at the same time). We find one or more issues like this daily. The key to success is the support of senior management. This is critical -- VPs, CEO, and appropriate committee of Board because they are the ones who may need to make decisions about the number of beds, equipment, respond to calls by heavily admitting MDs to complain about pulm. group and ask ["Who gave them permission to tell me how to manage or to discharge my patients?] Having someone higher up on the ladder to OK it is critical.						

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS32	We manage acute, severe illness very well. We coordinate chronic care very well. We are better than the average bear at detecting psychological or psychiatric problems. We are very good a providing preventive care --- when people call in for prescription refills we review their charts for any preventive care that is needed.	Well, it's mostly intuitive. Other groups collect data on us, such as patient satisfaction --- HMO data shows that our satisfaction rate is 95%. We also know that our readmission rates are readmission rates are good and that our LOS is usually 1 standard deviation or so lower than other groups. When we do qualitative chart review we find that we don't have a lot of medication complications.	Objectively, it's hard to say. We hear from patients that we are more prone to listen. A lot of the "money makers" aren't there --- like stress scanners. I think our ethical standards are higher. We spend time with patients --- 15-20 minutes with the patient at each visit. We are very friendly to gays. A patient said that "you aren't slick" — there's nothing fancy	You would be overwhelmed with the long problem lists that our patients have. (laughingly) I don't know whether that is because our patients are sicker or because we keep better lists. We order fewer tests. We provide care more judiciously. Specialists have commented to patients that "you must really have a problem if they referred you."	Harried, cooperative, rewarding, not fun (at least not socially fun), respectful, shared. We are enmeshed with each other --- whether that's good or bad, I don't know. I leave sometimes feeling like I take care of the people I work with too. If you care a lot about your patients (more than just their medical problems, then you take more responsibility for them. That makes it very stressful. [There are racial issues, cattiness, social and class differences. Cultural differences. I really have to watch what I say.	No data	No data
	here. We don't market ourselves. Other physicians have said that we are naïve. We are functional, clean, not making a fashion statement. We provide care for a wide range of patients, economically. We ask questions during the intake questionnaire that are more comprehensive. We ask the AGS questions that are correlated to alcoholism. We ask questions that are correlated to depression. We always ask about advance directives. We are more comfortable than most in prescribing a wide range of psychiatric medications. Women are often surprised that it's "one stop shopping" in that they can get gyn care from us without being referred.						

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS33	Over the last year, we have embraced innovation and the need to made change in the m-s. We have about 5 active teams working on a huge range of projects. We use a rapid-cycle mode. It is important to understand that our system is not rich-- we are only at a break even point now.	No data	In the old system, few who called for an appointment were able to get in the same day. Now there is same day access. There is a new approach to evaluate the problem. If you were referred, there was difficulty getting you back to the PCP.	No data	Their attitude is much better. Everyone is on a team and is empowered to make decisions. Their attitude about the future is totally different. Some are having a hard time and do not want to be involved. Most are feeling good for the first time, but also MDs are anxious about measurement.	No data	BH almost a year
	Any team spends about 100 person hours on teamwork -- The team involves receptionists, nurse, doctors, transcriptionists. One team is the Access and Efficiency Team. As far as I know, this is the first behavioral health site doing open access psychiatry and psychotherapy. Some days it is platinum, some days it doesn't work that well. We've been doing this for about 9 months. We discovered that an open access system required major overhauls of many of our support systems, such as the Record Room (RR). Because of the need for confidentiality, it has its own records. When we went to open access, we found we couldn't get records to the therapists (they were used to having several days notice). We revamped the RR. First, I introduced them to J. Womack's Lean Thinking. I required even staff with only high-school degrees to read the book. One of the ideas is to reduce inventory so that you have just enough to be value added. With the old RR it took 2 weeks to pull, use, locate, retrieve, and file a chart. It took 1/2 FTE just to look for records (e.g., in offices). They now have this down to requiring only 5 hours of a staff members' time. In the old system they had some 700 pending transcriptions. Now they are dictated "just-in-time. " In the old system pulling a chart required 3 days notice, now they can get a chart pulled in 2 hours. One of our strategic goals is Open Access. .(continued)						

	success						
MS33 (cont.)	We began this in B.H. in September 1998 with 2 MDs doing some form of open access in 2 depts. We now have 14 depts and 50 (of 150) MDs implementing it. In BH 50% of the schedule is open. It used to be a 6-week wait for an appointment. We know that the capacity to handle MH disease is less than the demand for new patients, and we looked hard at what was causing this constant 6-week backlog. We learned that the treatment ladder was what caused this. The hierarchy for giving appointments was: 1. New health plan patients 2. Internal referrals 3. No one else (not a hp patient or internal referral) unless space available, which it almost never was. We began with a survey of patients and staff and learned that a majority of patients and clinicians felt that if the patient couldn't get a return appointment within 10 days, the patient couldn't take charge of their problem. Our appointment system was hampering our ability to provide good care. We learned that our appointment hierarchy meant that whenever there was an opening, a new patient was put in, but we couldn't service that new patient. That meant to me that [choosing your scheduling system meant] you could choose the level of quality you provide. We believe that should be something you are proud of and that [when constructing a scheduling system] we should err on the side of higher quality. The AHA! experience was that each individual in the practice sets up roadblocks to prevent getting new patients. When you set up an open access system, the [provider and system] rules do not conflict. Now the providers do not make the rules, the system does. The scheduling system takes into account the different paces of various providers, but they still have some rules about how many patients a given provider sees. Most importantly, it no longer pushes more patients into the system than they are able to take care of. The other teams are Medical Records Team Assessment Team. This team is designing a way to replace the old system of assessing patients. Before, after a 6 week wait, the patient would arrive and a nurse would take a hx. The patient was then taken to the doctor's office. The nurse repeated the hx, and the doctor then made the diagnosis and advised about therapy. It sometimes turns out they are not seeing the right person for their problem. It used to be 20% of the time; now is down to 5% of the time. Now when they call for an appt., there is an assessment within 24 hours. If depression (most frequent) or AODA (alcohol or other drug addiction), they can be referred to fill out an assessment at a web site: Howsyourhealth.com that provides a functional and emotional scoring to the doctor before they come for care. This can be accessed and completed 24 hours a day (semi-urgent) and can connect to the ER for urgent needs. For someone who is suicidal, they can always have someone seen the same day, if not, they can provide a choice to the patient. They are also using the Beck Depression Inventory for every patient. This is in line with Rockefeller's Problem Knowledge Coupler. We try to make sure that when they come in they see the right person at the right time. Our principle is that all of today's work is done today. All of this requires measurement to go along with change. They expect 80% of patients with higher than the Beck cutoff score to score in a certain range after psychotherapy. Partnering Team Partnering refers to relationships between the PC clinician and consultants. It has been common when the consultant sees a patient to hold onto the patient, whether by custom or because they don't feel comfortable sending the patient back because they don't think they will be followed closely enough. I looked at patients seen in BH from the beginning of 1997 to the end of 1998. Of those seen in the 1st 3 months, 70% were still being seen 15 months later. Only 15% turnover! Yet we know that depression is treatable and 75% should get an excellent response with short-term therapy. It also explained why so few new patients could get in. David Sobel (K-P) believes that 80% of primary care is psychosocial. I have everyone listen to his tape. They have set up a joint m-s with BH and primary care to allow primary care to work with BH in a new way. SOAP BH notes: They asked the primary care practitioners (PCPs) what they thought of the dictated notes they got from BH? They said it was boring because it is narrative--most is uninformative. Instead, the BHD has been "trained" and is now using the DAP and SOAP note format -- this template is far shorter and more useful. One time consultation: They have set up the notion of the "One-time consultation." (OTC) The patient, receptionist who schedules, BHD receptionist and providers are all reinforced that it will be a one-time consult and return patient to PCP. The PCP and receptionists are given a script and definition: "I am going to send you for a OTC to have them look over what I am doing. BHD has slots on their daily schedule with this label. PC Flags: In terms of following patients: he uses SYNTHESIS. [parenthetical: All dictated notes are transcribed the same day. Other information is put in digital form: hospital discharge data, EKGs, lab. It is not an EMR, but you can do a text search of all dictated notes.] When a specialist sees one of my patients he can send someone back to me and put a flag on the patient's record to, for example, remind me to do a repeat lipid profile in two months. The flag goes to the PCP. If it is not done, w/in month, the PCP gets a call. If not done, the specialist can call the patient in. Psych therapist in PC. They have assigned a therapist to the primary care sites. They do several hours of psychotherapy each day, do spot consults, teach skills in handling particular problems, patient coping skills Hot Line. Pilot project is a hot line for PC so that if PCP picks up the phone he/she can talk to someone immediately about a patient. These are all being implemented using rapid cycle change techniques. Q: How much does this cost? A: In a given week we are spending about 100 person-hours on teams. People are being paid to spend their time doing this [not just their lunch hour]. Someone said, "You have to assume you'll be around here 5 years from now. Do you want to be doing things the same way?" Most of us don't. This requires a new attitude that results in understanding that industries must invest in change in these micro-systems. You have to tolerate pulling people off-line to work. This is a radically new way of thinking in medicine which traditionally views any sort of meeting as a waste of time. Traditionally the view is that the only useful time is spent seeing patients. I think that unless you spend time considering how to deliver care better, much of that time seeing patients is wasted. Design Team. Their goal is that 30% of visits by the end of the year will be group visits. To meet this goal, they will need to develop 25 teams each week with 9 patients/team. This should greatly increase capacity. Someone must sell this to the providers. The design team includes the chair, nursing director, V.P. of the org, a support person (receptionist/data collector) and me. I sit in. We meet each week for 1 hour and focus on where we are going. We make general plans and expectations, but identify specific goals given that we know certain things: our capacity is less than demand, and we want to increase capacity the literature tells us that you have better care in group therapy, but we have few groups							

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS34	First, let me describe our medical model. We are a FQHC - a federally qualified health center. 86% of our patients are below the federal poverty level. 75% are people of color. It is an interesting, challenging patient population. We have a high incidence of disease. We are organized in teams. We reorganized into teams 2 years ago. An MD, RN, and Medical Assistant form a team. We have 6 or 7 teams, each team sees a panel of 1200 patients. Each team sees patients for a 4 1/2 hour block of time per day. The morning starts with a 30 minute meeting to review appointments that are scheduled for the day. Then the compressed clinic day. Then time for charting each afternoon. We have practice management time that is scheduled every week. Patients are not scheduled for that time. That time is for reviewing data, collecting data. A lot of our data comes from the practice management team. We look at diabetic panels twice a year. We can conduct group visits; e.g., 5 or 10 patients meet each month for diabetes support. It's funny but you can see almost the same number of patients during a compressed clinical day as during a full day. We try to see 4 patients per hour. The teams are staggered throughout the day so that we can be open from 8 a.m. to 8 p.m. The number of teams is scheduled to match times when patient demand is the greatest. We have 3 exam rooms and have eliminated time in the waiting room. It's called express check-in. We verify insurance and demographic information the day before the appointment.	We have pediatric measures --- immunization rates, eps/dt, newborn screening, anemia screening, dental exams. Adult measures --- tetanus, cancer screening. Then we focus on some diseases - for example HbA1c and retinal exams for diabetes	I think you would see the difference. If you sign up as a new enrollee, we do a welcome call and establish a relationship over the phone. There is no wait in the waiting room. You'll get phone calls from providers. You'll have a different level of interaction with nurses and medical assistants. During the welcome call we encourage people to schedule an appointment, but we leave it up to the patient to do that. 75% of the time patients will get to see their own team.	No data	There has been a radical change since we introduced teams. You can see it even where they hang out. Before the docs were together, the nurses together, etc. But now the team hangs out with the team. At the morning meetings, you may see the medical assistants providing the leadership. The medical director calls it the "fast break" — 3 people on the floor and anybody can finish the play.	No data	We started this 2 years ago, mostly because there was dissatisfaction by the providers that they couldn't manage patients. Also, we have had a move to Medicaid managed care. There are incentives to manage. patients assertively --- the economics that had to do with per member per month dollars.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS35	We have had an unwavering focus on preventive health care. We are a 2-site community health clinic. There is a PCP assigned to each patient. The patient stays within the team. We provide health care to indigent people. We have a large enhanced prenatal program. We have case managers, we provide community (continued)	The TQM Committee follows indicators. There are different indicators for different life cycles, e.g., immunization rates, health risk factors for teens, indicators for high risk populations. More globally, we define success in what we are doing in that we [the education and prevention department] are still here.	We do lots of patient satisfaction surveys - from TQM. We get overwhelmingly high marks for our services. Patients are respected, well treated, connected with a medical provider. We have a bilingual and bicultural staff. We work with patients around finances to help them meet financial responsibilities but we don't hassle them about it. Patients complain about waiting. There seems to be a perception that they have to wait because they are poor. Or that the quality isn't as good because they are poor.	We've grown from 28 employees 7 years ago to almost 100 now. Before we could ask everyone what they thought about changes we wanted to make - we didn't have to write anything down	There is a sincere commitment to make things better. We did a lot of work around waiting times. Patients see that we take our problems seriously and work on them. We have a commitment to work toward excellent service.	No data	No data

	success						
MS35 (cont.)	services. We have defined health care as fairly holistic in terms of looking at the patient's situation. We help them stabilize and better take care of themselves. We are in a capitated arrangement with Colorado Medicaid. We were managing care long before managed care came along. We try to do as much as we can within the clinic. When a patient needs to go outside the clinic we can get services at a discount through our relationships with the local hospitals. Our hospital accepts our discount. We screen the patients and set up the discount and the hospital accepts it. We use case managers. E.g., a woman needed a liver transplant. The case manager spent 6 months helping family get insurance, set up fund raising, and got the woman a new liver. We have people who will advocate for the patient and help them get what they need.						
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS36	We are beginning to identify populations well. Though this an on-going struggle, we now know which women are due for care and who to remind. We have a large eligible population and we pro-actively try to provide them with preventive care. In other settings, a woman has to be referred. When women come to our microsystem, it is a screening center that also has a radiology center, as well as all the necessary elements for coordination of care and follow-up of care.	We have a Clinical Roadmap team for breast cancer screening. The team has actually formulated a criteria for success. It is made up of a number of process and outcome measures. They are 1) A HEDIS measurement - the proportion of women in our population who have received care in the last 2 years. 2) The number of women who came to the screening program when invited 3) The number of women in the program who develop a late stage disease (tumor, i.e.). 4) a survey response during the time of enrollment in the program. We believe that these criteria give us a specific as well as broad outlook of success.	We don't believe that other breast cancer screening programs or preventive care places have any clue about who they are taking care of. They start with women once they come in to have a first visit. We start with women way before the first visit, right at enrollment in the plan	Yes, clinicians would experience it differently. Physicians receive quarterly reports for all of their patients. They know who is scheduled to receive a screening and who is also overdue. We have an Intranet that goes throughout the system, and on this Intranet physicians can see the latest guidelines and recommendations about screening for their patients and find out the exact dates in each of their patients' care process. Unfortunately, this can theoretically allow clinicians to drop their guard. This is the risk of the system. PCP's start to think that the system is taking care of the patients, and that they can lay back on their efforts. We believe that PCP's have to be continuously encouraged and reminded to follow-up with their patients and not give up their important role in the care process. We have built a safe-guard mechanism in that now nurses are taking over the follow-up care of screened women. We have also learned how to identify women and track them throughout the care process. Patients experience care entirely differently. Once patients enroll, we send them a welcome letter along with information, in the form of pamphlets, on breast cancer and a questionnaire in regards to screening. Women don't even have to take the first step in our microsystem. All they have to do is fill out the questionnaire sent to them. Our data tells us that in a two year period, 85-87% of women enrolled fill out the questionnaire and get the care process rolling. It is closer to 65% after the first year of enrollment. However, by sending the educational material along with the survey twice and then putting a reminder note in the chart for primary care physicians to discuss this with their patients, we have reached the 85% mark by the end of year 2. We work very hard with the medical records people to get notes regarding breast cancer screening the charts. We are a little worried that lately, the percentage may be decreasing slightly. The reason for this is not entirely clear, however we feel that it could be because the denominator is changing. We are receiving more non-network women. Once women have sent in the questionnaire, we send them recommendations when they are due for a screening. Close to 65% of women receive screening when they are recommended to do so. If they do not schedule an appointment in 2 months after a recommendation has been sent, then we send them a "true" reminder. This is a letter which emphasizes to patients that they should take advantage of this opportunity. Women can call in and schedule a screening appointment on the same call. We just submitted a paper to the Journal of the National Cancer Institute discussing the differences between telephone reminders and motivational telephone reminders. We are now implementing the former because we have seen that while spending time with patients on the phone, you are doing enough already, thus making motivational reminders redundant, time-consuming, and potentially paternalistic.	The budgeting is a big problem. It is not cross-system. It happens departmentally, and because our microsystem is a multidisciplinary one, we are dependent on survival from many different departments like internal medicine and radiology, both who may have conflicting departmental priorities	There have been retreats focusing on these issues. Good question. We try to do this through the course of our activities. But we don't do it conscientiously. It's kind of on the job training.	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS37	We deliver primary care through a team of 4 physicians, 2 LPN's, 1 RN, a MA. We deliver care to about 6,000 people. The team operates within a clinic of about 20 physicians. I don't know if we do anything very well, but maybe well. It is possible to exist as a primary care practice and not do anything. However, there are some things we are doing. I think we identify health related issues very well. We are skillful in managing for example, coumadin patients, who can have bad complications if their health is not managed. We have created a database using Excel that allows us tell who is on coumadin, notify the staff when a prothrombin measurement is not done, when a patient started on coumadin, etc. The system also looks at compliance of treatment. We try training staffs that are team-oriented and believe in systems oriented change.	For example, in the coumadin example, we make sure that patients have prothrombin tests within 5 weeks and we use evidence-based criteria to manage patient care. We try to have team norms and goals. We have had mixed success with this. The problem has been staff stability. There has been lots of turnover. This has been a constant distraction. The larger institution has also not helped; they give a lot of "rhetoric" of the importance of teams, but often times it seems that convenience and other things come first. We evaluate how physicians are buying into quality improvement by noting their attendance at staff meetings and also noting the quality of meetings. We have team meetings twice a month. We don't really collect much data.	We send out letters to patients with questions. However, the results don't show much of a positive difference from the standard of care. I think that the amount of turnover hurts patient satisfaction. But it would be much worse if there were no team approach here.	Physicians would find themselves doing more meeting, talking, and planning rather than whining.	Communication is the key here. We try to make sure that there is an open environment and that people feel part of the team.	No data	It has been like this for a few years.
	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS38	Our hospice is composed of 3 outpatient (home-based) teams (corresponding to 3 geographic areas of the state) and a 10-bed inpatient unit. Each team has a patient care coordinator and medical director assigned to it. Our micro-system has had a hard time the last 2 years -- we were vertically integrated	I hope we can have much more penetration. We now have about 43% of dying patients on chemotherapy compared to Hospice of Michigan or Blue Grass in Oregon which have percentages in the high 70s. Success is understanding what the patient wants and wants to avoid and being able to give care to a patient to accomplish these goals--symptom control, emotional comfort, etc. A real home run is when the family is fragmented and pulling apart and we can help the family heal, say goodbye and achieve closure. Another mark of success is that family members feel comfortable in caring for the patient and participating to their desired level.	No data	We give nurses a lot of autonomy in the hospice program. They have standing orders and can give everything short of opiates without consulting us. For example, there are standing orders for bowel management, treating terminal agitation, anxiety. We are only called if the patient needs opiates or there is some phenomenal problem they can't solve. They are so good at explaining to patients what to expect and talking with a very diverse set of patients. Their education ranges from PhDs to those who didn't go beyond the 5th grade. The nurses are the first line of problem management. I spend about 2 1/2 hours per week on patient management and meet with 1/2 the team each week to review problems. Patients and families have the doctor's pager #, but they always go to the nurse first.	Well, we've really been affected by the chaos of combining then dissolving the relationship with the VNA. We've had a dramatic drop in LOS. This means there is a huge turnover, and we are always going full blast getting patients into the program.The staff here love the autonomy. There is a lot of paperwork that is done because it benefits the patient. They like working in a system where the patient and family come first. Staff have often come from acute care settings that they don't like.	No data	No data

	success						
MS38	and combined with a VNA as Diversified Services. This didn't work and DS is now dissolved. We will have our own CEO and Board. Until now, we've barely been holding on. We're battle fatigued, and there is not yet clear leadership. Until we have the CEO on board, no one can say "We can take this risk." Without a CEO we can't get buy in for quality improvement or a clear sense of direction. How we are different: Our hospice environment is designed to promote understanding the needs and expectations of patients who enter our program. We set up a plan of care and focus on the care plan and patient expectations--we explain what we do and focus the experience on their needs. We work hard at making sure that the family feels capable of taking care of the patient. We allocate time for care management, including spending 2-3 hours with a dying patient and the family. This is in contrast to the VNA which had a very different management culture which as focused on number of visits and productivity.						
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS39	We are successful at coordinated team-oriented care for adults with severe mental illness. Rehabilitation and care are considered one service. It is in people's subjective experience --- there are no good measures. The easiest way to get at that is the level of hopefulness, decreased involuntary care (hospitalizations), decreased time in hospital, working in competitive job, decrease in substance abuse, increased participation in own care.	No data	It would be experienced as different in a couple of ways. You would get more information about the services coming in so that you can make more active choices. You would meet the whole team, instead of one person. You would have a say in how the service is put together. We have a service plan that is broken out into areas. Find and maintain housing, develop and maintain work, maximize a sense of well-being. Under each of these areas there are specific goals. This is very unusual to have the areas in front of you. Mental health services tend to be baffling --- people don't know what to expect. Our goal is to give the patient a sense of control.	Laying out the goals helps the clinician too. They often don't know what is expected in a community mental health center. A lot of mental health is just focusing on symptom management, but that doesn't leave much room for a life. Our staff meetings are set up to provide direction and support of care. We have a team approach to care.	No data	No data	10 years ago we had a case management service in psychiatric care and a day treatment program. Then we closed the day treatment program and started focusing on occupational support. With that shift we started working in teams.
	success	***measures***	***patient***	***clinician***	***culture***	***professional***	***how long***
MS40	We have been successful at everything, we've been really lucky. One of the barriers to improvement is the systems that are in place. I've been in systems like that for most of my career. It has to be easy for the doc and easy for the patient. You can provide good care and collect data without interfering with patient care. Traditional medicine collects a lot of information--which may or may not help the patient or the physician. We have been able to collect a lot of information because it hasn't interfered with practice. For example, we have a lot of administrative and billing data. Collecting it hasn't been a problem. In this micro-system, I can not ask the physicians or the patients to do too much. It has to provide value. That's been my sales pitch. What I'm offering is a new tool to understand how my patients are doing and how I'm doing --- independent of what I think. There hasn't been an independent unbiased observer. The patient should be the one deciding whether care is good or bad. We use a one paged computerized report. Every clinic has an MD, physical therapist, social worker, and chiropractor. We can query a database at any time for individual patients, but also for all patients we serve. We are also hooked up to 26 other centers. We can look at data by the point of service or longitudinally. We measure functional status, health status, work measures, treatment, who you have seen (type of provider), age, sex, height, weight, SF36, satisfaction, clinical comorbidities, smoking, cost of lost work over time.	No data	You would experience it differently. You would be given a touchpad computer when you come in for your visit for filling out all the intake information. Your picture would be taken digitally. All this would happen, and the doc would see it, before you see the doc. The doc would explain your responses --- e.g., the SF 36 score.	Physicians want to spend more time here — so they are. They love the model because everything you need to offer the patient is here in one place.	No data	No data	I didn't come here to do this. I wanted to work somewhere else, but I was asked to set up a spine center. We set it up on our own --- nobody helped us. The idea of bringing all the disciplines together was new for this place. I started a model like this before --- but here we have the data and the multi-disciplinary teams. We've quadrupled the volumes that we projected. We've overcome the barriers as they've come along. I've believed in it from the beginning. You can make a profit by doing the right thing. My vision was that we should be doing things differently. I don't think this is being done anywhere else

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS41	Population medicine is what we do well. Our notion from the beginning was to redesign care for diabetes. This was from the larger system. The problems are this is a population with a great deal of needs. Traditional healthcare services are not well equipped to meet these needs. We often felt that we were trying to improve chronic care, not just diabetes. We did focus groups of clinicians and educators. We came up with the key design features. Number 1 was a team approach. We need to support the primary care provider. We use the team. Some people talk about "carve out" we talk about "carve in". It is one stop shopping. As many aspects as possible are there for the PCP. Our other design features were primary care based use of diabetes case managers, behavioral aspects, ongoing staff training, and comprehensive information technology (that's the one we've never managed to get).The team is the patient, primary care provider, RN, clinical diabetes educator, and LPN.	The population measures are a global view of our success. We are not just controlling diabetes, but controlling the risk of diabetes. We look at smoking cessation, lipids management, % patients taking aspirin, HbA1c, % screened for retinal, foot, kidney problems. We look at the provider satisfaction with the program --- how is this working?	You would see your pcp, who would want you to see the diabetes care team. Patients can often see the team within a day or so, often immediately.	Nurses weren't comfortable working at the limits of their licensure. We had to address this in training. We had the endocrinologist work through case studies. In "C" they are disassembling the group --- they have found that it is hard to take the teams apart because of the way we put them together. For example, the LPNs are dependent on the RNs in the team. LPNs are taking retinal photos and doing foot exams. RNs who haven't been part of the team aren't comfortable supervising that.	The cohesiveness of the team is so important. The RN and LPN really work together as if they were 3 people. The RN doesn't waste time calling people on the phone - that's not part of my role. The clerical person is also important in updating the registry. The incentives are different. What do we keep? What do we do less expensively than the PCP? We are interested in talking with any one else who has dealt with this before. KP is leaving because they weren't making money, but the reason they weren't making money is because they didn't know how to process claims. We have the 3rd highest prevalence of diabetes of all Kaiser regions. When the decision was made that the larger system was leaving NC there was an article in the local newspaper where a woman said, "I don't know what I'm going to do --- I'm getting the best diabetes care I've ever had."	No data	The design team started in 1995. We implemented the program in 1996. The design team thought it was important to integrate the psycho-social issues, we wanted to integrate behavioral issues. The diabetes prevention care program started in "A", then in "B", and then in "C". The process variables we were monitoring at 6 months implementation were higher in "C". I think this is because we were better at teaching the program and "C" had the role models of "A" and "B". Now we are having the context yanked out from beneath us [the larger system is leaving the area]. It has been the integration with a health plan that has allowed us to create a diabetes program. Now we are going to be a multi-specialty medical group. We are writing the new business plan now.

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS42	I believe that it is very important to set the context of the microsystem. Thus, let us first talk about the overall system in which the microsystem is embedded. Quality improvement projects have moved from just a conceptual and theoretical phase to one that is mainstream of the organization's beliefs. We have a number of interdisciplinary bodies which have come up with highly effective ways of delivering and organizing care using business systems research. We have laid out what is happening in the community-based clinical programs as well as the campus-based clinical programs. For example, community-based care involves health promotion/education, primary and secondary prevention, cost-effectiveness of various diagnostic procedures, and effective ambulatory treatment. We have 38 primary care clinics and 4 multispecialty clinics focusing on adult medicine, pediatrics, and oncology. Within each clinical program, there exists guidance councils, developmental teams, and work groups. The campus based system involves diagnostic and therapeutic equipment and processes. We have guidelines and indications for doing therapeutic procedures. We look at both case efficiency and intensity of procedures. We also look at preventable complications and post-discharge care. The campus based clinical programs are split into regular and ancillary programs. Women's and Newborn's would be an example of a regular program.	We have a series of outcomes measures. We identify key work processes and develop key indicators which then feed back to clinicians. We try to eliminate variation between facilities in the health system and within facilities. We have three main categories of outcomes that we measure. 1) Clinical outcomes. We measure clinical outcomes by looking at compliance to indications/guidelines as well as care processes. An example of indicators/guidelines is performing hysterectomies. Physicians are provided with sets of guidelines and are given feedback based on whether they are adhering them. An example of care processes might be rate of c-sections. As you know, c-sections are common when there is a failure to go into labor. We have established many measures and steps which have been used to generate flow sheets for physicians. This has helped in measuring variation and in providing feedback to physicians. Clinical outcomes are also measured by complications, such as birth trauma. 2) Financial outcomes. We look at this area in two ways, the first using the health plan perspective. We look at pmpm payments from members and use it to budget our microsystem resources. We also use what is called as an "episode treatment group" for a particular disease. Physicians can use this information to compare themselves to their peers. The other way we look at financial outcomes is by looking at cases in the inpatient "world." We look at staffing mix, supply costs, costs of daily care, etc. We measure case costs by multiplying efficiency and intensity. For example for hysterectomies, we look at average length of stay, costs of procedure, total costs to system, etc. 3) Patient satisfaction. We look at % excellence. 100% patient at discharge evaluate physician and staff services. We have a variety of team goals. Last year, we had 4 physician outliers when it came to c-section rates. This year, there are no outliers. This can be attributed to our c-section guidelines. We have been able to establish an electronic medical record for the labor delivery process which allows the staff to be aware of the progress of labor. Regarding c-section in cases of dystocia, we have a complications database that doctors can go over on the system Intranet. We have increased compliance to best practice guidelines to 85-90%. No protocol will be perfectly 100% followed; there are always unique situations when the guideline shouldn't be used.. We believe that compliance yields higher quality, and higher quality of are costs less. Satisfaction runs separately now. That is, you might have low cost care which delivers good outcomes but has a terrible patient satisfaction mark. Monthly, doctors are updated on patient satisfaction survey results.	A patient would experience care differently only to the extent that the probability for a better outcome is higher. No complications would also be something that a patient should see. We have really two customers, the payer of the health bill and the consumer of care. For both, low costs and high quality is the issue.	We emphasize that doctors need to share information with one another, care with dignity, sit at the bedside of their patients, involve the patient in the decision-making process, and be active in patient education. There are three tasks that physicians in the microsystem are involved in, measurement, education, and implementation. I talked about measurement before. Our education staff consists of writers and graphic artists who work with physicians in constructing provider education tools. Manuals and tapes go out to physicians so that they can practice patient education. Doctors are also asked to be familiar with and utilize implementation tools. We can't ask doctors to measure things if it's going to slow them down or if we don't provide good tools. This is why we are into automating things and a simple "click and print" method, so that it is easy for the physician to implement quality improvement tasks.	It is more satisfying. There is a scientific basis for everything I am doing. Our main focus is on clinical outcomes. Financial outcomes are more of a secondary issue that we don't center ourselves around. We make sure that those people who are involved in developing best practices are also the ones who will lead its implementation in the various regions. Otherwise, you get what is known as the "town-gown" syndrome. By doing it the way we do it, physicians have a sense of ownership over guidelines and best practices.	No data	No data

	success	*measures*	*patient*	*clinician*	*culture*	*professional*	*how long*
MS43	The hospital was founded in 1945. We track our endpoints extensively and have been able to do 3-yr follow-up of 75-85% of patients. Some come back for follow up. Our patients come from all over the world. We do a follow-up exam. We used to ask them to go to their family doctor and have them send us a report but don't do this any more. We also have an annual banquet in January and invite all former patients to come. 80% of those whose surgery was in the last 2 years come to this banquet. We book a large hotel, and they are our guests. It is social but also an opportunity to do a follow-up check. We have 15 doctors doing exams. 700-800 people generally come. There is a lot of camaraderie among patients. *Q: What led you to have these banquets? A: The patients organized it! It is still true that a patient is a co-chair of the event.	Complications; 53 yr failure rate is;< 1%; 10 year "short-term" failure rate is < 0.5%; First is the recurrence rate (failure rate) which is a gold standard in the field. We have a 53 yr failure rate of less than 1%, short term (10 year) failure rate of <.5%. We also look at the time to return to work, how many have chronic pain after 3 months, and the short-term infection rate (0.5 % - 0.7%). This is very low. We do life time follow up through mail surveys. We also look at co-morbidity — angina, acute chest problems. We have had only 1 death from heart attack after 7400-7500 patients.	No data	The main thing is that we use only one technique for repair. This is in comparison to a full spectrum of work by a general surgeon. Many of our surgeons train here, and over 50% have been here for 10 years or more. They are proud of the work done here. Most stay more than five years, some 22, 25, 30 years. They also like the structured practice. There is no need to develop referral sources. It has a very fine reputation. They know the hours they will work, and we have coverage for emergencies. It is a group practice with each taking pride in their work but knowing they can trust their colleagues. You must realize that everyone uses the same technique for inguinal hernia repair. Although there are small, minor differences, every surgeon who joins the staff, regardless of seniority, starts by assisting, then being assisted in 150 cases before being left on his own. If we are not completely confident he has mastered the technique, supervision is extended another 100 cases. The secret of success is in everyone using the same technique. Is this technique widely used outside your hospital? Yes, until about 7 years ago when the new laparoscopic methods using mesh were developed. This is being pushed by the industry and patients. Our technique is more difficult because it is anatomic. It still remains if not the best, one of the one or two best techniques	No data	No data	Since founding in 1945

Health Care Micro-systems Interview Responses

II. Patient Experience, part 1

New Patient = *If you think about a new patient, could you walk me through the experience starting when they first become a patient?*
Scheduling = *Have you put in place any special patient scheduling?*
Risk Assessment = *How do you assess patient's needs and health risks? Are there any particular surveys or other ways you have developed to do this?*
Pt. Information = *How do patients get information about their health condition?*

	New patient	scheduling	risk assessment	pt information
MS01	Our day is broken into 3 sessions with 2 gaps. The gaps allow for communication time. We have built into the day time to communicate, present cases and learn from each other. There are 3 times to plan and review charts before each session. This is what the day looks like: Pre Huddle: 8 - 8:30 a.m. Gap Session 1: 8:30 a.m. - 12:30 p.m. (5 MDs) Gap Session 2: 1:45 - 5:30 p.m. (5 MDs) Gap Session 3: 6:45 p.m. - 10:30 p.m. (2 MDs) All 9 MDs are in the same room during the gaps - they don't have individual offices to retreat to. This really helps facilitate communication.	We can usually see patients within 1 hour. We set aside time in every MD's schedule for every session for acute visits.	When the patient first comes in a complete medical history is done. We have not expanded beyond that. We want to do some others, but so far we haven't.	One-on-one interaction for the most part. We also have a library of educational materials. We want to move toward a computer generated piece.
	New patient	scheduling	risk assessment	pt information
MS02	No data	Standardized triage by patient reps. I am trying to figure out how to adapt open access to accomplish what we need to do. About 50% of our schedule is "at risk" [open at the beginning of the day]. We're about at Stage 1 in this. If a patient needs to be seen that day, they are seen. I handle calls during the day when I can (during gaps) or after seeing patients (40 min - 1 hr). I am planning to set up a web site which would allow patients to access their record (read only) The medical logic in Medivation provides much of what we need in an EMR	Hx taking using the KC for acute care. More comprehensive database for patient record and generating a problem list.	*Q: Do your patients communicate with you by e-mail? A: We participated in a large survey done by a medical sociologist of 600 patients. More than 60% had computers at home. The elderly are most rapidly increasing users. I consider responding to e-mail part of my call-time.
	New patient	scheduling	risk assessment	pt information
MS03	Most of our patients come through the ER and are admitted to the floor if they meet the criteria of being over 75 and having an acute problem. They are seen by many people such as interns, nurses, and attendings. Functional as well as nutritional issues are examined.	No data	This is done all throughout the process.	Some patients receive written guidelines based on their condition. Everyone receives advance directives.

	New patient	scheduling	risk assessment	pt information
MS04	No data	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS05	[She made it clear that she doesn't know much about the patient experience --- that is not her focus.] The feedback on patient satisfaction surveys is always good. Patients have clear expectations.	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS06	No data	With open access if you are only taking care of your own patients you will have to see 2 - 3 more patients per day. Physicians agreed to try open access and we have been doing it since October. It's only a problem during really high volumes --- for example flu season in March. The financial problems of the system were the real facilitators for going to open access --- there was a threat to lay off three physicians. I said, look, we have to cut out urgent care visits and see them everyday. Working down the backlog was a bigger barrier than the idea of open access. We gave them a plan, gave them feedback about how they were doing. E.g., you have 90 physicals to catch up on, now you are down to 30, you are doing great. By October there was no backlog.	We did a report of who is high risk in the population. Locally we have looked at highest diagnoses --- which is why we are working on asthma and diabetes. We spent a lot of money to develop the system, but we didn't have the money to add the case managers that were needed. We just don't have the manpower to deal with this. I think we could get the same information by asking physicians "who are your sickest patients?"	Besides having typical education things, we have a clinical nurse on each team who is the contact person for education --- cholesterol, diabetes, asthma, etc. She will call the patient to follow up with education. It was a big step getting the clinical nurse to be the point person. There is some variation from team to team but we have all pretty much agreed to what the education will be. We aren't quite there yet with the diabetes.

	New patient	scheduling	risk assessment	pt information
MS07	Upon entering, a patient is worked up by the house staff and the nurses take care of the administrative work. A "pre-printed order sheet" is drafted which has on it different protocols. Some protocols, such as the ventilator protocols, are computerized. Others are paper protocols. For example, my secretary has a book with insulin protocols. Doctors take the book to the ICU bedside and follow the directions, or at least refer to them. We have seen that tables are better than flow charts. The protocols remind the staff of such things as prophylaxis of deep venous thrombosis or stress ulcers, etc. We now have established specific pathways for certain types of patients. We now are more cognizant of the fact that what we do in the ICU affects patient rehabilitation. We are trying to have a more systems based outlook across the continuum of care. We are trying to become more "preventitive."	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS08	When you come into an exam room care focuses on why you are there but it doesn't miss the chance to take care of your diabetes too. There are 7000 patients with diabetes. The care team is the pcp, the diabetes resource nurse, the LPN, the endocrinologist, and the nutritionist. Diabetes care is integrated into primary care. Patients are included in developing care plans at 2 levels - at the medical group level, the steering group includes patients. At the care level it is a conversation between the provider and patient and family. We try to help the patient understand what the best practice is for diabetes care. 99.9% of the patients are involved in self-care. We aim efforts at motivating them based on their knowledge. We haven't completely made the leap of putting them in the drivers seat. Setting treatment goals with the patient can be difficult - you have to figure out what makes sense for the patient. The medical goals aren't necessarily the patient's first goal. If making cookies with a grandchild is their goal, we have to figure out a way for that to happen.	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS09	(this is for a newly pregnant woman) Information is provided over the phone. We have a pre-conception counseling protocol. We mail out information about prenatal care and registration within 48 hours of the first call. The patient can choose a provider. Most new patients can be seen within 1 - 2 days. Pts arrive at the office. There's some business office stuff --- insurance, etc. A nursing assistant goes over a health risk survey and takes a history. The MD reviews the forms and the patient visit is for about an hour and a half for a new patient. Then there is some lab work. All this happens in our office. Another visit is scheduled for 4 weeks later. We emphasize a number for the patient to call with questions.	We have quick access, but not open access. We take care of anyone who just walks in, but we don't advertise that. We try to triage based on urgency. Next available appointment slots may be a month out. The extenders have more open slots. The older, establishedMDs have a longer wait time for next available appointment. We maintain 10% open slots for same day appointments. Once a week or so a patient will triage themselves to an urgent care center or to an ER. We don't know how to stop this. I found out this week that a woman I delivered a few weeks ago went to the ER with pain. The ER MD called me 6 hours later --- they had done all these tests and had found nothing wrong, of course. She could have just showed up here. The good thing about HMOs and managed care is that it does help stop this.	We use standard ACOG survey or another survey for non-pregnant women. We update these yearly.	A lot of in-office education, give out "What to expect when you are expecting", we have a set of reprinted sheets. We started giving Lamaze classes 30 years ago. Not many people were doing that then. We still provide them in our office. The nursing staff does them. The hospital offers classes too, but we just kept offering ours in our office. It helps to educate the patient about how we do things. At night the phone rings directly to the MD on call instead of a nurse answering service.

	New patient	scheduling	risk assessment	pt information
MS10	No data	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS11	You would be referred by your physician. We would make a follow-up appointment --- during the visit there would be an electronic medical assessment that would get an in-depth picture of your diabetes and lifestyle. We would input lab data, do a complete foot exam, take blood pressure and assess your knowledge base of diabetes. You can't assume they know much about diabetes --- no matter how long they have had the disease. It is amazing the number of adults with type 1 diabetes who still have a child's understanding of diabetes. We assess whether they are still in denial ---- if so, we might make a referral to the psychologist. Really, it all depends on what the patient needs. We may put them into a group class or provide one on one education. We assess what pieces are missing and then figure out the best way to get them. We give feedback to the physician. Then we follow-up. Who does what at what time is very fluid. There is some overlap. We consider ourselves, together, the consultant to the patient's physician.	No data	We don't have a way to identify patients who have diabetes or who are high risk. Patients are referred to us. There are 350,000 - 500,000 people in the system ---- we have 25,000 patients enrolled in the program. I know that we don't have all of the diabetics, but we don't have a way to identify them.	No data

	New patient	scheduling	risk assessment	pt information
MS12	No data	We are moving to open access.	We don't have anything specific. I would like to expand this area. We have been working on a web-based application for improving medical care. Epic allows us to do a graphic representation of health status.	We don't have an integrated strategy. The hypertension grant is creating a resource center that will allow patients to access web-based materials. ** has developed an on-line patient education resource too.
	New patient	scheduling	risk assessment	pt information
MS13	80% of the time there is a free bed. The patient is met by a nurse, who directly brings the patient into the ED and to an open bed. Even before registering, the patient might be met by a doctor. If a patient comes in with serious eye pain or burning, the doctor might check them and put in an ophthalmic solution even before the patient has registered or answered insurance questions, etc. A rolling cart with a computer is sent to the bedside and there a chart is made for the patient. Nurses do a preliminary evaluation, followed by a physician. The ER has models of bones and joints. I want to get a 3D simulation into the ER for the patients in the future. If the patient is admitted, then they follow that route. They are put on new floors that have been constructed to reduce noise. I have made sure that there is double paint on all the walls, that all the lights are double output flourescent bulbs. We strive to create a very clean environment. I make sure that the systems engineers make rounds regularly. If a bathroom sink is not working, we try to proactively fix the problem.	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS14	No data	Open access was a new concept for all of us. We were seen as the experts to the rest of the group even though it was new to us too. That made it really hard. The MDs were really skeptical. It wasn't presented as an option. We were going to open access.	Not in any special way. Pediatrics does a great job with education. We have been focusing on patient care after the visit. Before it was sporadic. Now we take the responsibility for calling to check up on patients. Teams have been working on this.	No data
	New patient	scheduling	risk assessment	pt information
MS15	A lot of our patients are not insured. So they are not into regular preventive care. They see us as their regular provider but they don't come in unless they are really sick. They can be seen by the MD on call or by own MD. Most see own MD when they think they ought to.	No data	We have had a health maintenance flow sheet for 15 years. It was used as a model in researching primary care practices. We revise what should be done every few years based on guidelines.	We used to publish a brochure. But people didn't read it and it was expensive. So it is still an oral tradition. I don't think our track record is very good. The flowsheet is often blank. It is happening during episodic care. We are better for some things like getting mammograms for uninsured women. A lack of financial support makes some of the preventive stuff difficult.

	New patient	scheduling	risk assessment	pt information
MS16	There are 6000 - 7000 diabetic patients in our diabetes program. All patients are referred from their PCP after being diagnosed with diabetes. We don't have a way to identify who in our population served has diabetes. That needs to be done, probably as a global screening. It would be too expensive to just look for diabetes. For newly diagnosed patients, they are referred to the program - the appointment is based on urgency. Patients are usually seen first in a class format then they are seen individually by a CDE. The philosophy is that the patient is the key person - CDE assesses where they are, what they need to learn. The patient satisfaction surveys we've done for our diabetic patients always look good. We use a wallet sized card that has some information pre-printed on it, but it also has space on it to provide individualized information for the patient.	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS17	We've been going through a re-engineering project --- redesigning the patient visit. 90% of our visits take 45 minutes or less now --- down from a little over an hour. We've reduced the number of handoffs. We've reduced the handoffs to only 1 or 2. We do registration over the phone, if possible. Health assistants are cross-trained to update registration, draw blood, schedule next appointment. All this is done in the exam room. We've been measuring non-productive time ---- where the patient is just sitting there. We want to reduce that. We've been testing a "greeter". The greeter meets the patient and uses a walkie-talkie to find out from the health assistant if there is an open exam room. If so, the patient goes directly to the exam room without waiting in the waiting room.	We have a lot of no-shows, but we still prefer that someone call to make an appointment. We try to call patients before the visit to get information. If patients just walk in we assess their needs and attempt to link them to other services they might need. We try to give preference to people with appointments and people who show up for their appointment on time.	No data	We use health coaches to work with clinicians and patients. It is based on the pre-contemplation and contemplation stages of change. The smoking cessation program will test using e-mail interaction with patients. We have a "MAM" program --- mothers asking mothers --- that links mothers and grandmothers with teenage mothers to serve as a mentor. Visit in their home two times per week, available to answer their questions. The MAM person will work with a young mother to make sure she goes to appointments, etc. What we didn't anticipate is that the MAM program has been successful in getting women to go back to school to get their GED. This type of program is separate from a case management team. It is coaching --- usually the coaches have been active as volunteers. We have training, they are paid to be coaches. We're doing the same thing in with asthmatics --- FAN --- Friends of Asthmatics in the Neighborhood. FAN workers pair up with a family with an asthmatic child. We are doing this with diabetics too, but the coaches have more training.

	New patient	scheduling	risk assessment	pt information
MS18	We try to expose the patient to advance directives at many different places in the community. The library, church, family practice physician's office. The system may work a little different based on where you come in. Some models think it is solely the physician's responsibility. We set up a system of advance directive educators. Social workers, chaplains, nurses, or a small group of highly qualified volunteers can be trained as A.D. Educators. They complement the physician's work by working through some issues that aren't strictly medical, for example, how do I talk to my family?, etc. The A.D. Educator identifies other resources in that are needed --- MD, pastor, clergy. The goal is the increase understanding about end of life, encourage reflection about these decisions, facilitate communication with family and physician. There is a tendency to get to the end of some process --- get a written plan. We encourage the A.D Educator to go through a process. Completing written documents provides no real value when making decisions at the end of life. Physicians say that families make better decisions at the end of life when they have gone through this process. In essence, it makes the physician's job easier. We provide yearly in-services, written communications for A.D. Educators. We don't just interact with them once. They become an identifiable group. Some of the people we train to do patient education end up doing staff education. We started out thinking that we should train two RNs from each unit. They became a resource to the unit. We didn't expect that and it has really been part of our success. It has allowed us to make rapid changes to the system. The ability to update is one of the benefits of the A.D. Educator system we have put in place. For example, for many years we weren't happy with the power-of-attorney document. Last year we started working on this. Leadership identified the problem. We went through several drafts. We had an in-service. 75 people were there. The sole point of the in-service was to get feedback on this document from the A.D Educators who do this all the time. They made suggestions, we changed the document again, then they just started using it. They made sure all the old documents were thrown out. Within 1 month we had changed the system in a small way. It doesn't take months and months for us to make a change. We call the training a certification - --- we only want people who will be certified to do this education. This has become the standard of training in the community. In one of our hospices it is written into the job description that the hospice workers will have this certification. The A.D. Educators provide competent assistance to patients. As a need for improvement occurs we have a way to do that too. *Let's go back to the question about what this process might look like for me, someone who wants an advance directive. Ok, you will either be approached or you will ask to be approached. The A.D Educator will start by asking, "what makes you interested in this?" Most people have a story that tells us what they know, what they believe, what they want to do. The A.D Educator uses an adult education model to listen and identify needs. The process could take many conversations or as little as 60 minutes. It depends on the individual. We've seen in our dialysis unit that it might take 2 years. Another extreme is someone coming in having already thought about all this.	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS19	99% of our patients are referred by optometrists. There is an expectation already built in. We send patients information before them come along with a map of how to get to the center. We call them and confirm their appointment. When they walk in, we great them with a smile and hello. We have coffee in the receptionists office. We try to make sure that the patient's wait time is less then 10-12 minutes. Patients say they are willing to wait this long. Then, patients have their exams. We want the patient to have good vibes when they come into our center. Our total cycle time from arrival to leaving is about 1 hour. The outcome of the visit varies. For some patients, we schedule them for surgery. For others, we help them to schedule a visit back to their referring doctor. At the end of the visit, patients receive a checkout survey, which is basically our report card. They rate us on many areas of patient satisfaction. We call the specifics of the survey our "moments of truth." We focus on doctor's care, technician's care, the bill, etc.. We also ask them about the first greeting they received, the first impression of the staff, etc... At the end of the day, we take all of that day's patient surveys and we average them to obtain our average score for the day. Thus, there is a constant every-day process of measurement and then subsequent improvement.	No data	No data	We wrote a patient education handout on the thirty most usual eye conditions. We also have detailed information about our surgical and laser procedures. Everything is at a 7th/8th grade reading level. We eventually would like computers in our front office. This way, we would be able to access Web-based information that we could pass out to patients.

	New patient	scheduling	risk assessment	pt information
MS20	No data	No data	No data	We got a grant to make a video tape that is very explicit. It was professionally done. It is also linked to a web site. The tape can become outdated very quickly, so linking it to our web site helps us keep everything up to date. We also provide an information packet. The nursing staff is training to do the education.

	New patient	scheduling	risk assessment	pt information
MS21	We are not a certified diabetes program, but we have been recognized by the work that we are doing. There are 485 patients in the program. Of the 485 patients, 85% have improved blood sugar levels. Most of the chart is charting that the patient has done. There is me (the RN) and a .5 clerical assistant. Patients are referred from their PCP or self-refer. I work with a wide range of patients - most are in lower paying jobs, 40% are uninsured. We provide monitors and strips to indigent patients. They only seek care when there is an emergency. It's hard to draw them into prevention. A lot of our patients are just surviving. Patients will come in and say, "My doctor says that I don't have to monitor my blood sugars anymore because I'm doing better." I tell them, "Your doctor, as good as he is, will he have to suffer the consequences of your diabetes?"	No data	No data	I teach a course. There are materials in the waiting room. Knowledge passes between people and you learn by doing. After you get the patient to a certain level, you watch them learn by doing. The nurse educator needs to have an upside-down, inside-out knowledge of diabetes. I'm sure that I don't know everything about diabetes - you know, the technical, university level stuff. But I can teach patients what they need to know in a way that they can understand and relate to.
	New patient	scheduling	risk assessment	pt information
MS22	Our data system gives us information on anyone with CHF who has come into the hospital, either for a first visit or a readmission. Our medical record number show us that approximately 1200 patients are CHF, as determined by their medications, i.e. ACE inhibitors, digoxin, Lasix. The official criteria to be in our program is that a patient must have an ejection fraction of < 35%. This is how most programs work. In reality, for us, we have patients who have ejection fractions anywhere from 6-80%. Usually, if we take in a patient with a 80% e.f., there is something else wrong with the patient, like COPD which is causing the CHF. We don't ignore any health problem. The other departments, for example ER, also know to look out for potential CHF case management patients. If a patient comes twice to the ER or hospital within 6 months for CHF, everyone knows that they should contact me. Even the hospitalists who have "cardiac consults" know to contact me. Whether the patient is seen in the hospital or clinic, Dr. D. sees them first and sets up the medications and establishes the care protocol. I can only fidget with the medications. Dr. D. conveys directions to me. However, I have the independence to change things around depending on the symptoms. I spend 1.5 to 2 hours doing a history and physical, read the chart thoroughly, schedule any tests that are needed, highlight medications and written instructions for the patient. I make sure that they understand their medications and why they need them. We are constantly providing patients with information. We have what is called a "5 minute rule." This deals with activities. Patients are advised to do something physical but stop as soon as they begin to get tired or experience a change in breathing. Then, they must stop and look at their watch and note the amount of recovery time. If recovery time is >5 minutes, they did too much and should decrease their amount of activity next time. Thus, we give our patients rules and information like this so that they can learn to self-monitor and manage their condition.	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS23	The process is usually that a patient calls in with a lump. She is usually seen within a day or so. First she sees her primary care provider. Then she is sent to us for a mammogram. We do a mammogram. We usually do an ultrasound --- the thing is that we can do it then if we think it should be done, we don't have to go back to the pcp to discuss it. If it is a cyst we will drain it. If it is a lump, we'll do a biopsy right then. Or we will send her to surgery that day. Usually everything is done within 1 or 2 days. Patients can come to us without a referral, but most of the time it is through referral.	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS24	No data	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS25	Well how you enter the system depends on if you are a managed care patient or a non-managed care patient. We've increased the number of patients and decreased the number of providers. A non-managed care patient can't get in as a new patient for an urgent visit. We can take non-managed care patients, but you wouldn't be able to call in and see us that day for you first visit. A managed care patient can call in as a new patient and see us that day if they are sick. So you would call and be asked to come in 15 minutes early for your appointment, fill out the paperwork, then see the physician. We would address your acute problems and any chronic problems.	No data	No data	One to one education, mostly provided by the physician. We connect them to courses. We don't have a web site, but we will refer them to particular sites based on their disease.
	New patient	scheduling	risk assessment	pt information
MS26	Patients show up, there is a pre-procedural work-up, the endoscopy nurse takes over, then the procedure, then recovery, then discharge. There are 10-15 handoffs in this process. We are working on one piece flow so that the "team" is with the patient throughout instead of all the handoffs. As it is now the patient meets with the MD and if they decide to do an endoscopy it may take days --- the patient leaves the office after being told that we will contact you about available slots. We are moving toward scheduling the endoscopy before the patient leaves. Now we have 5 physicians, 5 schedules, 5 schedulers. It takes days to schedule an appointment and then sometimes it results in the physician being double-scheduled.	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS27	We have service agreements for access to specialists. The wait can sometimes be 2 months. When they are sent to a specialist, patients may feel abandoned or that their primary care doctor is stupid. Because all the pc docs sent stuff they shold be able to take are of, we brought together the dermatologists and primary care docs so that they could hear descriptions of conditions and learn how to care for common conditions. The dermatologists also agreed that if they are sent a patient, they will see that patient the same day. Some have developed some "carve out" appointments on a daily basis.	No data	No data and are uncomfortable with it. They are afraid of missing something. There is a group I know about somewhere else with committees working to develop criteria for acceptable e-mail.	Not much. We have some materials for patients. We do very little with e-mail
	New patient	scheduling	risk assessment	pt information
MS28	A patient identifies a problem, we do a non-invasive test to identify an ischemic problem. The cardiologist will do a work-up, do an SF36, and determine the need for any additional tests. The patient may be referred to the shared decision making library. We'll do the catherization, then PTCA or CABG. Patients will come in the same day of surgery at 6 am or 9 am depending on the time of surgery. Patients are followed from admission to discharge by a case manager. They are usually discharged with the VNA. They are scheduled for a repeat visit for one month later. Then they will be sent back to their primary care provider or have one more appointment with the cardiologist. That's for the routine patient.	No data	We use the SF36 --- we aren't particularly good at doing any thing with it but we are collecting the data.	Patients are sent a video teaching tape regarding heart surgery. Patients come to surgery more educated now than they used to be. We run through the cath video with them to show them the blockages.

	New patient	scheduling	risk assessment	pt information
MS29	People are referred to the program - from family, friends, a physician,	No data	No data	No data
	etc. We send out an enrollment person to visit them in their home. Really we are educating the elderly person about managed care. We bring them in for an assessment - we provide the transportation. The assessment is 2 part - first in the clinic, then a home visit to assess home care needs. The team works up a care plan, how many days are needed in the center, what level of home care is needed, what are the medical issues. Then we go back to the home and present the plan to the person and to the family if there is a family. If they are interested in enrolling, we have them sign the enrollment plan at that time. That signs over the Medicare benefits to us. They can disenroll at any time, but we can not disenroll them for any reason at any time.			
	New patient	scheduling	risk assessment	pt information
MS30	No data	No, but our surgery will stay open late to accommodate urgent patients. We know	We don't do any health risk appraisals	Use of the web is about 4 years behind the US but growing. They have just begun to
	that 86% of patients can see the doctor of their choice within 48 hours. If urgent, they can be seen within 2 hours. We make sure we provide nonurgent appointments appropriately by calculating panel size, average number of visits and make sure we have the capacity for access. We also track changes in the consultation rate.		collect patient's e-mail addresses because contact is so much easier this way. They do not use either for patient education, however	
	New patient	scheduling	risk assessment	pt information
MS31	No data	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS32	First, you would find it hard to get through on the phone. Well, actually some people come in and say it was so easy to get through, then others are very frustrated. Once you get in you would be warmly received. If you have an acute problem we would see you	We have a computerized scheduler. So, we can look up by	No data	We have a pamphlet about the practice. We explain things
	the same day, or the next day. You would sign in and do paperwork. Then wait 20 - 45 minutes for rooming. Then wait again 5 - 20 minutes for the encounter. But we wouldn't just leave you there, someone would stick their head in and say "I'll be with you in just a minute, I'm running behind." Then we would plan for care. If you needed lab work you would wait again. Then check out.	day, or by physician to find appointments. We have available slots for same day appointments. But they fill up really fast in the morning. We have a policy to take someone really sick that day. So, if we don't have any appointments the receptionist will ask what she should do. We find a way to work them in.		verbally. We explain on our answering machine about how to make appointments. But that doesn't mean that people will do it right. Elderly people are befuddled by the voice mail. We provide a lot of education.
	New patient	scheduling	risk assessment	pt information
MS33	No data	Yes, Open Access.	Beck Depression Inventory, AODA, Howsmyhealth.com, Patient surveys	We have introduced patients to the use of technology. We have a resource room that has the usual pamphlets, also internet access, sites to visit, information about groups they can participate in.

	New patient	scheduling	risk assessment	pt information
MS34	No data	We don't have a good fix on this. Don't have a good way to measure this. We are moving toward open access. We have a greater proportion of appointments left open for same day visits.	The welcome call screens for high risk patients, but it is not meant to take the place of a more detailed health risk assessment.	Not electronically --- our patients aren't set up for that. We provide education during the office visit. We have an RN at each site as a diabetes educator. We provide 6 modules of diabetes education. We are part of the IHI breakthrough series.
	New patient	scheduling	risk assessment	pt information
MS35	The patient makes a phone call - we ask, "what do you need?" Thecall is sent to a scheduler - appointments are made based on need. Most patients don't request a particular provider. They are told about the sliding scale fee and what documents to bring in for the financial screen. Then the patient signs in at the desk and completes the medical history form. They see a financial advisor before the appointment. Which program you qualify for is based on income. If you don't bring in the right documentation you are at full fee until you bring it in. Then the patient sees the provider for the exam.	Each team builds a template around the types of appointments they want to have - within certain limits, of course. They block off times for different types of visits -- well child visits, OB visits, well adult visits, acute appointments. We've just designed a chronic visit type. We've been participating in the IHI diabetes breakthrough. We've been working on changes in leadership, decision support, delivery system design.	No data	No data
	New patient	scheduling	risk assessment	pt information
MS36	No data	In our system, patients call in to set appointments for the most part. Usually reminders go out to women, and then they call to schedule a screening.	Whenever women turn 40 or are already over 40, or if there is a reason before then, they are mailed out a survey to be filled out. This survey covers risk factors, past surgeries, and other pieces of clinical information. Our clinical roadmap team has an annual survey of patients, however this is focusing on the entire experience. So, the needs and satisfaction of the screening program are distorted in this survey.	We use many sources, the key one is an easy to understand pamphlet that we send out to women.

	New patient	scheduling	risk assessment	pt information
MS37	A patient comes into the building, registers, and the team is notified. The LPN has an automated list of who is coming in. Lab stickers are printed out and the chart is given to the doctor. Some patients suffer from chronic diseases, such as diabetes and congestive heart failure. Their chart includes a unique cover sheet - a summary sheet on physician expectations about what care needs to be provided and also a sheet that contains education material for the patient. For example, a diabetic would receive current info on diabetes. There would also be a "diabetes" flow sheet that has on it eye exams, foot exams, etc.. All this stuff goes in the chart. The difference between us and other places is that we actually do something with all the information the nurse puts in the chart.	We have patient group meetings every once in a while. We have done this for diabetes. One afternoon, our diabetic patients are invited to the clinic and receive education by one of the physicians about self-management and care. This is sometimes also done with patients with cardiovascular problems as well.	Our history and physical covers these areas.	The flow sheets we have for certain illnesses as well as the expectation sheet are both things that are self-created. Patients can see this. The team has decided what data should be collected. For our diabetic patients, we also have a booklet out called the "Right Track," which contains information on diabetes. We can prescribe this booklet right out of our pharmacy for our patients.
	New patient	scheduling	risk assessment	pt information
MS38	They come to our hospice many ways -- (1)by self referral or a family member calling; (2) several oncologists routinely refer patients; (3) by a discharge coordinator. If they call, we do a short 1-page intake form that covers biopsychosocial functioning, disease trajectory, insurance (we have to get permission from their HMO), and ask MD if they will certify the patient as appropriate in terms of expected length of life. After admission, an administrative nurse completes an 8 - 10 page assessment that covers a range of issues from their expectations, pets, significant others, fears and concerns, plans, medications they are on for symptom control, whether they have a priest or chaplain from their own parish. We then develop a plan of care. One or two nurses and a nurses aide will care for the patient (at home) up to 5 - 6 d/wk depending on their needs.	No data	No data	No data
	New patient	scheduling	risk assessment	pt information
MS39	Patients are referred from inpatient psychiatry, outpatient mental health, or sometimes from a family member. The first evaluation is by a psychiatrist. This is really a triage evaluation. We used to have less clinically trained people do this but found that the patient got far along in the system before we found out that there were not eligible. Eligibility is defined by the state. The focus is on those with the most need; those who would benefit from a team based approach to care. Eligibility includes most major mental illnesses, borderline personality illness, Schizophrenia, recurrent depression. There is the diagnostic part and then whether they are impaired in a number of ways in their life. They need a few different services that would be best addressed by a team. We engage them in the service the way they need. If they are eligible, they meet with a clinical case manager. They may meet with a vocational specialist. The clinical case manager will go over the service goals. We have a recovery planning meeting where the family is included. The focus is to discuss what might support the person in their recovery. We develop a service plan, which is reviewed every 3 months. The recovery planning meetings are held annually.	No data	No data	We try to give them as much as they are interested in or are able to take in. We have some videos, books, reprinted pages. We encourage people to take personal charge of their lives. That is something that happens all the time --- we help identify what works for helping someone take charge of their life.
	New patient	scheduling	risk assessment	pt information
MS40	No data	Access issues aren't a problem --- people are seen right away.	No data	No data

	New patient	scheduling	risk assessment	pt information
MS41	New patients are diagnosed, the MD asks us for a consult, and we walk the patient down to our office. The RN or LPN assesses the demographics, what they do, risk factors, support available, medication, lifestyle, and barriers to making changes. We do a learning needs assessment. Order lab work-up, then plan for follow-up. If they are not newly diagnosed they can be referred directly to us by PCP. We also send letters to patients with diabetes asking them to come in. The first visit is usually 45 minutes to an hour long. Preventive screening visits are done yearly --- assess vital signs, behavior, willingness to make changes. We take retinal photos which are sent directly to the opthalmologist, instead of sending the patient to the opthalmologist. We learned that we need to risk stratify. You can't offer a Cadillac to everyone. You need to fit the level of services to the level of need. Some people might call this rationing. We prioritize based on risk. Risk is based on age of onset of diabetes, presence or absence of co-morbidities, etc. We use protocols to identify risk and then provide treatment Primary prevention --- those with diabetes, secondary prevention --- those with diabetes and any other risk factors, tertiary prevention --- already had stroke, MI, or renal failure. Primary prevention means they are usually directed to class and yearly exams. Tertiary prevention usually involves much more monitoring. Services are less intense or more intense based on risk.	No data	No data	We have classes, we have a resource list for every service area (weight watchers, YMCAs, etc.), we have support groups. We have trained the staff to teach when the patient is there for monitoring. We have found that one-size does not fit all.

	New patient	scheduling	risk assessment	pt information
MS42	We now have a standard pre-natal record at all of our clinics. Thus, all family doctors, ob/gyns, and midwives use the same instruments. The questionnaire given to women at their first visit is submitted into an electronic database. We are able to track folks that have increased risks. We make sure that referrals are made to ob/gyns if twins are projected. We have perinatalogists as well as case managers. At the initial visit, educational material is provided to women. We give them a water bottle that says on it "Pre-term labor." Our Care Process Model emphasizes how to prevent complications. Our high-risk pregnancy protocol is designed to reduce the morbidity due to pre-term labor and the costs, which amount to about $28 million. A fetal fibronectin tests has been established to determine who is really going into labor versus those women who are just experiencing pain. The $83 test is less costly than a woman coming into the labor and delivery dept, which costs $400/night.	No data	No data	No data

	New patient	scheduling	risk assessment	pt information
MS43	A patient first comes to an outpatient clinic. They don't need an appointment. They can come any day between 9 - 4 and wait for 1/2 hour - 45 minutes maximum. If they are from out of town, they are sent a questionnaire to be filled out by their G.P. Usually they hear about us by word of mouth. We check the questionnaire and screen out patients with cardiac disease, those whose weight is more than 10 - 15% beyond ideal. If they are willing to lose weight, we send them a diet. The day before surgery they come for an exam. We are set on a beautiful 35 acre site. It is a non-intimidating, house-like setting. The atmosphere is casual. They are offered food. It is well lit. A nurse asks some questions, check if they have lost the weight they needed to lose, BP check, hernia check. They go to a prep area to shave and then are accompanied by anurse who chats with them. Then they go to the finance office, manage any necessary certificates, forms, letters to employers are all prepared in advance—before admittance. We keep in mind that these patients are not sick, and the surgery is elective, so they are taken to their room but encouraged to go to the lounge area. Blood is drawn and they have a cardiogram. They are given orientation, shown the dining area etc. No meals are served in the rooms, and there are no TVs in the room because we want them to be ambulatory early, go to the dining area, sit together with other patients who are recovering. We have learned at the banquets that the patients value this as a very social experience and that talking with other patients allays fears about pain. Family are not encouraged to stay so that patients can mingle with other patients. Spouses and children stay in a hotel close by or a reasonably priced senior citizen's home. That evening they have a snack and go to bed. The next day they have a local anaesthetic 3 hrs before surgery, then a mild tranquilizer 45 minutes before surgery. They are in a holding area for 10-15 minutes, chit chatting with other patients, then walk to the OR with some assistance from circulating nurse. A nurse wishes them good luck! and introduces everyone to each other. The nurse talks to them during surgery. Some elderly have cardiac monitoring, and they monitor 02 saturation, but more than 50% have no monitoring. For 90% there is no drowsiness, no needles. There are 5 ORs, 2 anesthesiologists who circulate among the rooms. They have only light music, or they can bring their own CDs. After surgery they walk back to an open recovery area. They stay in bed for 3-4 hours, have some water, orange juice or ginger ale. Nurse checks BP. Almost all get Tylenol or Advil only for pain as soon as they get to the recovery area, another dose 3-4 hours later regardless of need. Within 12 hours they usually feel fine, can engage in movement. They are getting around at will and walk around the hospital or grounds the first day. May have a light supper. Each surgeon visits his patient that evening. The surgeon checks that the incision is dry and that there is no nausea and answers questions. The next morning the intercom announces that breakfast is available (patients can get coffee anytime). Patients sit anywhere they like, and pre-surgical and post surgical patients mingle and converse. Housekeeping staff treat them very well, as though in a hotel. We try to give them whatever they would like. At 8:30 the surgeons do rounds, remove 1/2 the clips, and the patients are on their own for the rest of the day. We tell them they can do any sort of light exercise they want. We show them how to get in and out of bed comfortably and encourage them to move and exercise (exercise bike, etc.) They see others doing these things and are told that they may have a little pain but they won't damage anything by driving, bending, lifting even a 50 lb load, etc. They spend the rest of the day. Those that live nearby leave that afternoon or evening, the others the next morning after the remainder of the clips are taken out. We give them pamphlets about what to expect (such as some bruising in the area), check their temperature. We emphasize they have now completed therapy. They do not need any further treatment and do not have to go back to their doctor. They do not even leave with any dressing and don't have to keep it covered. They can return to work if they wish, but most don't for 7 - 8 days (by comparison, patients in other hospitals usually take 4 weeks!). I emphasize again that we have a casual atmosphere, a friendly environment rather than a "hospital" feel. The areas of the house flow from one to another.	No data	We encourage patients to come for follow-up anytime, especially 4 weeks after surgery or to call with any problem. Our switchboard operator is instructed that if a patient calls during working hours, please find a doctor to talk to them	We have information about the technique on the internet. We also. have a video that can be sent to the patient or viewed after they arrive. We also have copies of several articles that have been written about our work

II. Patient Experience, part 2

Referral/ unusual problems = *Sometimes patients have health problems such that they are referred to a number of specialists and find the information they get confusing, information is lost, or they are not sure who is in charge or where to ask questions. Are there particular ways you have addressed this coordinating issue in your micro-system? If a patient has an unusual problem that requires expertise from people in a number of disciplines outside your micro-system, do you have any ways of bringing that expertise together?*

Waits and delays = *Are you able to tell how long it takes a patient to move through your micro-system to definitive diagnosis and treatment? Are you able to identify the sources of delay?*

Incentives = *Are there any incentives that reward management and staff for meeting and exceeding patient expectations?*

Community = *Are there things you do seek input from the community about their health needs? Are there things you do to keep the community aware of your results and what you are doing?*

	unusual problems	waits and delays	incentives	community
MS01	No data	No data	No data	No data
	unusual problems	waits and delays	incentives	community
MS02	This is a big focus. Our working relationships with consultants are good and we usually get information back. They are too busy for formal systems.	We are paying special attention to high priority diagnoses, this included [diagnosis of a breast lump]. We have been working hard with other systems and their scheduling. We gather the data and use it to identify their problems for them and push them. An example is scheduling barium enemas. Access is a big issue that results in a lot of e-mail. If the wait is too long, we send the patient to a competing system. Delays are often caused by a lack of specialists	No data	No data
	unusual problems	waits and delays	incentives	community
MS03	At the team meeting, the overall health of the patient and their needs are discussed. At other places, the care process may be fragmented. The daily team meetings bring people together. Everyone interacts with each other. It's not like other places where people just read each other's progress reports in the charts.	We have some of the typical hospital delays such as scheduling and completion of tests. However, additionally, many of our patients have social problems and issues that need to be addressed. This lengthens the care process and can delay it.	The only reward is the knowledge that you are providing good personal care for each patient.	We function to serve the community. We have a community relations department and they frequently organize talks by community and hospital leaders. We are also in touch with many different community boards who give us input on an on-going basis.
	unusual problems	waits and delays	incentives	community
MS04	1) Family Practitioner maintains contact and ongoing role 2)critical care point person, gives info to family and patient and also makes clear that this is a team-- no secrets or gag rules for nurses. Others can and do discuss plans, etc. with patient and family 3) Doc in phone contact w/in 24 hours if need be.	They track median LOS by type: CV Su to ICU to floor within 24 hours (in hosp 4-5 days) MICU, chronic lung disease 2/5-3 days CCU <2 days Surg ICU ~2 days They track median values: 4.8 - 7 days. Their LOS is below national norms.	No data	No data

	unusual problems	waits and delays	incentives	community
MS05	No data	No data	No data	No data

	unusual problems	waits and delays	incentives	community
MS06	We are all in one building, so we have never had a big problem getting appointments with specialists. The specialist will e-mail me notes or call me if it is urgent. No real turf wars over patients. Our system accesses the hospital notes. The specialist signs the note electronically and it goes immediately to the primary care provider --- they don't have to think to do that or look up the name.	We have measured wait time and delays in the exam room. Waiting for appointments was a big problem before we went to open access. Most of the delays were related to hospital admissions (Dr. X had to go to the ER this morning to admit someone). So we created a hospital service so our docs don't have to leave the clinic. 20 docs share rotation in the hospital to handle all admissions. We created a phone center to handle problems with phone access. Hasn't accomplished everything we wanted to do. We have 6 people answering phones. I saw it as decentralization and didn't like that idea for the micro-system concept. My phone nurse knows my patients --- she knows when a patient really needs 20 minutes instead of 10. This has been borne out with the phone center and it is still hard to get through. We have decided to get rid of the phone center and go back to the smallest replicable unit of the teams. We have had some problems making space for adding the receptionist to the team and 2 people from the phone center. I'll not increase staffing but just move them around. We are going to pilot test this change. It's not about technology; it's about answering phones. We have a medication recall line that is used about 75% of the time. The pharmacy has learned to deal with our phone volume but we haven't yet. They have used automation to set up an answering machine for prescription refills.	No data	Our system does two types of satisfaction surveys. We have a local community advisory board. We developed a family practice newsletter that isn't about wellness. It's to let people know about what is going on in the practice. When we were moving to open access we asked patients how they wanted to be communicated with and they said a letter from their physician. So we try to make the newsletter like that. They didn't want to read a news release in the newspaper.

	unusual problems	waits and delays	incentives	community
MS07	In the unit, there is an attending physician, who is also teaching and a critical care physician. Things only get complicated when an outside consultant is used. Usually, we try to have whatever outside people have to say filtered through the house staff physician. We do have a multidisciplinary team that helps out the coordination process. Every morning, we have rounds at 8:30 am to 10:30 am, 7 days a week. If there is a private consultant in, we usually go to their patient first. Everything relies on communication.	Over the last 7-8 years, the average length of stay in the Shock-Trauma ICU has gone up to 5.6 days from 4.5. This is basically due to the demographics, sicker and sicker patients are coming into the ICU. Our APACHE scores have been getting higher and higher every year. The acuity of the patients has gotten worse, however we think that there is still delay in our microsystem. In fact, this is an on-going project. We are trying to increase the flow rate of patients across the ICU. We think that there are logistical delays. The hospital right now has an extremely high occupancy rate.	No data	No data

	unusual problems	waits and delays	incentives	community
MS08	No data	No data	No data	No data

	unusual problems	waits and delays	incentives	community
MS09	We have been forced by the HMO networks to use approved panels. But we really have no limitation of specialists. We use a paper system.	No data	No data	Patient surveys are done periodically (so far we have only done 2). We have one page exit interviews. We haven't changed a lot based on these surveys. As far as the community, we are hesitant to tout our results. We don't want to appear to be doing research about c-section rates for economic gain. It is unique in clinical practice to be doing research. We presented our to the nursing staff --- they said that they would pick someone in the middle. Not someone the highest or the lowest.
	unusual problems	waits and delays	incentives	community
MS10	The neonatologist is the physician of record. They coordinate care at the physician level. Cardiologist, radiologists, etc. are consultants. The same team takes care of the patient regardless of the problem. There is always a nurse at the bedside, a case manager (usually a resident or NP or nurse), and the attending. That's the care team. Well the team is the baby, family, bedside nurse, case manager, and attending physician. (I have to remind myself to include the family --- that's how hard it is even when that is something we are really working on.) But the team always expands to be larger, such as including social workers.	No data	No data	No data
	unusual problems	waits and delays	incentives	community
MS11	No data	Depending on the priority, we can get someone in within a week --- for example gestational diabetes. For most newly diagnosed patients, it's within 2 weeks. It really depends on the priority that the MD gives the referral. Immediate intervention is what it takes to prevent hospitalization.	No data	No data
	unusual problems	waits and delays	incentives	community
MS12	We started as a multi-specialty group. Now, if I pick up a phone I can connect directly to a specialist. This makes the transfer of care smooth. The Epic system generates referrals for non-urgent referrals. My notes go with the referral. It's the same method for getting information back to me. We are also connected via e-mail --- we do a fair amount of communicating this way.	When we looked at the subcomponents of cycle time we looked at waiting room time and exam room time. We started working on improving the on-time rooming rate. Room readiness seems to be a problem. We thought that the problem was that the patients are late for their appointments but that isn't the real problem. We have changed nursing schedules from 5 8-hour days to 4 10-hour days. We are also going to room protocols. How to set up a room, types of patients that go in different rooms. We have also been tracking 3rd available appointment --- we look at each physician's calendar and the time until the 1st available appointment, 2nd available appointment, and 3rd available appointment. Three days or under would be really good. Working in teams should bring this down. We have found that residents are underused and faculty are overused.	No data	No data
	unusual problems	waits and delays	incentives	community
MS13	Every provider has a business card. Thus, all the patients know everyone's names. We are evaluated highly on patient satisfaction because of this. We also receive back up help from social service if the coordinating issue is very complex.	We can track process length through our real time "flight simulator" system. By touching the screen, we instantly know such things as arrival to bed, bed to nurse, arrival to doctor aggregated cycle times.	No data	No data

	unusual problems	waits and delays	incentives	community
MS14	This could be better. Now it's a note that goes out. It's very individualized according to MD.	Wait times are a big source of delay. Waiting in the exam room before the MD comes in. Now we have gone to standardized rooms, standard stocking of rooms, pulling up information about the patient visit before the visit.	Human Resources came up with an Independent Development Plan (IDP). If you come up with a plan for something to improve and achieve it there is a reward --- basically you qualify for a raise. We just started this year and next year it will be mandatory to meet your IDP to get a raise. We send out weekly news flashes on e-mail recognizing people's efforts. For example one group of nurses wanted to improve patient satisfaction in their team. One team wanted to decrease supply costs --- they cut supply costs by 28%. The IDP includes a plan, method, way to check results. It has to be approved by the manager. Then we may have to provide resources to them. For example, I taught one group how to use excel.	No data
	unusual problems	waits and delays	incentives	community
MS15	We insist that specialists use our record. I'll see the record that way. Specialists consult with us a fair amount. We stay involved in the care as patients are moved through transitional care units. There is a common record, a common staff, and a common attitude. We have lots of hallway conversations. Getting people in and out of the medical center is very different. There are 11 different managed care organizations with different approval processes. We have poor communication with the medical center. But they have created an on-line medical record so I can see it. It's just the dictated notes. It only sends records out --- I can't send records in (if I had an on-line record). [Why?] Attitude, I think.	We don't track it, but I know how long it takes at the medical center and how long it takes here. For a breast lump, it's less than a week from finding it to mammogram and seeing a surgeon. At the medical center it takes 6 weeks. Delay is not a problem for us. We are patient advocates. We try to get to know the people to call to work the system. I used to be more effective at working the system 15 years ago. When you query me about me sitting here and about the medical center, I'll tell you how I feel. One of my patients is being put on a research protocol at the medical center for ovarian cancer. I don't have any way to let them know that she doesn't need to be treated this way.	No data	No data
	unusual problems	waits and delays	incentives	community
MS16	No data	No data	No data	No data
MS17	No data	No data	No data	No data
	unusual problems	waits and delays	incentives	community
MS18	No data	No data	No data	The leadership has tried to be visible by giving community presentations, press releases. I often get direct feedback from patients and providers. We have changed the culture enough that they expect things to work a certain way --- if it doesn't it is seen as a failure. The feedback loop includes expectations of the patient/family/practitioners that things will work a certain way. When they don't, there needs to be a person to report to who will do something about it.

	unusual problems	waits and delays	incentives	community
MS19	We have a manual system, in which we provide referring doctors with customized forms that are easy to understand and hand-off. We fax these forms to the referring doctor. If they don't send anything back to us, we call them a day before a patient's appointment.	About an hour. We have an actual position for facilitating patient flow on our staff. The facilitator acts like a "traffic cop" and informs the technicians and the doctors who the next patient is, what needs to be done, who to take when, etc.. You can only have someone like this if you have enough of patient volume to support this. However, we do. And its important to have someone looking at the big picture and remind us if a patient has, let's say, waited for too long or can be accommodated in a special way.	Waiting time had been a problem. We measured how much improvement occurred per doctor. We rated each doctor as having a good level, a great level, or the best level. This spurs competition to do better. We also have an on-going bonus for all staff based on the center's profits and revenue. However, there is an important clause that says that a certain level of patient satisfaction as measured by our surveys is needed before any bonus payment. Thus, if we go through a year, where we substantially increased our overall profits and revenue but patient satisfaction was not up to par, no one gets a bonus.	We have held many workshops with community doctors to let them understand when they should consider referring their patients to us. We try to increase everyone's knowledge about each other, about what each care site can do and what each site has as its goals.
	unusual problems	waits and delays	incentives	community
MS20	No data	In most of hospitals you sit in the admitting office for 20 minutes then you are taken to the floor and asked the same information you were asked in the admitting office. We just took out the admitting office step. Patients come straight to the floor. Before people go to surgery then to a pre-op holding area. I didn't know what in the world they were doing there. The only reason we did it that way was because patients need to sign a release form. We found out it was that way because one day someone made it to the OR without signing a release form. Who had responsibility for that? The floor, the pre-op holding area, and the OR. Everyone was supposed to ask to make sure it had been done. So, now patients go directly from floor to surgery. We assigned the responsibility for getting the release form and took out all the steps that were checking the checkers. We pay extreme attention to standardization. We are done with bypass in 2 hours.	I think incentives would be a mistake. It is a slippery slope of not being good enough. If I do this, I get this. But what if I do this? Should I hold something back for more incentive? Then who do you decide to reward? The floor staff? The ICU staff? We try to align the incentives. Most of our nurses are have young families --- they want to go home to their families. If we do the best job we can we all get to go home on time. That's an incentive.	No data
	unusual problems	waits and delays	incentives	community
MS21	No data	No data	No data	We aren't doing anything to collect patient satisfaction data. I asked patients to write about their changes and the process. There was an article in the local paper, "Patients are their own specialists" - it said that what the Saginaw program is especially good at is helping patients take care of themselves.

	unusual problems	waits and delays	incentives	community
MS22	Patients, when confused come back to me. I coordinate things with radiology, family practice, orthopedics, ENT, etc. Patients come to me and usually give me an update on how their follow-up care is going. I like this because we are really into caring for the body as a "whole." If there is a problem with another care taker, I like taking care of the problem right then and there in front of the patient. We get physicians, nurses, social security people, you name it, on the "speaker phone" and talk with them.	Physician availability is the biggest source of delay. It helps that I can confer with physicians and visit with patients here. For the patient with the umbilical hernia, I was able to take with the surgeons and coordinate a schedule for patient care. If it is an emergency, we push the process of care. Otherwise, we make sure we follow-up as quickly as possible.	No data	When people call our office, they will always be asked a series of questions regarding their health status and how they are feeling. This phone service allows us to give and receive quick information regarding patients' health needs.

	unusual problems	waits and delays	incentives	community
MS23	85% of our clinicians approved giving radiology more responsibility. At first some of them questioned it --- didn't want to lose control of their patients. But now that we've been doing this and most people have been through referring patients to us, they don't question it. In the beginning, the surgeons wanted to stay in the loop with biopsies. They didn't like the idea of giving over the biopsy procedures. We did a study of 100 patients --- did biopsies both ways, needle and open. Out of 100 patients, 36 cancers were found. 35 cancers found with needle biopsy, 35 found with open biopsy. Both missed 1 --- different ones. Needle biopsy caught one that open biopsy missed and open biopsy caught one that needle biopsy missed. So the surgeons said fine, do the needle biopsies, but we want to consult on them. Now surgeons have completely turned to over to radiologists --- the surgeons realized that their input was costly and timely. We keep everyone informed and on track. We've had no problem with buy-in, but we are salaried, so we are not taking away their business, just the unnecessary surgical visits. Others in the community have turned over breast screening to us. The VA and HealthPartners have contracted with us to do breast care. Insurers and employers want to send patients here because of our data on breast outcomes. The breast work here has been a big part of getting new patients into the system. We are going to be working on improving surgery integration. And we want to widen our breadth to bring in more patients. We are always on the cutting edge of new techniques and technologies. We are a training site for biopsy equipment. We are one of 6 US sites to look at nuclear medicine and breast screening. We have a room for digital mammography. Our system got a DoD grant to compare patients who were on their own with cancer compared to patients with a care coordinator who would go with them to appointments and treatment. They did so much better with breast cancer nurses. We will have 3 at the new center. The most time spent with patients is right at diagnosis. So the nurse can have a roster of several patients that she is working with. They are available to their patients day or night.	Sources of delay were the getting to mammography, getting to surgery. We've really focused on the gaps from step to step.	No data	No data

	unusual problems	waits and delays	incentives	community
MS24	No data	No data	No data	No data

	unusual problems	waits and delays	incentives	community
MS25	We have 2 full time people that coordinate care. We write the note, then send the patient across the hall to get it all set up. We couldn't do it any other way because of all the different precertifications. Our mission has been to do what is right for the patient. We refer quicker than not. We will contact the specialist by phone or letter. We are good about getting feedback from the specialists.	There is virtually no delay. Our ancillary staff is so good. If a woman calls in with a lump she can be seen that day. If necessary we can schedule an urgent mammogram. Then we have the results within 24 hours. In our system an area that has been a problem has been to do secondary studies at the same visit. So the patient leaves, results come back to us, then we have to order another test.	No data	No, the only way we get info like that is from our MCOs.
	unusual problems	waits and delays	incentives	community
MS26	No data	It takes around 4 hours now --- we have a goal of 90 minutes. # of schedules (# MDs) # of schedulers Part-time nature of providers. The nature of urgent consults. They are unannounced and unpredictable. Actually they are predictable in that they happen every day. One or two everyday. But we don't have any contingencies for them. We started a "crash cart" that is available for urgent consults. It's a rolling cart that is set to go. There is a check list so that when the ER calls we can go down the list ---have you done this, have you done this. We were finding that they weren't ready when our team got there --- there is a lot that can be done before pulling our docs out of the unit.	No data	No data
	unusual problems	waits and delays	incentives	community
MS27	No data	I think we could (identify sources of delay). I haven't been practicing there for 2 yrs. If I were, the next thing I'd work on would be the huge practice silos. Patients don't experience their illness as involving these separate silos. Do today's work today.	No data	No data
	unusual problems	waits and delays	incentives	community
MS28	We have a proactive cardiac cath conference for the more difficult cases. We combine the data we've collected on the patient and stratify the different interventions.	Patients are usually operated on within a few days of the cath.	No data go smoothly. I think that is something we need to improve, but we can't control it. We've tried moving the SF36 upstream to use it as a decision making tool instead of just a way to show the patient that he or she has improved since they had the surgery.	Getting into the system is what frustrates the patient most. Once they get to us things
	unusual problems	waits and delays	incentives	community
MS29	No data	No data	No data	No data

	unusual problems	waits and delays	incentives	community
MS30	This is a problem. We have just hired someone whose task is toredesign care across organizational boundaries. She is being partly supported by us, partly by the Community Trust. For example, if a patient falls in the street and thinks he has a fracture. He might contact their practice, but more likely they would be taken by a paramedic to the local ER, triaged, x-rayed, seen by an orthopedist, taken to surgery, then seen by a therapist, then discharged under supervision of social services, and sent back to care of their primary care doctor. From the perspective of the system they have passed through community services, the hospital system and secondary care, social services, and GP practice who was a part of none of this. From the patient's perspective, he just broke his leg.	For a breast lump there is typically a delay of 2 weeks after referral by the GP. Then, it is usually one stop to diagnosis and therapy. It is waiting to be seen on referral. There is a national project going on about this, looking at inefficiencies in the system -- it is probably resource constraints, particularly personnel.	No data	No data
	unusual problems	waits and delays	incentives	community
MS31	No data	No data	No data	No data
	unusual problems	waits and delays	incentives	community
MS32	Well it depends on the type of patient. It's a complicated process for managed care referrals. We have a goal of 48-hours for anything non-emergent. If it's emergent we will call the specialist right then.	No data	We use letters of commendation. If we have comments from a patient. We are moving toward team review instead of individual performance review. Point to what people need to do better.	No data
	unusual problems	waits and delays	incentives	community
MS33	We have one record for everyone, this is less of a problem We have the "digital dump." We have timelines with what to expect in terms of the partnering program--specialist reminder flags Information flow is important; we are paying a lot of attention to it.	Timeliness a big issue. If you call into BH, we can get you into therapy within the week. We hope it will go to 1 day. We now have only 50% carve out (unscheduled). Time to third appointment is 7.5 days from 16.9 days last September We have data boards entitled "How are we doing?"	No data	No data
	next to the waiting room where we give patients this information. It provides information on preventive care rates (stool guaic, tetanus) etc. as well as access. We hope it will go to 1 day in BH.			

	unusual problems	waits and delays	incentives	community
MS34	We have some primary referral relationships with specialists. It depends on the needs of the patient. Often the interpreter plays the role of coordinating the care. We have established procedures of how information is communicated back to the primary care physician.	No data	Celebrations and pats on the back are all that we have. No productivity incentives. We are all on straight salary. A strong egalitarian spirit.	No data
	unusual problems	waits and delays	incentives	community
MS35	No data	No data	No data	The community does focus groups and gives us feedback. There seems to be an interracial bias about quality.
	unusual problems	waits and delays	incentives	community
MS36	With abnormal findings, additional evaluation must be done. Our surveys show patient concern with the coordination of care, especially with an abnormal finding. We have instituted a trial study with a "navigator." We believe that navigators can help guide patients about where to go and when concerning their follow-up care after screening. We are also doing another pilot study on the treatment side. Overall, we believe that from the point of referral to eventual diagnosis, there is a large grey area. We are presently trying to improve this area.	We are experimenting with different measures. We do chart audits. However, we do not have yet a good automated measure. We have a fairly good idea of the time it takes from an abnormal mammogram or biopsy to treatment, but not beforehand. And this is not the best starting point for measuring time of care. We want women in within two weeks for diagnosis. We don't have any data though, so we can't systematically look at delay.	There are only incentives for high-level administrators to meet HEDIS measures. Nothing filters down.	We have a consumer controlled board. They have asked us to do studies on breast cancer patients. There is still a resource issue for us. We work with limited resources. We try to do many things to raise awareness of breast cancer and the importance of screening. It is mind boggling, therefore, for me to find out how little people know. We tell the media and various other mediums, however, people are surprised at what we are trying to do and the scope of the effort.
	unusual problems	waits and delays	incentives	community
MS37	Sometimes, we do have to send patients to a specialist. For example, if a patient needs an insulin pump. Our microsystem is unique in that here a specialist comes to the patient, instead of vice-versa. Specialists, every now and then, make rounds with us in our practice. This is different from the usual referral process. For diabetes, it works quite well.	We are able to identify delay in some areas, like CV, diabetes, and mammography. We know when patients if and when patients have gotten certain preventive tests. We track patients through preventive care, but not through the diagnostic processes.	No data	We do systematic satisfaction surveys via telephone. We can assess each doctor's individual performance in this way.

	unusual problems	waits and delays	incentives	community
MS38	We make one nurse in charge in the inpatient unit. She is the conduit for any problems or questions. She is the one patients and family members contact, and she will coordinate when there are problems, is aware of their needs, and has continuity. If need be, she calls the doctor. She knows, for example, patients or family members to look out for—who may panic, obstruct the care plan, etc. In the home the majority of visits are by the same nurse and aide team. This works very well, and it is very rare to have patients call the doctor first.	No data	None. Another organization I know about rewards aides for obtaining certificates in rehabilitation or end-of-life dementia, and they get a higher salary. It would be nice to be able to do this.	We have a very active board with a lot of outreach activities including nonbereavement counseling services tied to acute care. The results of our audits identify opportunities for improvement.
	unusual problems	waits and delays	incentives	community
MS39	No data	The idea of this care is that it is available as long as needed. It is rare that we would serve someone for less than 6 months. It is more common that we serve someone for many years.	No data	There has been a strong consumer movement recently on creating peer support centers. These are not run by us, but by consumers. We refer people to them and then we participate by providing some of the educational seminars. They encourage people to take control of their own care. For example, they use workbooks on living with mood disorders. I teach residents about community mental health. I invite the peer support groups to educate the residents. It really is an eye-opener for the residents. I think that as physicians a lot of us don't have any idea what it is like to live with a mental illness. And none of the education teaches that. The peer support centers let people with the illness teach the residents about it.
	unusual problems	waits and delays	incentives	community
MS40	No data	One day, one visit. A new patient is generally one-hour visit. A return patient is usually a 30-minute visit.	No data	No data
	unusual problems	waits and delays	incentives	community
MS41	No data	No data	No data	No data
	unusual problems	waits and delays	incentives	community
MS42	The campus/community based structure addresses the coordination issue. If there is a high-risk pregnancy, perinatal case managers are assigned to the woman and care is provided. The multidisciplinary clinics also serve as a point in which many issues can be treated at once. If the woman is a diabetic, her specialist care manager may refer her to an obstetrician as indicated by our care protocols.	The two main problems of treatment delay are the unavailability of physicians and patient non-compliance. Our case managers are the ones who make visits to patients who are not following their health schedule during pregnancy. We have a detailed flow chart for normal and abnormal deliveries. We have criteria for dystocia and fetal distress.	We have an internal budget financial incentive structure which has many indicators. If at the end of a quarter, there are savings from the unit, the $ is split 1/3 to the facility, 1/3 to the health plan, and 1/3 to the physicians. Ultimately, what the physicians see is an increase in their fee schedule for the next quarter.	We derive our health plan members from the community. We have a marketing division that conducts focus groups in the community. We survey patient satisfaction in the clinics and study health plan-population interaction. For example, we know that women in the household make most of the insurance decisions for the family. We try and work with this data.

	unusual problems	waits and delays	incentives	community
MS43	[They screen out high-risk patients because they do not have backup ICU.]	No data	No data	We visit meetings of chiropracters in major cities 2x/yr. Many times patients go to chiropracters because of back pain, but the reason is an abdominal hernia. Because patients travel long distances to have surgery here, we go to other cities for follow-up. We send patients a letter letting them know when we are coming. We also let their GPs know we are coming and hope they have no objection. *Q: What do you learn from this? A: Sometimes we pick up someone who needs surgery. Sometimes people bring friends or a relative who need surgery. Sometimes their doctors come as patients. We realize it is hard for some people to come to hard, and our follow up is improved this way. We ask about the incision, complaints, how the repair is going.

III. Information and Information Technology

	On the pre-interview survey, you indicated that your information system . . . Do I have that right?
MS01	We are working with someone to develop the information system we need. We will be pilot testing soon. It will be integrated into our existing system. An independent practice cannot fund information systems.
MS02	We participated in a large survey done by a medical sociologist of 600 patients. More than 60% had computers at home. The elderly are most rapidly increasing users. I consider responding to e-mail part of my call-time. We have a lab interface (since Feb) (the lab is hospital based) and are working on R-network fax for consultant reports. We looked into scanning in the consultant report, but most of it is junk and just as fast to type in a few sentences. For the time being, I just type in pertinent findings on consultant reports and x-rays. The EMR also provides pharmacy interaction alerts. The EMR is the best tool there is out there. Given the diversity and biology, it is very hard to develop gls that would help with an individual patient. The EMR has a Protocol Function. The hospital is gradually developing one for inpatients (by CERNER). Another function of the Medical Assistants is to take the responsibility for getting the results of tests, e.g., CAT scan before a patient visits. I can access lab data, discharge summaries, x-ray reports for his hospitalized patients if their discharge summaries haven't been sent to me yet. When lab results are returned, they come back by provider, and I can attach them to the patient's chart. When I open the patient record to the "desktop" flags alert me to deal with abnormal results.
MS03	We use a written record for the most part which includes lab results and x-ray test results. Soon, the whole institution is going to switch to an "order-based" system, in which some of the care processes will be computerized. We believe that this will probably crash and destroy the micro-system for about 1 month, and then it will be good. There is a huge learning curve as well as a phase of "learning and acceptance" that the staff must go through. The promise of IT is that it will generate all sorts of data for us, from reports to graphs on all sorts of outcomes.
MS04	No data
MS05	We run our own reports every 60 - 90 days. We export data to the Society of Thoracic Surgeons and the American Cardiology Society. Our data becomes a subset of their data. In the beginning of looking at the data, there was a lot of fighting and in the end there have been a lot of hard feelings. It's a matter of building up trust. How the organization is structured has helped a lot. The Chiefs are salaried and are expected to work on improvement. They are well versed in the data. The physicians work at other hospitals as well. We have been involved in population based efforts that focus on cost and LOS. We focus on the health of the native population. We are starting a state-wide diabetes disease management program. There have been lots of starts and stops. It's hard for us to reach a consensus about what to do. We have an "explore" database. This system has been up for about 2 years. It's a national program [HBSI]. 167 other facilities are included. We can pull information by procedure code. The data can be categorized by severity. Level I = low risk, II = medium risk, III = Hi risk, IV = extreme.
MS06	There is a practice in [location X] that is fully automated. It's a solo practice that is caring for 4000 patients. The only way he can do that is to be fully automated. We're going there for a site visit. The needs of primary care get lost in the greater needs of the system. No one is willing to invest in automation. We are looking at a system to do a lot of the paperwork. I.S. has to commit the resources. They have to be willing to support anything that will interface with the overall clinical information system for the system. We are also looking at a new system for pre-certification of hospital care. We lost $15,000 within one month with CTs and MRIs that weren't pre-certified. The bottom line of the clinic and hospital are tied, so that expense falls on the clinic. We can't ignore this. We see that the insurance companies are just clamping down on this. There's no point in trying to fight it.
MS07	Our IT system in the ICU was established in 1964. It then later moved into other areas in the hospital and today is corporate-wide, in 6 different hospitals. We have laboratory data, pharmacy data, administrative data, EKG records, x-ray records, and all sorts of other information on computer. The hardware we are using is actually archaic; it is more of a DOS system than a Windows one. We have a "complete medical record." Computer terminals are at the bedside of all patients in the ICU. A Medical Informational Bus (MIB) takes all of the information from the technology and equipment at the bedside and directly transfers it into the mainframe computer. We could get updates to the minute if we wanted, but we usually just collect the data every 15 minutes. Thus, information is coming into the medical record from various sources, including the MIB and from nurses/physicians who have terminals at their work stations. I am able to download all the data collected and store it in a database to do population queries. We also have an automated billing system. The first year this was installed, the Shock-Trauma ICU increased its yearly revenue by $1 million. This was because before the billing became automatic, there were so many tasks that we just forgot to bill for. At the corporate level, there is now talk about creating a longitudinal record. This would allow patient information from another hospital outside the system or a physician's private practice to be integrated into the chart here at our hospital. The hospital might have spent close to $50 million on information technology. They are also trying to move to a different format, away from the hardware system we have now to a client-server process. The IT system here also measures processes of care. As I said earlier, the data that comes from the system is used to create new protocols and to tinker with others. Some of our computers are able to run very sophisticated programs. Usually respiratory therapists help out. But for example, our ventilator protocol is almost entirely computer run.

	On the pre-interview survey, you indicated that your information system . . . Do I have that right?
MS08	Our patient records vary from site to site - one site is totally paperless. For diabetes all the resource nurses are using a standard tool. There are manual - next year it will be computerized. Information is available on our website. We have the capability of sharing information with the patients now - at the system level, but we don't want to do that yet because that would be going around the care team. They [the care team] aren't ready for that yet. It's all part of building mutual support. At the system level we have the opportunity to combine our clinical and administrative databases. We use the information system to generate risk lists and stratify risk. We asked it to give us everybody with a diagnosis of diabetes and to give us everybody with a prescription for an oral glucose agent. Then we tested this way against a manual chart review and found that it was a very good, accurate way to generate a risk list. This list is sent to the MD quarterly. It helps the care team identify patients who are at greatest risk.
MS09	We are starting a medi-tech system at the hospital. So far we can't access office records. We seem to be 2 - 3 years toward a fully integrated system.
MS10	Our system is a mix of paper and electronic. Connected to hospital (e.g., lab, radiology, pathology, etc.) We seem to be behind. Our institution is behind. This is a barrier to doing improvement work. The data that is available for populations of babies is very poor. That's one reason we participate in the regional database. There is no organizational support for maintaining, developing data bases at a department or unit level. You can't expect the institution to develop it. Complaining about deficits is not useful. For a while I was a "consultant" to the institution about information systems. The patient record should contain the same information we need for the organization on financial and clinical outcomes. The outcomes and administrative data should be part of the patient record. ICD-9 codes aren't specialized enough.
MS11	Our system allows us to track who didn't come back for a follow-up each quarter. Then we use non-clinical people to make the calls. This would be impossible without computerized medical records. You can't drop out of the program without talking to us and letting us know why. This really is an important part of chronic care. We are using a clinical algorithm that is computer based.
MS12	No data
MS13	The physician group, who has contracted with the hospital, invented the tracking system and brought it to the hospital. My colleagues and I invented the "dashboard" approach to measure cycle times. It's been here for three years. For this sort of stuff to expand, there needs to be a radical revolution involving the current market of software vendors. They are so monopolistic, so customer unfriendly, so unhelpful. These vendors have done nothing to help clinical systems and administrative databases. Right now, I'm staring on my screen at Microsoft Word and Excel. Bill Gates has probably done more for modern medicine than any of these other software vendors!
MS14	We are going to an electronic medical record --- IDX. The medical group will be up by 3/1/00. People are ready --- we've been hearing about this for so long. Lab, x-ray, and hospital are already on line. But there isn't a way for us to import data yet.
MS15	I'm using Wasson's FNX --- a multi-task system. All my patients > 70 fill out a questionnaire. It gives me a printout of their health maintenance flowsheet. It uses the Dartmouth Co-op charts. It tells me what the patient's needs are before I walk in the room with the patient. It give social, geriatric, and clinical information. I pay for a booklet that I loan to patients about geriatrics. I have them read the chapters that apply to them. It gives me feedback about my population as a whole too. I have 93 patients in it. For example, I know my rate of living wills. I want to link this system to the office system. My partners don't use this system. My partner has entered all his patients in a database file. The FNX doesn't track everything that he does. So 2 out of 5 of us are trying. We came to practice because we like the dr-pt relationship. All these bells and whistles aren't what we came to practice for. For example, we are leaving our automated phone system. We're old timers. What does information technology do? How much is it just documenting to outsiders what we do? If we thought that collecting excellent quality of care data would keep us in business we would do it. That's not what will keep us in business.
MS16	We don't have a fully fledged electronic medical record. Every exam room has a terminal. We have a diabetes screen that can be pulled up as an interface on top of individual databases. The guidelines are available on screen too.
MS17	Our patient tracking system is used for at-risk patients. There are several thousand patients in it. Perinatal reasons is the largest reason to be in the tracking system. The diabetes registry is on the tracking system too --- that's 500 or so patients. The physicians make a judgement about what at-risk means. The state has made some of these decisions. It has to be something that is important to track or important to get the patient to other services. Once they are not at risk they are taken out of the system. Staff are assigned to the patients who are at risk and who are in the tracking system. The information can be looked up at any PC. Any inform that is kept in the overall system --- appointments, encounters --- are added to the patient's record in the tracking system. We designed and deployed the software ourselves. The computer can update the screen or the case manager enters the data. We've added a column for numerical values in the diabetes registry.
MS18	We haven't made a great effort to do this [use information technology to document/track advance directives]. We are just overwhelmed at getting records on-line. We have to find the electronic green sleeve [how they document advance directives]. The one clear advantage is that this has been adopted throughout the community. MDs see the same thing in different settings. The 2 things I see coming are 1) an electronic green sleeve, and 2) web-based curriculum of training. This would help us in the ongoing training and in orientation of new people.

	On the pre-interview survey, you indicated that your information system . . . Do I have that right?
MS19	There's not much to report. We don't utilize any information technology in the practice here. In the future, I hope we will be able to do so. I think that using the tool to increase patient education is one of I.T.'s most promising advantages.
MS20	We try hard not to collect information in a retrospective way. We collect info in real time and feed it back within days so that it can be useful. To do this you have to identify the individuals who are able to collect the data and make it part of their jobs. Most of the information is there, you have to find a way to harness it. Really all that is needed is a simple system to get back information quickly. Computers, lines, high tech come to mind but it doesn't have to be that way. Talking is a way to communicate too. I.T. doesn't have to be an elaborate system. Think about a patient moving through the process from left to right. From the floor, to the OR, to the ICU, back to the floor. Communication follows the patient from left to right. And each of those different units has their own fiefdom. We should be communicating from right to left. We don't know why the floor can't take the patients from the ICU. We just know that we keep telling them they need to take the patients and they keep saying they don't have beds. So it is important for each group to talk to each other instead of existing in these silos. And people don't think about how a change here will impact the rest of the system.
MS21	No data
MS22	Right now, all data is kept on paper or on an EXCEL spreadsheet. I get my statistics from the spreadsheet. M. puts in information on patient utilization of services, appointment schedules, lab results, ER admission, hospital admission, etc. We don't have access to all of the patient information, we still have to go to each department to collect the information. We could look at the KPDS, but it doesn't have all the information. My recommendation is the system get the Point Program. This is through the Internet, and all you need to access information is a password. This is meant for case managers, but can be used by any health care provider. All you have to do is pull up your panel and you can find out what's happening with your patients, lab information, etc. It looks fantastic, but the system decided not to do it. Instead, they went with the "AmCare" system. However, this system doesn't allow you to communicate with one another. That is, if your colleagues don't have an Amcare module, you can't receive data from them. Also, you must buy a module for every person. So, for our micro-system, we would have to buy a module for all three of us, but then we would still only be able to communicate with ourselves, not with others until they get it! Currently, we keep hard copies of all patient information. Dr. D. signs off on the information, M. xeroxes the info and puts it in the patient chart. This is the "old-fashioned" way. We are supposed to get an electronic medical record. We were told 5 years ago that we would get it in 5 years. They are saying the same thing today. The reason why the Pilot Program is the best is that it would be close to instantaneous. The KPDS doesn't tell me dosage of medication, scheduling information, who ordered tests, and what is happening today. It only gives me general information. One other example of IT involves pharmacy. I need a special password for pharmacy information. This is good practice and good for security, but it might lead to disjointed and untimely care.
MS23	We have a system-wide computer. We can get path reports, lab reports immediately. We also have a system just for biopsy patients - this is not completely integrated with the system but is just at the Breast Center. We have a person who is dedicated to the breast center system. Patients who need follow-up are on a tickler system. We look at statistics on biopsies monthly. How many, lesions, positive, ultrasound, localization? For FDA we have to keep some statistics. We keep records for each radiologist too. This will be mandated by FDA soon. We don't have the surgery information yet. That will be at the new center.
MS24	No data
MS25	No data
MS26	No data
MS27	They are working on a huge IT investment for the whole system. Locally we have a local area network for all current patients. Some of the med rec. is on-line, but because this is only a part of the system, it has to be printed off and put in the paper record.We adapted an until then useless "visit registration slip" for this purpose and use a program that uses the Preventive Medicine Task Force Guidelines. As a patient signs in, the computer generates a slip of paper with: age, sex, USPSTF gls for that cohort, when the test was done, and whether it is due in 7 seconds. There are dumb computers in each exam room to pull up patient information and "semi-smart" computers in each office. They are also on e-mail. Our on-line medical record has patient demographics, appointment history, major medical problems, pharmacy, lab results, some x-ray (can call in and get by phone). Laboratory results come by computer. Print outs are put on the clinicians' desks and a separate printout is sent to the chart room.
MS28	Getting real time feedback of data that impacts what we do has always frustrated me. If we are going to collect all this crap we have to figure out how to use it to help our decision making process. Data feedback in a way that we can be comfortable with.When we decided to shorten our intubation times we saw decreased LOS and increased patient satisfaction. You can track LOS, but the nurse doesn't care about that or think that she can do anything about it. But if you show her the intubation times you are showing her something that she has control over. I'm much more interested in finding out what I have some control over. You have to identify the variables that are important. Mortality is important, but what is driving mortality? It's usually things that would rarely make the front page of the NY Times. You have to get beyond the ranking.

	On the pre-interview survey, you indicated that your information system . . . Do I have that right?
MS29	We have a completely integrated computerized medical record. We developed it in house. We hired the programmers and they built the system based on how we operate. Some people buy systems then try to adapt it for their needs, but we wanted to build it ourselves. I have a computer on my desk and I can pull up any patient record. All the providers have access to all the patient records on their computer.
MS30	Other information can be gotten from national databases (morb. and mortality reporting were discontinued, but they will be getting utilization reports also information possible from ambulatory group. Computer connection to other databases: Blood is collected in the office, sent by taxi to hospital labs (they have no office laboratory or private labs). They get an e-mail notice of the results being held in a file to check. They review and a click authorizes putting it in the patient record. When a patient calls about results, the receptionist can call it up. Other practices (13 or 14) are now doing this, but it was inaugurated by their office. Began when a receptionist pointed out that the computer that prints out the results could also file it in the record. They worked with the lab to develop the system. It is a neater, more paperless approach. It is more cost efficient and avoids misfiling of filing lab reports without their being seen. The system includes alerts for out-of-range lab values. They expect to be able to schedule on line before long.
MS31	Our current system is PDS 7000. It is a totally integrated network system. It includes pharmacy, diet, central services. We can enter orders, get lab results. The nurses can use it to document care and to retrieve data. We are now moving to a Cerner (Windows-based) system and are in the midst of transition. When implemented we will be able to track the effect of an order [further down the line].
MS32	Paper-based system. [Didn't ask follow-up questions.]
MS33	No data
MS34	No data
MS35	No data
MS36	The larger system developed the software many years ago and told us to run the screening program. The program we are using is in COBAL language. We need to rewrite it into new software. This is a big challenge for us because it is tough to rewrite the program. Software is critical. We have quite a bit of stored data, such as risk factors for women, age, date of mammography, bilateral screening or not, etc. It is proven helpful in not only storing this information but also for billing purposes. Processes of care are also looked at by the information systems. Recently, we have taken a look at the timing of the invitation we send out to women to get screened based on our data. We have also been able to link our database with the SEER (Surveillance & Epidemiology & End-Results Reporting) system. This is a population-based cancer registry, so we can know everyone who has breast cancer. By linking our specific patient data with SEER, we are able to calculate population-based measures such as staging of disease for our members, age-adjusted incidence and prevalence of late stage tumor. We have received extra money from the National Cancer Institute to do this. Our system is obviously very interested in outcomes of care. We are HEDIS inspired and our system wanted to produce outcome measures themselves. "Clinical planning" is emphasized.
MS37	We believe strongly in real-time care. Our clinical information system is updated within minutes. The sorts of data we collect on it includes all patients seen that day, information on lab, encounters, x-ray reports, pathology reports, CBC, urine, etc... Every time, that we want an update, we just press the "refresh" key. The system is called OASIS. It is a commercial set-up software plan. It took a huge amount of time for the IT people to learn and implement the system. To access it, you need multiple interfaces. Just the clinics have this system. You can access information from the hospital. There is also no direct input of clinical information by patients. In terms of clinical decision support, we don't have a system that spits out warnings or reminder, however. For support, we usually go to another place, specifically clinical guidelines and access to the medical literature. All the doctors get information on their specific performance from a measurement group in the health system.
MS38	Some is computer based. We have the plan of care, orders, meds, treatment on computer. (Usually verbal) orders are entered by the clerk. The system they have was the VNAs and is not hospital-friendly. We are about to add pain scores, dyspnea, family anxiety to the data base.
MS39	We have used the same system for a long time. It has everything in it. We have collected a lot of data but we have a hard time getting anything out. We have data --- we collect information quarterly. We don't have a smooth way to get the information back. There isn't a good way to get it back out to the people.
MS40	We hired a data management person --- we didn't get any CIS people or support from they system. No one else has their own data management person. That keeps coming up. I keep saying, "And no one else is doing what we are doing either."
MS41	We have a diabetes registry that includes pharmacy, hospital, claims, and lab data. We have developed an intellectual property separation agreement for the registry. The IS is needed in the transitional support of the medical group. We are looking at a new information system for the new group --- if we can afford the one we want it will do everything.

	On the pre-interview survey, you indicated that your information system . . . Do I have that right?
MS42	Our information management has three streams, data management, data analysis, and information technology. 1) Data collection includes a prenatal data set as well as a postpartum data set. We use a "profiler screen" as an automated instrument in which data can be entered into. We do individual surveys and pollings. We try to only store relevant data and manage the data well without having any coding errors. 2) Data analysis allows us to look at the clinical, financial, and patient satisfaction outcome measures. For example, once data is collected, all a physician can know is where they stand in regards to a particular compliance rate, for example. However, it is up to the data analysis team to sit down with the physician and brainstorm why they are different, generate a hypothesis, and validate the hypothesis. 3) The Information Technology stream includes a database administrator and an electronic data warehouse which collects data and pulls external data. Programmers help to automate data collection and generate web reports for physicians to understand easily. This is important if we are to appear credible to the doctors. There are three phases of information. 1) Clinical data coming from the administrative system, such as ICD-9 codes, etc... 2) A self-coding data sheet, which can be input into the computer into profiler screens. 3) The final phase is a merger of the first two, and this is what we currently have in our labor-delivery system. Data is charted right in to the medical record. It can be extracted from any of the clinical workstations in the labor area. Our "stork-byte" system was implemented so that everyone uses the same record. In one month, we will have the capability of having all data from our clinics and hospitals "dumped" into the electronic warehouse, so that care givers have instant access to a longitudinal patient record. Right now, what we have to do is go to each area in our system, extract the information and then merge it into the warehouse.
MS43	No data

Health Care Micro-system Interview Responses

IV. Improvement, part 1

Specific projects = *Can you tell me what sort of things your micro-system has done to redesign your services and to improve the quality of care?*
Evidence of success = *In what ways were they successful? Are there specific levels of performance you can point to?*
Barriers = *What are the barriers to making change? How have you overcome them? (or are trying to)?*
Awareness of results = *How is everyone made aware of these results?*
Funded projects = *Do you have any internally or externally funded quality-related research or quality improvement projects underway now? What are their objectives?*
Leadership training = *Within the micro-system have there been any specific efforts devoted to leadership training, such as creating effective teams, conflict management?*

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS01	Part of our value system is that we have never been satisfied with the status quo. One project we worked on was changing physician behavior regarding flu vaccine and diabetes care. We did chart reviews and collected names that needed a flu vaccine. We gave the doctor's the names. They set up the direct contact. Within 4 months those eligible for flu vaccines went from 78% to 99%. That changed the physician behavior. People repeat familiar behaviors.	No data	No data	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS02	No data	No data	No data	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS03	We constantly try to better ourselves. We have on-going educational sessions for our staff. We have many protocols, such as skin care protocols, mobilization protocols. On average, our length of stay is about 8-9 days. It is coming down slowly, and we expect it to continue to come down	No data	This is a big hospital. There are many layers of bureaucracy. We must adhere to a budget and thus make tough choices. This is also a 7 day week institution, however, like in most places, the care on weekends is never as good as that on weekdays. There is a staff problem as well as a scheduling problem of tests. There is also an incredible pressure to increase capacity. Since discharges happen so quickly, there is some burnout and dissatisfaction. Finally, not all doctors like the interdisciplinary philosophy. They like to do whatever they want. We have convinced most of the doctors that it takes a good multidisciplinary team to take care of the patient and address all the major social issues.	No data	No data	There is an annual retreat that addresses these issues [leadership training, effective teams, conflict management, change management, etc.] for the three shifts of workers in the geriatric unit. We also having meetings among the leadership and the teaching unit that addresses these issues.
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS04	No data	No data	No data	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS05	[Didn't understand what happened beyond feeding the data back to the physicians.] The improvements have all been in the rates.	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS06	We've worked on orientation and enrollment	No data	Our biggest problem is the amount of energy it takes to	No data	No data	No data
	The thought that the patient should access one person. We set this up with an RN --- they did the orientation, assigned an MD, took some medical information. A great change, everybody happy, but then we couldn't afford one person dedicated to this. We went back to no orientation, no enrollment. Three years later we get a recommendation that we need to have someone doing orientation/enrollment. I said, "I've heard that before." So this time we just assigned the role to someone in the team. We still had all the brochures we had printed up from the first time around. What was missing is that we didn't assign the responsibility. With the chronic care guidelines it was a similar thing. You can set it up, but then you have to pay attention to the details. The diabetes protocol is something we are working on now.		accomplish these changes. There is an internal barrier between the docs and support staff. They do the day to day work --- if they don't want to make the change they continue to do things the same way. Even if they are part of the process of making the change, they may not do it. For example our goal was to see all patients today. At first it was great then at the 3rd week the schedules were full again. We found out that if the RN saw the schedule filling up today she started using tomorrow's available appointments, the next day's available appointments, etc. At the system level the priorities for the system are not the same as the priorities for me in primary care. It's not that they aren't supportive, but the priorities are just different. At the local level I don't get the measures that I need --- the measures at the regional level aren't at the level I need. There is incredible support at the local senior leader level. But at the department level there are barriers. We try to make changes across departments because in the community we don't want to treat patients differently because of the department they go to for care (peds v. IM v. FP). The barrier is to get agreement for everyone to make the change after one group pilots it. Every group doesn't need to pilot it before making the change.		
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS07	We recently measured costs of care in our ICU in 1991 and 1992, as a control, compared to 1995. We found that costs in this time period were reduced by 25-30%. Total costs to the hospital were reduced 19%. We hadn't even started looking at costs till 1996. Basically, this means that	Overall, things like lab utilization, x-ray use has decreased 25-30%. We have actually never done a lab project to improve quality or reduce costs. However, we did try to raise awareness and create an environment where by this could happen.	One barrier is my partner. I am an "early adopter." I am	No data	No data	No data
	though cutting costs weren't an objective in our quality improvement efforts, they were a surprise bonus. One example of a quality improvement effort involves our sedation protocol. We saw that we were overusing sedative drugs. Our first project was to design a protocol that would move us away from the highest costing sedative drugs. For example, we were spending $290,000 on drugs for advanced respiratory distress syndrome. We used to give 5 g of Valium per hospital visit per patient. Now, we give less than 500 mg. This has led to shorter hospital stays, less complications, and a decrease in costs. Another example includes keeping more attention to tightly regulating glucose levels. This has reduced infection rates and thus decreased costs.		quickly sold on quality improvement projects. He is more of a mental person, he needs to see double-blind randomized controlled trial evidence before supporting any change in process. He hasn't obstructed any project specifically, however he does serve as an obstacle. I have, however, realized the importance of having someone like that on the team. Another barrier is if the protocols designed do not work well. You have to make sure that there isn't a backlash with folks saying that the protocols are a waste of time. Another barrier is if the nurses don't feel comfortable or agree with the protocols. I also think that there is a barrier at the institutional level. For example, the institution has launched a Clinical Consistency Program. Basically, they want every place in their system to practice the same way. However, this hurts us because we have found ways to do things efficiently here, and if we have to practice like the rest of the system, we feel that we'll be practicing "mediocre" care. Thus, there is a philosophical barrier. One thing that has helped us is the credibility I have within the organization. What I want is basically a mosaic of well-organized units within the system. I want to see cooperative efforts in quality improvement. Sometimes, when costs are high, the leadership acts with "juvenile behavior" to fix things and forces us to micromanage. This is especially true when JHACO comes around. However, when JHACO sees the stuff we do here in the ICU, they absolutely love it. Don't get me wrong, I think for the most part, our institution has done a good job		

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS08	We've adopted the ICSI guidelines for decision support. We are also using Staged Diabetes Management, which is a little more robust. We give CME luncheons around diabetes. We've used the chronic care model to. think about improvements. For self-management we developed a wallet care, we standardized the diabetes education program, and we used our "Discover" magazine to publish an article on diabetes. We have planned visits - diabetes patients are scheduled for a certain half day It changes it from a random event in a chaotic day to a planned visit. Everyone is geared and aligned for caring for patients with diabetes during those planned visits. We have group visits. We set up stations they go to - feet, etc. Then a group session on a certain topic and support groups. It's hard to assess the impact of each of these strategies. The Center for Health Promotion has a lifestyle change line to support patients - patients can phone in and talk with someone. Assessing a patient's readiness to change is a new idea - putting the patient in the drivers seat. We aren't using a sage on the stage anymore in our diabetes education.	No data	There is a perceived barrier regarding finances. The implications of phone care, group care. The system has evolved to provide acute care and episodic care. The idea of stepping back and doing things differently is a real barrier.	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS09	No data	No data	No data	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS10	In a project that ended in 1996 we were involved in a collaborative benchmarking project reducing nosocomial sepsis and reducing cost of care. (We reduced x-ray use as a way to reduce cost of care.) As that ended we were trying to decide what to do next. We began recruiting interest in this idea of parents being partners. We created an adhoc group to look at parents in NICUs. "We believe the parent/child relationship is essential. We believe in providing a nurturing environment where the child is part of a family and the family is part of a care team." We all agreed on that. We held focus groups to ask parents what that would look like. How would we need to change our practice? We did this 6 months before joining NICU 2000. We were lobbying to have this as a focus of the work. NICU 2000 is a benchmarking project. It is aiming to: 1) create a habit for change --- a flexibility about changing. 2) look at care as a process --- process does create the outcome 3) evidence based medicine in choosing therapies. 4) collaborative learning. 8 centers joined us in looking at parents in nurseries. Now there are 11 centers. We did something wrong the first time. We created an adhoc team to lower infection rates. They brought the change back to the unit. The unit didn't want to make the changes. The team was "off-line". They had success in lower infection rates, but they met so much resistance. Our goal is to make a unit that creates improvements. So, the first thing we needed to do was teach the leaders about improvement. We have shared governance. We had the leaders take a course --- concepts and theories of continual improvement --- but we told them that the improvements that they would be working on must be related to the parents as partners project. Some of the changes they worked on were giving parents calling cards, calling the families post discharge to ask how's it going. Improving education to parents. We charged the entire operating structure of the unit with improvement.	No data	Inertia, not wanting to change, status quo, resistance to change. Our first project with the regional network was improving infection rate. It was showing how our data compared to others that did it. At first I didn't believe we could do it. The benchmark was 5% and a third of all our babies were getting infections. We went from 35% to 13%. You have to move from "we need to change" to "we have to change".	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS11	No data	No data	At the top there have been a lot of changes. Hi turnover for CEO, CFO, COO.	No data	Yes, from our foundation, from pharmaceutical companies.	No data
	This is a real challenge for us. We have to prove ourselves again and again. We have to prove it by showing the data on readmits and unplanned admissions. Focusing purely on the bottom line all you see are the salaries. Direct reimbursement cannot match salaries. In California they bill as educators, not as providers. The biggest barrier was that organizations didn't understand how to weave in the costs of diabetes management. Any outlay was seen as a loss. A success has been overcoming this barrier with the HMOs and getting them to use diabetes educators. Information technology has given us many different systems but they don't communicate with each other. It is very fragmented. The cost is huge to overcome this barrier. There is an ethnic barrier. A large Hispanic population in San Diego. Our relationship with Hispanics is not strong enough. We provide every service in Spanish as well as English. Latino males are the most difficult for us. The ADA has a specific initiative to address this but they don't have a solution yet. Some clinicians don't value diabetes education. They are lone rangers. Protective of their own world. We have no leverage --- everything is voluntary. We depend of the good will and clinical judgement of the clinicians. From the HMO, it is seen as over utilization when physicians send a lot of patients to diabetes services. Education emphasizes the importance of the initial outlay to reduce costs later on. New technologies are more expensive. This is classic for chronic illness --- an upfront investment in time and treatment for down the road payoff. This is a real barrier in an HMO environment. To overcome this barrier you have to collect and feedback outcome data. Recruiting qualified personnel is another barrier for us. Bilingual, certified diabetes educators.					
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS12	Two things that we've been working on recently is improving the rooming process and forming teams.	No data	A problem is that the organization is slow to	No data	No data	No data
	change --- they are supportive of change, but slow. There are too many handoffs in the decision making process. One of the great fears was that the 3 teams would become autonomous --- this was a misconception of the larger organization. They have well-defined policies and procedures about how things should be done. I don't think we have had a lot of barriers. Control of information is a barrier. It is hard to get the information we need. Change will be more rapid in the teams as we have more control over the information. We put together the guidance team and the idea was that this team would tell us what to work on. But I saw most of the good ideas coming from the front lines. The front line needed to be empowered to make the changes. So, now the guidance team will become the quality council. It will have membership from each of the three teams. Changes that teams want to work on will be presented to the Quality Council --- this is what we want to do, we want to use this method. The Council's goal will be to provide guidance and facilitation. "Yes, that project meets our overall goals, what resources do you need?"					
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS13	One example is that we have continually invested in	No data	1) The failure to appreciate that much of this quality	No data	No data	No data
	the pneumatic tube that goes to pharmacy. It has basically paid for itself. Basically, what happens is that if the ER doc makes a request to the pharmacy for a particular drug, they put the request up this tube in the ER. The tube shoots it directly to the pharmacy on another floor. An alarm goes off there. The pharmacist checks things out, puts in the medication, and shoots it back down to the ER. It's great. Some of the other ones I guess I mentioned earlier on	stuff has been worked out somewhere else. Getting people to share ideas is how you get best practices. 2) You need a passion to change. Right now, all hospitals are paralyzed with fear regarding the Balanced Budget Act of 1997. But microsystems can still move even when the macrosystem may be stuck. There needs to be continuous quality improvement. 3) There must be reeducation/retraining and the spread of this knowledge.				

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS14	The corporate policy for open access was a barrier and facilitator at the same time. The way corporate defined open access wasn't really open access and they set incentives based on their definition. Some people had different views about what open access was. For us, it was "doing today's work today." For corporate, it was "if your schedule is open 75% a week out you will get a bonus." This incentive did get MDs interested and it did help the MDs see the benefit. We had to do a lot of training for the MDs about open access. We looked at each MDs backlog and gave them options for how to work it down. For the staff training it was this is how you schedule for open access, this is how to present available appts to the pt. There was a problem with how to track it. We wanted to give ownership of this to the managers. But then there were problems because the physicians weren't getting feedback on time about how they were doing working down the backlog and meeting open access goals. Then the MDs wouldn't get the incentive because they hadn't met the goals. Another problem was how do we get medical records here on the same day. Nurses were really skeptical about care teams. They said "we'll do it, but we will show you that it won't work." A lot of nurses identify with one MD. The team concept sounds like more work. By noon that first day they were convinced. They became advocates. Even the design of a building can make it hard --- if the building is designed wrong	No data	You have to work side by side with the staff. Gaining trust, being available to problem solve, facilitate meetings. Teaching about team work. Being seen by the staff as someone who knows what they are talking about.	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS15	I was in a meeting --- a two-way interactive video meeting --- where they were saying that 30 - 40% of time in ambulatory care is wasted time. Someone from Boston said "the chassis is broken!" I thought he said, "the chastity is broken" --- I agreed, because I feel like I've been violated. One change that we are trying to accomplish is about the 2 parallel providers --- you walk in one door and if you go to the left you are at our clinic, if you go to the right, you are at another clinic. We are doing the same thing, in the same place, and are in competition with each other. If we could combine the two desks we could reorganize and be more efficient. We would both like to do it but it has to be approved by 6 layers of bureaucracy at the system level.	No data	We do try to change to improve the quality of care. The idea of documenting a process is new. We just do it.	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS16	No data	No data	There are patient related barriers - getting patients to make changes that need to be made. We haven't had any major physician barriers. The physicians view this as a positive development. We presented it as reducing their work. I think that the single biggest barrier that can be present is around reimbursement issues. This isn't a problem for us because we have a capitated population. But without that, reimbursement for diabetes education becomes an issue. We did have some barriers with the Provider Support Report. The same report can be viewed positively or negatively based on how it is presented. We tried to present it in a way so that the physician doesn't think that the data is going to be used against them.	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS17	40% of our patients are self-pay. We use a sliding fee schedule. Our minimum fee is usually $8. Sometimes the patient asks us to waive this. In January, Social Services started asking them to use "time dollars" --- that's part of our MORE (member organized resource exchange) time dollar exchange. What are you willing to do for your neighbors? Some people don't have any ideas, so we show them a list of things people do --- reading to children, etc. If they agree to pay their bill that way, someone will get in touch with them to follow-up. This has really been a shift in thinking --- staff as well as patients. It's easier for the staff person to just waive the $8 fee. Staff have to be familiar with the program, spend more time setting it up. We're evaluating the program now. Last year's staff waived $40,000 - $50,000 in fees. We need to evaluate whether the value of services equals the $40,000 - $50,000 waived. Another improvement is that we've been involved in the IHI Diabetes Breakthrough Series. We've adapted it. It is a population based evidence program --- it looks at the total population, who has diabetes. This fit with our patient tracking system, so we created a diabetes registry. We've identified every patient with diabetes over the past 14 months. We use the health coach model and have created "circles of care". That stands for Change Illness Response through Community Lifestyle Education. We use the community health nurse, coaches and visit the patient at home to work with them on meeting objectives. The patient sets a lifestyle goal and 3 objectives related to the goal. We work with them to make sure they come back in 3 months. We have been testing a diabetes cluster clinic. 6 - 12 patients come in at one time. HbA1c has dropped 1% for all patients who are in the first 2 clinics. Our goal is for 50% of all diabetic patients to have a decrease of 1% or greater. We're doing the things that the other sites in the breakthrough series are doing too. Working on how the MD approached the patient, lifestyle changes, self management, giving patient support (use of dieticians, other community resources), population based care (identifying all the people with diabetes in the community, providing evidence based care. The collaborative has provided a lot of information about the evidence. Also we do pdsa cycles. We don't have a way to do population management. Years ago we used to look for pregnant women and ask them if they had an OB. That was as close as we've ever gotten to population management	No data	We have financial barriers. There are limited cases where non-clinical workers are included in reimbursement. I hope that we can demonstrate how we are reducing costs so that we can get reimbursed. It's always hard when we get new clinicians. They aren't used to working with para-professionals in the community. We try to illustrate what works. MDs focus on what they do in the exam room but that's not enough. A third barrier is how do we collect enough data to convince our own physicians much less managed care organizations. We have to convince our community to participate in these programs too --- especially bartering. It's easier to get people to volunteer than to participate in the MORE time dollar program. The time dollars are only valuable if you have a lot of things you can buy with them. People say that the dollars aren't that important, but the funny thing is that most people know precisely how many time dollars they have in their account. We use them in 9 neighborhoods. In one we have created a MORE time dollar store. Costs are based on how long it takes to get something in the store, so soap could cost as much as a used stove. Staff manage the whole store and the donations. Last year we exchanged $86,000 in MORE time dollars.	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS18	No data	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS19	I talked previously of our efforts to reduce cycle time for patient waiting. We saw from our data that our wait time was too long. After collecting the evidence, we decided to close down the office for a half a day and hold a series of discussions. We divided the staff into 5 teams and each team had a different project. For one, it was to probe into the pscyhology of waiting. For another, it was researching into using information technology, in the form of wireless microphones, for easier check-in and check-out. Another group researched Southwest Airlines' organization structure to see how they efficiently run things and have the lowest waits. We basically had a competition between teams to create the best improvement project with the idea that we would implement the best project. The idea from Southwest Airlines actually did get implemented, though we are trying to work out the kinks in the system. Basically, when a patient comes into the office now, they get a "boarding pass." Patients are given appointments at the hour, like 8 or 10 or noon. These are analogous to flights. Patients can "check-in" early for their appointments and they receive a "boarding pass." The earlier patients get in, the less they have to wait, and they see the doctor first. We are still trying to get the process right, but it is a start.	No data	The barriers include attitude, acumen - intelligence, persistence to improve, creativity, and building a culture to succeed. We've basically realized that we can't be too concerned about the rotten apples, if we have them in our staff. Instead, it is better for the entire organization if we focus and support the early adopters to change. It is the early adopters who will pull the organization forward so that it can realize its mission and vision. Those who don't have a good attitude, low acumen, etc. are hard to change.	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS20	No data	No data	Just ourselves. Barriers are really funny. It's just like	No data	No data	No data
	my two dogs. When we have a dinner party we have to block them in the back hallway with a little wooden gate. And the dogs just stand there. They see the gate as a barrier they can't get around but really all they would have to do is push. I think we are the same way. There really aren't any barriers --- they are all just little wooden gates. Standardization has been our biggest gun against barriers. Once we all agree to standardize something it is an agreement to make the change --- otherwise then you aren't providing standard care.					
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS21	I've developed a checklist for the administrative	No data	Initially, there were physician barriers. They	No data	No data	No data
	assistant to use when creating letters to the MD. We send letters when they enroll and as follow-up. It reports results and problems, interventions. This is the type of information that needs to flow back and forth between the MD and RN. As long as I tell the MD what is happening with the patient, the MD still feels in control.		didn't know what this program was all about. It's a good thing patients could self-refer, because that is how the MDs learned about it. Our program wasn't meant to compete, but many hospitals now view it as a competing program. There are a lot of fallacies about diabetes and diabetes care - I see those as barriers too. There is a barrier of denial.			
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS22	We needed a secretary to continue to grow. I showed	No data	No data	No data	No data	No data
	the administration that last year alone I saved the system $2 million because of the CHF program. A lot of this money was then spent on heart transplants, but nevertheless, money was saved. When, they refused to still provide me with a secretary, I told them that I'd close the program for new admissions. That did it, because now I have an administrative assistant. The three of us now have monthly quality meetings. Recently, we decided to launch group meetings for our patients. We realized that patients might want to meet each other since they are going through similar disease processes. At these meetings, we gave each patient their own notebook which had information on their last visit, lab results, EKG results, a list of medication, and a schedule. This was a version of their own personal chart. If they went to another state or were travelling, they could take it with them. We have also started a group program focusing on stress management for these patients. It costs $20 a person for a six week course, but volunteer services footed half the bill. This is conducted by a psychiatrist within our system. We have also started sending out a newsletter to all of our patients on issues that might affect them. We are asking the administration for another case manager. They have told us to put together a proposal. I often find myself fighting with administration. For example, I wanted a ProPac machine that could simultaneously take blood pressure, pulse, O2 saturation (pulse oximeter), and other tests. I needed it for quality improvement purposes. I told my administration, but she didn't champion the issue. I went to another administrator, and he convinced the board. They asked, "Why does she need this?" He responded, "If she says she needs it, she needs it." And we got it. We basically never sit still. We want to provide individualized treatment for all of our patients. When a patient dies, we send out a condolence letter. We correspond with the families of the patients.					
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS23	No data	No data	No data	No data	No data	We've done some of this at the Breast Center and
					system-wide. It's been more directed at the support staff level with conflict resolution and team work.	
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS24	No data	No data	No data	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS25	Nothing. Our micro-system is a prisoner of our macro-	No data	No data	No data	No data	No data
	system. If it isn't important for the micro-system, we have no incentive to do it and improvement hasn't been a priority.					

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS26	No data	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS27	No data	Our experience was that at the beginning [going to open access] demand went up, later it went down by 6.3%, down by 8.3% . Overall, by 7%. I didn't have to hire new doctors [when they began, there was talk of this being necessary]. Our no show rate before we began was 20%. Now we get calls from the head office about why we are not forwarding the fail-to-keep rates. It is because when people make an appointment the same day, the rate is so low, it doesn't even show up in their statistics. In terms of success: access is up; match rate is up; quality of care is up, there is improved operations; satisfaction among patients and staff are up. We asked the doctors how many would go back to the old system. Only 3/110 said they wanted to go back. Costs are down.	No data	No data	No data	We had people apply to be team leaders and chose the best 15. In 3 centers we kept the current leaders and in others, assigned people to centers and assigned leaders. We also gave people the choice about who to work with. Q: I have heard people react in horror to such a plan because they believe that demand is insatiable and that this will open the flood gates. How do you respond to this worry? A: Well, if you talk to people in an HMO, they tell you that demand is insatiable. If you talk to people in FFS practice, they say, In my dreams! They can't both be assessing patient demand correctly. In the first generation of "open access" people carve out "slots" based on predicted urgent care demand. But you need to move beyond this and dispel the myth of "needs vs wants where wants are seen as unjustified demands. This is the height of arrogance and b-s. In health care, what we sell is a relationship. But what we then do is put up a barrier in the form of "we think you'll get better if you just wait" If they come in for what we think is an "inappropriate" appointment, so what? First, they'll find a way to get in anyway. Second, it destroys the relationship. Third, it is an opportunity to do other things - preventive care, to explain how they might handle the problem themselves the next time, and an invitation to them to call me. Incidentally, the notion of "demand management" by forcing people to call a stranger is completely misguided. The way to manage demand is over time, not with a call to a nurse. You explain to the patient what to do next time.

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS28	We've worked on pathways, decision support, and cultural improvements. The challenge is to keep the improvement going. Now we are looking at low cardiac output after surgery. We discovered that the processes weren't defined or owned. We define them, assign owners, then standardize. We've looked at how often patients are having chest pain in the 24 hours prior to surgery to develop a prediction rule about the likelihood of developing low cardiac output. We stratify the care and use a multidisciplinary team to stratify care. It's been harder for us to get our arms around the post-op processes. In the OR we put up the patient's risk --- everyone can see it.	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS29	No data	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS30	Q: You've mentioned that you use quality committees. Can you tell me more about them? A: They are not formal committees. They are groups of individuals who would normally be involved in a given process. For diabetes, it includes the receptionist, diabetes nurse, and doctor with a particular interest. We set aside "ring fenced time" to work on this during a quiet period, say at 1:30 for an hour. They pick topics according to their strategic goals. An example of one these quality groups is the one working on the telephone system. They receive 135 calls the first 2 hours on Monday. The group came to the unusual conclusion that capital investment is needed. Their old system has no voice mail capability or direct (memory?) dialing. They believed that a new system would save time that could be used in other ways.	No data	1) avoiding QI jargon. When I first learned about CQI 10 years ago, I came back enthusiastic about sharing what I learned but made no progress. Now I just say, "Lets have a look at antenatal care." 2) remember that even when it seems you have accomplished something, new people come who were not party to the original plans. Before you know it, you've fallen back. We used to think that people would learn the systems by osmosis. Now, we have a formal induction system to explain and show people [how the systems should work]. We try to get people to be analytical about what they do. For example, not just continually refilling prescriptions. The receptionist coming up with an improvement on getting lab results is an example of this culture. 3) we are not quick enough. We need to learn how to speed up implementation. We've recently lost about 2 years of headway because of so many changes, loss of Fundholder system, threat to jobs. You need security and headroom for staff to allow them to work on issues	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS31	Doctors can enter their own orders into the system.. They can also say, "use my asthma orders." Others are for use of heparin, feeding tubes, etc. There are 4-5 sets of heparin orders. We have only fledgling attempts to standardize the orders, and it would make work easier for nurses and resp. therapists. I try to get the nurses to advance the work rather than directly telling the doctors to use my protocol. For heparin, I have a weight-based nomogram which is a standard of care. Other docs who do not use this are at some legal risk of not using a standard of care. We also do a lot of manual tracking of classic complications; for example: reintubations, readmissions, self extubations, ventilator-associated pneumonia.	No data	We don't have much power [authority]. We can't tell Dr. So and So to stop something (like IV Pepsin). Ultimately, we need to change the rules and set practices in the ICU. This would include standards about the maximum time between when a patient is admitted and seen by the admitting doctor, maximum time for calling back to a nurse, CME, annual or biennial privileging, perhaps requiring board certification in some specialty. These are all people in private practice. They have old ways of thinking, and this will take time. The nurses already have stringent requirements and the quality of nursing care is very high. Other barriers are that we are short staffed and that we have to compete for social workers, dieticians, etc. There are so many issues to be resolved. Although the computer system will enhance what we do, now a lot of data collection is manual. We are still deciding on an acuity system. Also, the hospital is under major financial constraints regarding equipment, staff allocation, etc. Many other parts of the hospital affect our volume. The ER volume is increasing, and if we don't have room, they have to hold patients there. OR patients come to the ICU, patients on the floor are coded and come here. It is a big challenge to triage appropriately. In terms of the community, we try to convey that patients and their families can rely on this our service to help them with a place to stay and be comforted.	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS32	We have a doc meeting once each month. We have a clinician meeting once each month. Then we have a staff meeting. Any issues raised are ok. It's a chance to give and get feedback. We identify lows and highs (in our patient satisfaction) then work backward to figure out why. We set a goal of referrals within 24 hours and we did it. But that is something that we must keep monitoring. In reception we set a goal of answering within 3 - 4 rings and no messages on the answering machine. That might not even be realistic.Processes are important to clinical goals. Abnormal test results are something we have worked on. Tests are reviewed every 1/2 day, certain tests are isolated, then those are expedited. It's sounds really simple, but we bought a "priority stamp". And a "received by" stamp. This lets us track lag times. As a small business it is really hard to work on improvement.	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS33	No data	No data	Awareness.	Q: What have you done to increase awareness? A: We send out a newsletter within the dept. that includes summaries from each team. Data are posted on the data wall. We also talk informally to each other. Willingness to change. I ask people: would you be willing to try? We have now found that we are implementing change too fast for the support structures to keep up. We think the whole organization will be involved w/in a year. 25% of ortho is involved in open access, but the records and x-ray folks depended on 2-day notice. They do not yet have an EMR, but they have outpatient records and reasonable inpatient record access. You can call up a med list if it has been dictated, x-ray. What makes this possible is DocNet [sp?]transcription. They have transcription stations in many units, and you can pull up the transcription (read only) and see the last note, when last seen, what was done. You can get about 80% of what you need without an EMR	No data	These efforts take a lot of time. It requires helping the doctors understand that they have to be change agents. You can't practice [medicine] too because it requires full time for guidance, selecting strategies, assisting with a choice of methods, data collection, drawing on knowledge of changing staff behavior and relationships. All are important. As an "outside" member of the team I can say things that team members can't say to one another. It requires coaching colleagues [including doing a critique after a meeting] about ways of developing or presenting an agenda, how to think in terms of systems and base the agenda on strategic goals. At GM, in aerospace, GE, etc. they have 1 coach/ 75 employees working on this [leadership training], usually engineers. We might not need that many, but some at least. They pay me the same salary they would pay me if I were practicing pulmonary medicine. I am not an administrator (like CEO or medical director). It is important to have someone in their prime and develop their interest. The way to start is to give someone 25% of their time and see how they do, if not, thank them and let them go back to clinical work. If they do well, move to 40, 60%, and on. The change agent is crucial to making this work. Most m-s don't have organizational goals. It requires someone who takes this role. Q: It sounds as though you are saying that m-s need to be in a larger system that can foster these efforts. A: Not necessarily, in a small business, you need someone with a vision; someone who can put the right people together, be an advocate, be confident and sell the goals of the business, coach people and help them become experts. We have a lot to learn!

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS34	When we were moving to teams, some people were resistant. But really there was a minimum of that. The Medical Director and lead physician modeled this before rolling it out for the rest of the group. Then we had to increase RN staffing in the clinic. No one would want to go back to the way it was. We started March 1, 1997. We don't have a formal QI team or council. Improvements start with the board and top management team. They will set the priorities. Rather than have 15 goals, I like to have 1 goal each year. Last year it was boosting managed care enrollment. This year it is customer service --- our #1 goal. One of the improvements within this is working on the telephone systems, information systems. We've done a focus group. We have more meetings that you can shake a stick at. Three times each year we have a 1/2 day all staff meeting. On a weekly basis we have a full clinic 2-hour staff meeting. A lot of the improvement stuff happens at the meetings.	No data	No data	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS35	We have found that in terms of how we deliver services we can change the system and outcomes. Some of the things that we've done around diabetes is set up group classes, schedule chronic visits around group classes, create a focus on helping patient see own role in care. On the diabetes register we put whether the patient has a collaborative goal with the provider. Providers get a copy of their own registry each month. Some providers didn't know how to set collaborative goals. We educated them about how to do this. Our lead doctor developed a self-management book that we give patients. It walks them through a goal setting process. This [the lead doctor developing it] had more weight with the other doctors. We worked with the patient to help them understand the diabetes guidelines. We empower the patient to understand the guidelines. Leadership has been incredibly important. Our leadership was very involved in deciding to participate and then in pulling the interdisciplinary teams together. It was an unstated expectation. This made it difficult for people to blow off the harder parts of the improvement. We took the approach that you don't have to do this - we are going to be doing some things. You are welcome to try them too. I am amazed at how many providers have a completely different way of documenting in the chart. Before the collaborative [on diabetes] the notes were strictly clinical. E.g., patient not compliant. Now notes are more attentive to patient needs and goals. What is realistic for their circumstances. We have 233 diabetic patients in the registry. HbA1c has gone from 10.5 to 9.1. 50% of our HbA1cs have decreased by 1% -- our goal is that 80% will have a 1% decrease. Blood pressures <140/90 have increased from 67% to 75%.We've redesigned the flow sheet - it is updated with the guidelines. The focus of the registry is to give providers a tool for planning a visit without the chart in front of them. Who's coming in, what will then need?	No data	It will be a challenge to sustain this when the collaborative ends. Another barrier is time and resources. No one has enough of either. Once it was time to institutionalize something - moving from pilot tests - that was a real challenge. E.g., one of the nurse educators has really resisted doing things differently. She has struggled in giving patients more control. She didn't go to any of the learning sessions, she wasn't part of the improvement team. She did everything that she said she would do, but nothing more. She never embraced the bigger picture.	No data	No data	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS36	We have involved nurses in all follow-up care of screened cases. This is because we have found that physicians don't always follow-up with patients. 2) We have tried to reorganize the timing/distribution of reminders by having earlier reminders and getting women in the care process. We are also trying to reduce the downtime involved in scheduling an appointment. Also, we are looking at the way women enter the building/center and are seen by radiologists. We are trying to make the process even "physically efficient." Plus, we have worked to separate screening and diagnostic work in radiology so that both of these tasks can be done simultaneously. 3) We are currently trying to improve coordination of care. No examples can be provided yet. 4) We have a steering committee for the breast cancer screening program. It has evolved to include a surgeon, primary care physician, radiologists, and various administrative people who oversee each site. The larger system has replicated the steering committee model with different key areas of clinical care including depression and diabetes. This steering committee is also called the "Clinical RoadMap." The multidisciplinary care involved in our program makes life easier for doctors. Even surgeons like it that roles and responsibilities are divided up. I think that doctors are more open here. It takes a special kind of physician personality to embrace multidisciplinary care. It is not just "natural." 5) We are also working on a project that works on the notification of results to women. We have found through surveys that women want to be notified of test results in different ways. We are trying to individualize this process based on a woman's preference. 6) We are also looking into capacity issues. We need enough capacity to deal with people coming in. There must be adequate staff and resources. We have done detailed analysis looking at screening patterns and demand. There are many peaks and troughs that we see. Our goal is to try and reduce them so that we can plan and organize our system better.	No data	The biggest barrier is $ and the marginal cost to implement information systems. We were "lucky" that the larger system established this many years ago, and though an update of the program will be expensive, we think it is worthwhile. The second barrier is the way of thinking. We have tried to instill a prevention/planning/public health approach. There is a key reason as to why population-based medicine hasn't caught on among all physicians. When treating an individual patient who has let's say angina, a physician will prescribe nitroglycerin and actually see the patient get better. The physician takes comfort in knowing that the patient has gotten better. We need to make population-based medicine the same way. Physicians have to know whether they are or they are not improving the health of the population. They need data, their own data, to tell them how their patients are doing on key clinical indicators. Only information systems can provide the necessary data most efficiently. However, just to recognize that information systems are necessary requires at least some progressive, broad-minded and flexible thinking on the parts of physicians. So it's a tough task overall. So physicians are a barrier. They need training. It has to start in medical school. That's where the seeds need to be planted, and it is has to be kicked up a notch during residency. And it's not a book learning thing, rather physicians have to "see it, experience it."	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS37	We have made sure to get quarterly reports to see how we are providing patient care as a whole. On a day to day basis, we have made sure we have access to data. This has allowed us to be more organized and see more patients. Having information like the mammography rates for a population allows us to deal with the information and know what's going on with our patients.	No data	The amount of change in staff is huge. Staff changes are as frequent as every month. Second, building our team and dealing with the administration who deals with 20 physicians has also been tough. For example, our regular staff meeting is attended by our receptionist. The administration board doesn't want our receptionist attending the meetings. They say that other receptionists for the other docs then complain that they have to cover another person's work. So, on one hand, they say "work as a team," and on the other hand, they don't let the team meet or work together. The other barrier is inertia. People don't want to change. They don't want to do things differently until disaster comes through the door. Nurses also say that we have "done it this way all the time." It's hard to make change happen. The last barrier is still having a paper based medical record. This is the primary source of information. There is definitely a lag time before all the information is there.	No data	No data	We have team building retreats where goals and priorities for care are set.

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS38	In the inpatient unit, we have been looking at two areas: dyspnea and how we are treating preterminal delirium vs. other causes. I am planning a new values history form that elicits patients hopes and expectations and their concerns. We did the project on dyspnea because many families reported this as a bothersome symptom during the last 3 days of life. We are now treating dyspnea as a 5th vital sign and flow chart it. Reports have gone from 50% to 0% reporting dyspnea lasting more than 8 hours. We could do this because the hospital CEO bought into it, the Patient Care Coordinators believed it, the nursing staff believed it was important. Q: how did you accomplish this? A: Only 2 attendings had to be consulted, and the key was administrative buy in. You can't make change from the bottom up. The breakthrough came when I showed the staff a timeline of the patient's care that showed what the patient and family were saying minute by minute, and how there had been no response. Suddenly, the PCC said, "That is unacceptable!" Two nurses decided to measure dyspnea competencies of their colleagues, and we implemented the flow chart.By contrast with the outpatient program, the VNA has been in survival mode and only counted visits. We are also doing a project called Care Link on pain management with 8 not-for-profit hospitals and nursing homes. Q: Many doctors say they don't want to frighten patients by bringing up end of life issues, and that may delay their entering the hospice program? How do you do it? A: We say, "Here are the alternatives. One is terminal sedation. Tell me your thoughts." I let the patients guide me. I might say, "This must be a scary time for you. How are you doing? What can I do for you? What are your concerns? Most patients are on the brink of death. It is no secret that their body is dissolving in front of them. It amazes me how courageous they are. Some have such peace in the face of horrific disease. Q: What are the sorts of concerns patients express? A: They are afraid of choking and suffocating — physical symptoms. They may want to get it over with. They want to know who will care for their wife. They don't want to be a burden on others.	We did a telephone survey of bereaved families. We sent a postcard saying we would call, but they could opt out of the survey if they wished. We lost a lot of families this way — it was soon after the death and too easy to opt out.	Q: You've mentioned the administrative barriers stemming from your affiliation with the VNA. Are there other barriers? A: There have been two major barriers to improvement: (1) the CEO/organizational culture; and (2) the information system. We need to access data and get clinical information back in a timely way. I think the way to do this is to start small and decide on perhaps 5 items such as: dypnea, pain, emotional distress, problems of the family, and other and track these. To do such review, though, you need a safe environment, not one based on blame. I don't want this to be part of the "blame game" like we had with the VNA in which success depended on having a certain number of people on "report." These are very good people who are trying hard to do their best!	We bring in and discuss the literature review	(Toolkit project, not based in hospice program)	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS39	We have monthly quality council meetings. The structure --- team based care --- is just the way we are doing it now. We don't assume that it is necessarily the best, so we keep revisiting the way we do things. Service planning has been the focus for the past year. We've been working on how to do this better. I want to get the information back that is related to service planning. Residential status, # of episodes of hospital care, time in jail, time homeless, employment (hours worked, wage earned), other activities, involvement in managing own health, knowledge of illness, participation in service plan, follow through, drug use, substance use, caffeine, nicotine, hopefulness scale.	No data	Giving the information back to clinicians. We have done a good job at recruiting and retaining physicians which has eliminated a lot of barriers.	No data	We have a lot of Medicaid funding --- it supports the type of care we provide. Incentives are in-line with our service goals.	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS40	No data	No data	No data	No data	We were just funded $15 million by NIH to do randomized trials. We are hiring 38 people. We are studying the results of surgery v. no surgery for common spine conditions. We're using the model for data collection on all the sites.	No data
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS41	No data	No data	A continuing struggle for us has been the financial justification. It's hard to prove that you've prevented something. It's even harder to say you've reduced costs.	No data	No data	There was an initial 3 week training --- team development, brief negotiation, and motivational interviewing.
	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS42	We have a pre-natal record that now all OB-gyns are using. We are moving forward to automate it using our "stork-byte" approach. We also have a data system for all the operating rooms. A commercial vendor helped us to place this system and a scheduling system in the OR. We have also tried to work across departmental units. We have four different NICU teams and thus four different neonatalogy approaches. Now, we have overcome the physicians' "prima donna" attitude, and have convinced them to use the same electronic medical record. We have also worked hard in investing in protocols and guidelines as well as in the clinical management structure. Concerning the latter, we have a unified physician agreement which has in it standard payment rates, which meetings physician have to go to, titles, payments, etc.	No data	The traditional medical stuff like how specialties are organized. It's important to have the people who developed the "best practice" or who researched it to lead the quality assurance programs. The independence of the medical staff is also a barrier as is the communication between caregivers. Physician education can also be a barrier if we don't do a good job teaching physicians about patient education.	No data	No data	No data

	specific projects	*evidence of success*	*barriers*	*awareness of results*	*funded projects*	*leadership training*
MS43	Our basic technique has remained the same. We still use stainless steel wire for the deepest layer of repair, for example. But we are always looking at new materials and processes, for example suture material, cautery technique, type of local anesthetic (we've gone from novicaine to xylocaine to markaine), antibiotics (whether to give IV or orally), a new kind of dressing or equipment. For children we don't use clips and use dissolvable suture instead. We have a business meeting — myself, the CEO, medical director, head of PR, head of nursing — and present ideas for something that seems to present an advantage. We try to make it unanimous. We decide whether to try something on a small scale. If we agree to try a change, we make the change for 2 to 3 months along with the old process or material and track it by asking for input from patients, nurses, and surgeons.	A great advantage here is that we are able to study the effect of change and know with great confidence within 6 months to a year if a change is an improvement because our volume is so large and the technique standardized. For example, we have a study under way on chronic pain management and have begun another 5 year study on repair of femoral hernias which is the second commonest hernia (after inguinal). We are trying several techniques and hope to learn which is best. This will be very useful information, not just for us, but for the whole medical community. Here, an individual surgeon can do 150 - 200 in a short time where a general surgeon could never get that volume. In another study of chronic pain management, we are working with an anaesthesiologist from the university on a retrospective study, then we will move to a prospective study.	Once we have good information about the usefulness of a new approach, most accept it. But they can choose not to.	No data	We currently have a project under way	No data

IV. Improvement, part 2, expert systems

Expert systems = *We hear a lot about guidelines, protocols, and expert systems to help clinicians get up-to-date information. Do you use any such systems?*
Emerging clinical evidence = *How do you and others in the micro-system access and incorporate emerging clinical evidence?*
Best practices = *How do you identify "best practice" sites and processes?*
Information sharing = *How is new information shared among clinicians and incorporated into clinical practice?*

	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS01	No data	No data	No data	No data
	expert systems	***clinical evidence***	***best practices***	***information sharing***
MS02	Knowledge coupler is the best tool there is out there. Given the diversity and biology, it is very hard to develop gls that would help with an individual patient The EMR has a Protocol Function. The hospital is gradually developing one for inpatients (by CERNER). Another function of the Medical Assistants is to take the responsibility for getting the results of tests, ex CAT scan before a patient visits. I can access lab data, discharge summaries, x-ray reports for his hospitalized patients if their discharge summaries haven't been sent to me yet.	You can send information to the knowledge coupler.	I read a lot outside medicine. It is not that different. I read the Harvard Business Review. Right now I am learning a lot from Tom Petsinger's book, New Pioneers. I learn from the ID-COP program too.	We have regular provider meetings (EMHS) on substantive issues. We've grown rapidly from 8 to 30 providers, so there hasn't been much chance until now. We also have clinical meetings and meetings with patient reps each week. We spend a lot of time on this.
	expert systems	***clinical evidence***	***best practices***	***information sharing***
MS03	We have some protocols that we use. The problem with protocols in general is that we find that they are too long, bulky, and somewhat unrealistic. For protocols to work, they have to be focused and testable.	Since this is an academic medical center, teaching is done here on a constant basis. What we feel is good to preserve becomes incorporated in clinical care. In another hospital, it might be only 1 doctor calling the shots. In our geriatric unit here, a group does this.	No data	Teaching rounds make it possible for information to be disseminated. However, teaching also makes care slower and increases the number of tests done on average. Allowing students to see the patients takes time.
	expert systems	***clinical evidence***	***best practices***	***information sharing***
MS04	There are CD-Roms available in med libraries in hosp., not in ICU.	They monitor published guidelines from Am. Thoracic Soc, ACP, S. Crit. Care Med, adapt them and can put them in place w/in weeks.	For head trauma, he could go to several listservs, query others for their guidelines s (e.g. tPA and pulmonary emboli) translate to a protocol for their use and be able to have a reasonable on to begin with in days.	No data
	expert systems	***clinical evidence***	***best practices***	***information sharing***
MS05	We try to pull out protocols, guidelines, and articles to give with the data. They can be used as a resource. We try to adapt the guidelines some, but really we just try to use them as they are. Giving them abstracts from articles is a way to keep emerging evidence in front of them.	No data	We have some benchmarking agreements with other hospitals. We belong to the VHA group for CHF and stroke. We have monthly phone conferences. My role has been to facilitate these. We've gotten mixed feedback about how helpful they are.	No data
	expert systems	***clinical evidence***	***best practices***	***information sharing***
MS06	No data	No data	No data	No data

	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS07	One example involves protocols regarding brain edema. Our protocols were going well. However, new literature emerged on aspects such as cerebral perfusion pressure. Thus, one of the neurosurgeons here recommended that we revamp the protocols to incorporate the new findings. The neurosurgeon gathered the evidence and the first protocol was designed by a team headed up by a unit nurse. The protocol was soon standardized and ownership was created at the physician and nurse level.	No data	Both physicians and nurses come back with new ideas about processes of care. literature in general. Only when there is a specific identified problem in our microsystem do physicians and nurses read the literature and share findings.	We don't have any formal mechanism by which clinicians are kept up to date on.
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS08	No data	No data	No data	No data
MS09	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS10	No data	No data	We found 4 centers outside the group (the NICU 2000 group) that are excellent in family care. We telephoned surveyed all the sites that the Institute of Family Care suggested. We took the top 4 and did site visits. The thing that distinguished those places that are achieving excellence is the organization culture. Our culture was "of course babies get infections, they are not well to begin with." But they saw an infection as a failure, not entitlement. All the way to the bedside the unit knew that infection was a failure. The philosophy has to permeate the organization.	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS11	No data	This is my job in particular --- I don't do a lot of other things. I am on the Board of American Endocrinology. We are part of some clinical research projects. We read everything and are at every conference. I would estimate that 10% of our expenditures are for keeping abreast. Whenever there are retreats or medical meetings we show up to talk about diabetes. We have community programs --- 2000 people will show up. We push to be in front of people. Diabetes is always on the table. We make educational tapes that are sent to the MDs. We have newsletters.	We haven't done anything specific to diabetes. We were part of a large study.	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS12	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS13	Unfortunately, many of these guidelines by the time the evidence supports them are 8 yrs old. In the time being, medicine changes. Overall, it's hard getting people to buy into protocols and guidelines. It's hard to get over 60% nationally. If you do, you almost automatically get to about 80%. In the ER, all the doctors work for me. I am the physician/leader. They love and fear me. Our ED protocols are followed 98-100% of the time.	No data	Our protocol process basically is stealing from the Internet. Also, IHI list serves are a big asset. This is where people brainstorm protocols, from the management of asthma to increased security in the ER.	People talk and share, that's when they have fun. When they're not having fun, you hit a barrier. Change can be slow.
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS14	We don't have an expert system. We haven't had much success with implementing protocols. We are implementing guidelines for diabetes care. This has been a formalized effort to train and follow-up.	No data	Participating in ID-COP has been one way for us to compare. But it is hard to say what is a best practice. We don't really want to identify a group as an ideal practice. We have looked a lot at what works well and how it might work here.	No data

	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS15	That is a very complex question. It has to do with I.T. If we could afford a computerized record we would do it tomorrow. Cookbook guidelines don't work. Evidence based guidelines only work if I know the details of the evidence and content. Some of the guidelines become turf battles --- two different groups taking different points of view. We have to make our own decisions based on what we know about the patient. Then they send in some administrative person to look at our records and see whether we are following guidelines. There are a lot of factors that go into using or not using a guideline. Guidelines often follow practice by 2-3 years. We do things based on the literature more than the guidelines.	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS16	No data	No data	No data	No data
MS17	No data	No data	No data	No data
MS18	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS19	We use some guidelines from various specialty societies in our care. The 150 independent optometrists who we work with look to us for our standard of care. We produce documents on eye diseases and treatments according to guidelines and then we distribute them to our customers. I think that the critical pathways have a great opportunity for growth. It's important for doctors to know what to do next in all situations. These pathways give them a tool and adds to the seamless care process. It is important, however, for these pathways and guidelines to be accessible to the providers, something like Roladex would be helpful.	No data	No data	The doctors may use computers and Web based resources at home. At the center, we don't have computers in every room. There is no Internet connection. We don't find time to do this. We find ourselves evaluating patients and doing tests rather than looking up facts or literature. Information is shared via word of mouth.
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS20	No data	No data	No data	No data
MS21	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS22	Our "standards committee" has put together a list of medications. They asked me to write down signs and symptoms and her thoughts on medications. They have taken this into account when writing guidelines.	Dr. D. put together a protocol for the ER. It's a quick check list and has a basic scale for measurement. There is also a Lasix protocol for fluid buildup. Dr. D. also showed that an IV Lasix drip that worked slowly was the most effective and satisfying for patients. The PCP's now are doing this same thing.	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS23	No data	No data	No data	No data
MS24	No data	No data	No data	No data
MS25	No data	No data	No data	No data

	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS26	No data	No data	I'm not really familiar with what they are doing with clinical care. I've done a lot of looking at best service delivery. I tell people by word-of-mouth, our newsletter. Our goal is to create the capacity to see routine, non-urgent cases today. [what do people say when you tell them that is the goal?] They are skeptical. "That's impossible" "We can't work any harder."	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS27	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS28	We had a lot of skepticism early on. Using them doesn't mean picking it up every day. It's become part of the process - it isn't thought of as anything other than the process. Everyone agreeing with the concept of the standard care plan is what is important.	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS29	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS30	Preventive care screens pop up when patient summary is accessed	No data	Informal networking with people you know. Also, government has identified 50-60 Beacon Practices — ours is one of them.	No data
	The purpose is to capture the advances, innovations for dissemination. I believe the role of the GP is changing. It used to consist of someone to give a diagnosis and provide an expert plan of management. Now, I may diagnose but the patient can become an expert on his health in his own right, more expert than I am. Patients were once supplicants with the duty to be compliant. Then they became "consumers." Now we are moving toward partnerships. Although we don't do much on e-mail, and patients are not on the web yet, we are getting there. We are actually further along than Europe. The Beacon Practice program involves the GP practices; all specialists are hospital-based. Different arrangement in the GP's surgery as well. I do not have a suite of exam rooms to go from one to the next where they are ushered in by a nurse. Instead, I fetch the patient from the waiting room, take them to my office and have a curtained area for examination. We do not have vital signs taken for every patient, only when indicated. The buildings can be configured much more simply. The computer is in my office, so I can enter data and notes immediately.			
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS31	See above on multiple orders, and their desire to simplify	We suggest to the doctors that they might like to try something [new]. We never force them to.	No data	No data

	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS32	We pay attention to screening protocols. Those from American College of Physicians, American Geriatric Society, American Preventive Task Force. But sometimes there are conflicts in the written protocol. [what do you do then?] Explain to the patient, that this one says this, but then this other one says this.	Sharing from meetings, reading, computer search engines. But, I always want to see the data myself. Just because someone says this is better, that isn't enough for me. Ideally, it needs to be easily accessible. Give information to help prevent errors --- the Riefienstrif Institute does this. But that just isn't affordable for us. At the hospital there are systems that tell if medications are contra-indicated, but we can't implement parallel systems. It all needs to be part of the same system.	A GI practice we know is really good, ahead of the curve. We consult with their office manager. We encourage our office manager to attend meetings. But you really have to think about "best" overall. Perfect hip replacement don't do well in sick bodies. Even if we know who is best, we don't necessarily send our patients there if they don't pay attention to all our patient problems.	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS33	There are a lot of guidelines in most institutions, but the way they are implemented destroys their usefulness. For example, the diabetes guidelines are 40 pages. As a physician, I look at them and decide on the 2-3 most important things that should be done and work on getting those done consistently. Work on the others later. Ex: HgA1-C at 6 month intervals, urine creatinine, if given diabetic educaiton. I try to set up a process to make sure that is done 100% of time. Example: they have a pc registry of diabetic patients. There is a flow sheet on the chart. Anyone who touches the chart (anyone) can order a HgA1-C that is due. Even this is very hard to implement consistently.	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS34	No data	No data	I think it is limited by the amount of time we have. We have participated in the IHI Breakthrough Series --- that has been a built-in infusion of benchmarking. FQHCs collect data on our own health plans.	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS35	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS36	Overall, guidelines are overrated. They are outside the domains of medical schools. Everyone knows that continuing medical education doesn't change medical care. We do need information technology for organizing the clinical data and producing new data. We need more selective sets of data, as well. We don't need to know everything about the patient.	The multidisciplinary care team takes in new information by looking at different guidelines. Our Intranet has an "In Context" section in which physicians can check on guidelines and outcomes of care. All physicians have access to this and we also use email to inform and remind doctors to regularly check this site. We rarely get emails from patients regarding the care process. We are however looking at different web-based sources.	No data	No data

	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS37	We have access to "In Context." It is updated on current protocols in diabetes, CV, etc. By reading and answering some questions, doctors can also earn CME credit. We are linked to the National Library of Medicine/PubMed.	Over our Intranet, we receive a "What's Hot" bulletin where experts give the latest news on new trends and statistics.	There are some criteria for best practices and clinical planning that I am not sure about. It is quite obscure how this is "filtered" down. Systemic changes are sometimes unclear and not always obvious.	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS38	No data	We do our own literature reviews, bring them in for discussion. Our physician group includes an internist and pediatrician. We review our own protocols and update them. There are not a lot of guidelines beyond those for cancer pain. We look at the Oxford Textbook of Palliative Care, A H Pall Med. I use the web for lonelydoc and do a search there.	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS39	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS40	Guidelines don't work. You just can't force people to practice a certain way. What we do is use the best evidence and challenge people's decisions based on the evidence. We have a lot of standardization in what we do, but it allows the physicians to practice and see the value. I'm working here everyday and see the problems. You can't sell a system unless you are in the system.	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS41	We have lots of protocols. The role that is played by nurses is at the limit within the law of NC. Some nurses had problems with this. They were nervous about what they were being asked to do, but it was all within the limits of their licensure. We had the state licensure board come in and tell them that it was ok.	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS42	No data	No data	No data	No data
	expert systems	*clinical evidence*	*best practices*	*information sharing*
MS43	No data	No data	No data	No data

IV. Improvement, part 3, errors and patient safety

What happens = *What happens in your micro-system when someone makes an error?*
Culture = *Probe the extent to which there is there a blame-free culture, comfort in identifying and addressing errors, and efforts to learn from error.*
Procedures = *Have you instituted any procedures to improve patient safety (e.g., standardize, simplify, training in teams, simulation, error reporting?)*
Sources = *What do you believe are the major sources of error or harm?*

	what happens	***culture***	***procedures***	***sources***
MS01	No data	No data	No data	No data
	what happens	***culture***	***procedures***	***sources***
MS02	Sharing information with patients is the biggest safeguard. The EMR does drug-drug interaction alerts. When the patient leaves the office, he/she gets a printout of their medication list. Once in a while a patient will call later and say, "I was looking over the list, and I am not taking x anymore, but Dr. So and So has put me on y." It takes all of us. Another safeguard is that the KC forces me to consider all the possibilities. For example, if a patient comes in with headaches and vomiting, it has a structured sequence that makes you consider the causes, including cerebral hemorrhage. When a mistake is made, I deal with it openly. For example, a long-time patient of mine got very sick from misunderstanding how to take her medication. When she came back, I apologized. She told me at the end of the visit that if I hadn't apologized, she had been prepared to leave the practice!	No data	No data	When lab results are returned, they come back by provider, and I can attach them to the patient's chart. When I open the patient record to the "desktop" flags alert me to deal with abnormal results. I also worry about omissions for results not computerized, such as biopsy reports on paper. These are systems problems and amenable to standardization. We can develop tools to deal with this. Alfred North Whitehead said that you can recognize advanced civilizations by the number of complex actions that occur automatically. These systems must be made as transparent as possible. Everyone, including patients, must know the risks and trade-offs. Not to share this information, with patients, including uncertainty, is a disservice to them. Not all my patients accept this, but it is changing over time, and I continue to encourage it We also do an exit interview with everyone who leaves the practice. I have found that the most important reason is a series of systems errors. The last is simply the final straw. For example their appointment was bumped 3 times, or someone does not get back to them. Their trust in the system starts to erode. The doctor-patient relationship is important, but perhaps more important is how much they can rely on the system not to let them slip through the cracks. Patients want a doctor-patient relationship to protect them from the unreliability or to provide a pathway through the unfathomability of a health care system. *Q: Don't they also want an advocate for their interest? A: The system can be an advocate. It can be a reminder that a mammogram needs to be done, that there is a system in place to make sure it happens, that things go well. A system can empower the medical assistant to insist that a patient be seen, even if it means clashing with a provider. We should not let ourselves be put off by the sacredness of the doctor-patient relationship. We need more generalist specialization (though an oxymoron) because experience counts. For example, I focus on musculoskeletal problems. The NPs do more gyn.
	what happens	***culture***	***procedures***	***sources***
MS03	We "cut off their heads." No, seriously, we hope that the error is corrected.	There is constant talk in the unit about things like the time for when a patient is"safe to go home." However, this is different from giving the wrong dose of digoxin, for example. We have systems in place that try to ensure patient safety. For example, after a doctor first writes an order, the nurse picks the order up and if he/she is not comfortable with the order, they check back with the doctor. The pharmacy also has a drug formulary for the hospital. If the pharmacist detects a wrong medication or dosage, they do not give out the drugs. Thus, there are many checks in the system. The most frequent errors are medication ones.	No data	No data

	what happens	*culture*	*procedures*	*sources*
MS04	Preventive: charge nurse reviews last 12 hours of orders and lab results. Pharmacy	No data	No data	No data
	software spots problems in route, dose, drug-drug interactions, etc.; pharmacy empowered to change order. PharmD on rounds reviews MARs; picks up problems (d-d interactions) and suggest alternatives. Detection, Mitigation: depends on how detected -- If drug, route, dose, etc. nurse is queried and patient and provider are tracked. Patient for untoward outcomes; provider to make sure it is not a pattern; if it is, ICU not the place to experiment with remedial actions--patient acuity too high.			
	what happens	*culture*	*procedures*	*sources*
MS05	No data	No data	No data	No data
MS06	No data	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS07	The ICU is a very open and trusting environment. No one covers up problems.	No data	No data	No data
	We have multidisciplinary rounds during which everything is looked at thoroughly. Computers would bring out errors if one occurred that no one knew about. There are random personnel issues, and we deal with those on a person-person basis. These are usually errors of omission, forgetting something. However, system wide procedures to improve patient safety have not been necessary. One area in which we, like everyone, struggle with is in medication error.			
	what happens	*culture*	*procedures*	*sources*
MS08	No data	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS09	We have a formal system for doing this that involves analysis by other physicians.	No data	No data	No data
	It is done case by case. We try to look for systematic errors, for example lab reports not going to the MDs offices. We look at whether they are recurring events and ask if there is something we can change. One time an amnio sample was not picked up on time. So, the patient had to be brought back in for another amnio -- this is potentially a high-risk error. Although this had only happened one time we wanted to make sure it didn't ever happen again. So we instituted a phone call check up with the lab to see if samples have been picked up. It was a one-time occurrence but we changed the system because this was potentially a large error.			
	what happens	*culture*	*procedures*	*sources*
MS10	Aired in public, exposure, lynching. If it is low risk, it is dealt with on a 1 to 1 basis.	No data	No data	No data
	But we need to fix the system, safety mechanisms were bypassed if an error occurred and resulted in a bad outcome. The previous model was public lynching. This of course was couched as building character. Now we discuss the errors in a open forum. By the time it gets to this point it's non-judgmental and non-accusatory. It must be aired publicly to make sure that the system is fixed. People need to recognize the potential for error and take it seriously. We have a critical incident debriefing. It creates a support group for the person to keep the incident from becoming debilitating to providing good care.			
	what happens	*culture*	*procedures*	*sources*
MS11	No data	No data	No data	No data

	what happens	*culture*	*procedures*	*sources*
MS12	We just don't have a mechanism for discussing errors. We're reactive, not proactive. I guess it depends on where the error originates. It was not uncommon for us to have duplication errors because we had two systems. We had to develop a system to double check. To some extent, reporting errors lead us to develop the interface between the two information systems. What has been most problematic for us is following up on abnormal lab results. For example, an abnormal mammogram. The handoff just might not happen. Then the patient would be called in and the error explained. Epic has a drug interaction alert. I send my nurse and myself an e-mail message to remind myself to check on lab results.	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS13	That's a good question. Because when you reengineer a process like x-ray cycle time from 73 to 23 minutes, you ask, what's the error rate? We have measured this and have noticed a statistically insignificant increase in the number of false positives. This is .3%, and is right around the national benchmark. So we have tracked and mitigated this issue. Every staff meeting, we systematically go through all errors. All errors are presented as staff errors, not individual errors. Everyone has to sign off on an x-ray. So, it's the collectivization of responsibility just like the collectivization of data. Here is my thinking on errors. First of all, I think broadly about errors. Long waiting times, patient dissatisfaction, staff confusion are all errors in my book. Secondly, let me tell you my super-glue theory. When my daughter a while back broke the little arm of her toy ballerina, she came me to me and said, "Daddy, please fix this." I took out the super glue and gently put the ballerina back together, and she said, "Daddy you're the best." That killed me. But the freakin' health care system doesn't allow us to do that. For example, there is a new type of super glue like material that can be used during stitching. It is used in France, Canada, but not here. For me to use it in this hospital, I have to go through so many hoops. First, I have to convince the hospital to get it on the formulary. Then, I have to sweet talk a committee to purchase it. Then, it has to go to a protocol and credentialing committee. Then policy has to be drafted on it. It takes months and months, you have to go through layers and layers of bureaucracy. We haven't reached the right balance yet.	The ER has fortunately not had any sentinel events (bad). For improper medications, there is a systems mechanism	No data	The time needed to inculcate a protocol in the ER. The development takes time. Physician need to embrace the protocols.
	what happens	*culture*	*procedures*	*sources*
MS14	No data	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS15	First we apologize to the patient. I ordered an MRI of a patient's back. When I order a test the result is put on my desk until I deal with it --- I never got it so I never called him back with the results or to follow-up. Four months later his wife called to find out the results of the test. And he had been in pain waiting all this time. This makes me think that our office system is faulty. One of the office system is anti-coagulation. We have to have a fail-safe system that the same thing happens to all patients. Putting people on blood thinners is high risk. Medications are one of the biggest risks. We make it easy for patients to switch MDs within our practice if they don't like the care they receive.	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS16	No data	No data	No data	No data
MS17	No data	No data	No data	No data

	what happens	*culture*	*procedures*	*sources*
MS18	People are willing to share errors. There is not a "let's get that guy who made the mistake" but "how did this happen and how can we keep it from happening again." "What do you think we should do about this?" Of course, sometimes there is incompetence. But incompetence is a personnel deployment issue.	No data	At 7pm one evening a person giving care to a patient in a hospital who was receiving cancer treatment. The patient wanted an advance directive --- if my heart stops, I don't want CPR. The person told the nurse at the unit desk about this request and asked that the nurse please tell the MD. The MD never heard this. At 6 am the next morning, the patient had a cardiac arrest and a code was called. 20 minutes into a code the request was seen in the patient's record that the patient didn't want this to happen. We saw that there was not a clear responsibility to report the request to the nurse, to report to the MD. The physician always decides whether an order will be written or whether to go talk to the patient before writing the order. The system worked a lot of the time, but it wasn't consistent.	No data
	what happens	*culture*	*procedures*	*sources*
MS19	We take a systems approach to this problem. It takes a little while for people to get used to our philosophy. Most people are from the school of though that someone makes a mistake and they should be blamed. However, this school of thought flies in the fact of using teams! Thus, we don't use it. It's important here that everyone buys into errors being a systems problem. If one person doesn't believe that, it messes up the comfort level for the rest of us. Luckily, we don't have these folks right now. If there is a situation in which a staff person is repeatedly incompetent, we may need to fire them, but that's the only individualized treatment. I recently made a pretty big mistake myself. I broadcaste this mistake to the entire staff including the medical director. I did this because I wanted people to know that it's important to be up front and open about errors.	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS20	We deal with errors in a variety of ways. We try not to make it personal. We don't nail people. 99% of the people working here are great. If something bad happens it seems to me that the system has set the person up for failure. When you gather the data it almost never is what it seems to be. We had a patient who wasn't doing well. The physician ordered lidocaine. The nurse gave the patient a whole amp of epinephrine. We all thought "how stupid." But when we started looking at the medications they were beside each other in almost identical boxes. Still she shouldn't have made the mistake but you could see how it could happen the way we had things set up.	No data	No data	No data
	What happens	*culture*	*procedures*	*sources*
MS21	No data	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS22	We have a set up that is close to fail-proof. If something slips by, we try to take care of it right away. I think because our patient education is good, we don't see too many errors. Any errors are oversights. Many times the pharmacy catches it. Other times, the patient catches it. Sometimes, you are surprised about how much the patient knows!	No data	No data	No data
	what happens	*culture*	*procedures*	*sources*
MS23	A patient fell through the cracks once. We instituted a system where we prioritize results and send letters to the patient regardless of the results. In the letter we give the results and the next steps. Sometimes the letter is everything is normal all you have to do is remember to come in next year for your mammogram.	We go directly to the person who made the error and go over it. On a yearly basis we present errors and discuss them. We try to keep a record of errors that are made.	No data	No data

	what happens	*culture*	*procedures*	*sources*
MS24	No data	No data	No data	No data
	what happens	***culture***	***procedures***	***sources***
MS25	In the office an error would be taken very seriously. We identify all problems. The MDs, staff, ancillary staff have monthly meetings to talk about these issues. We have open meetings and have very little criticism of the people. Small groups may get together to brainstorm and bring back ideas to the larger group. If there is something we can change we will.	No data	No data	There are fewer and fewer people available to do more and more tasks. There are only so many systems that can be put in place. Time becomes the limiting factor. You need a certain critical mass of people and good systems. Without either it doesn't work.
	What happens	***culture***	***procedures***	***sources***
MS26	No data	No data	No data	No data
MS27	No data	No data	No data	No data
MS28	No data	No data	No data	No data
MS29	No data	No data	No data	No data
MS30	No data	No data	No data	No data
	what happens	***culture***	***procedures***	***sources***
MS31	As the medical director (or attending MD), I have to sign off on an incident report. Mechanical problems are brought to the attention of a nurse advisor, risk manager, MD. We try to learn what we can about how it happened and how to prevent it. We don't pursue anything about an individual unless something points to a trend. This is not a punitive approach. I am very slow to make an issue of something. For incidents like a fire, staff misconduct, malfunction of equipment we have medical staff procedures to deal with it. It may have to go to the VP for Medical Affairs.	No data	No data	Equipment and medications are a special concern because they can be so dangerous. The wrong dose, shocking a patient when O2 is in use, instruments, electric currents, monitors, misreading orders, blood are all of concern. It is very important that every member of the staff and MD be made constantly aware [of the need to pay attention to safety issues]. It may require education or acquiring new skills, but you can never rest [thinking that safety is taken care of] Among pharmacy issues, the wrong dose, the wrong meds, the med not being there, and ancillary services not performing when needed are concerns. Just as when rescuing a drowning patient, timeliness is critical.
	what happens	***culture***	***procedures***	***sources***
MS32	First we figure out how it happened and back track through the process. We encourage open sharing. We try to be non-punitive and make the point that these are systems issues.	No data	We have standard procedures for approving prescription refills. We have instituted double sampling if certain patterns are detected in lab reports. Charts with outstanding labs are kept in a separate place as a reminder to follow-up.	The biggest risks in primary care practices are prescriptions and labs.
	what happens	***culture***	***procedures***	***sources***
MS33	Inpatient errors and patient safety is the subject of a major effort going on now. It will result in a monograph, but is only in rough draft form now. That is another entire conversation. It is being done by Action for Change Today (ACT) supported by Fortune 500 companies, the National Coalition on Health Care. The monograph will highlight several institutions The big issues are : medication errors. They have identified 45 things that hospitals and outpatients can accomplish. They are interested in near misses.	No data	No data	No data

	what happens	*culture*	*procedures*	*sources*
MS34	No data	No data	No data	No data
MS35	No data	No data	No data	No data
MS36	No data	No data	No data	No data
	what happens	***culture***	***procedures***	***sources***
MS37	A pharmacist works on the team and has access to algorithms for patient education and notification of drug-drug reactions. If it looks as if it is a systemic problem, the hospital does a study and gives feedback. If it is one episode, we try to address it ourselves. It's hard to talk about "error" because it is culturally not acceptable for fear of litigation. But we try.	No data	Communication. Training the right people, providing the right education, and relying on communication is the key.	Systems changes that we don't know about, or ignorance.
	what happens	***culture***	***procedures***	***sources***
MS38	We could improve. When complaints come in, we convene to try to learn what went wrong. We review them and get patient-centered reports to understand what happened. Is this a system problem? Is this a pattern? This is very different from other approaches which was to find who to blame. These are good nurses. In one example, a 4-year old child with meningitis was misdiagnosed. The parents were acting out, and the response was to stiff it out [I think she meant deny their responsibility, refuse empathy]. I tried to explain, "Here are parents who one day had an active, healthy 4-year old. The next day he was a vegetable. Try to understand their feelings of anger and grief, and help them find something positive." This [both approaches] come from leadership.	No data	No data	No data
	what happens	***culture***	***procedures***	***sources***
MS39	No data	No data	No data	No data
MS40	No data	No data	No data	No data
MS41	No data	No data	No data	No data
MS42	No data	No data	No data	No data
	what happens	***culture***	***procedures***	***sources***
MS43	You mean medication errors, follow up of abnormal lab results? Let me give you an example. We don't have internal medicine specialists on staff, so all EKGs are sent out by courier to be read. Sometimes the reading comes back abnormal--ST changes etc., and we have to redo it, and sometimes cancel the surgery to be on the safe side and have them worked up with a stress test, etc. This upsets the patient who is anticipating the surgery. Other errors — we have patients who are on anticoagulants, and sometimes the lab makes errors in reporting pro-times. If we suspect an error, we put off the surgery and repeat the lab work. We don't rush to surgery — after all, this is elective surgery. Occasionally, the wrong concentration of antibiotic or anesthetic is prepared. Fortunately, the anesthetic we use has very wide latitude in terms of toxicity. In once case, we had a series of post-op wound infections. We looked at the OR, the time, personnel, swabbed all personnel and finally treated one of the surgeons for a staph in his ear and removed him from the OR until he tested negative. We pay a lot of attention to making sure we don't do surgery on the wrong side. The nurse and surgeon both examine the patient and confirm the side. The circulating nurse who takes him to the ER asks which side. When the patient is sent to shave, he is told to shave only on the side of the hernia. We've never done the wrong side yet!	No data	No data	No data

Health Care Micro-systems Interview Responses

V. *Leadership*

Macro-system helps = *Can you give me some examples of particularly helpful ways in which the larger organization affects the care provided by the micro-system?*
Macro-system is toxic = *Can you give me some examples of particularly toxic ways in which the macro-organization affects the care provided by the micro-system?*
Ideal financial structures = *What financial structures for payment and rewards do you believe would be ideal for improving the quality of care?*
Replication = *What would take to replicate what you are doing? What do you think are the key factors to your success?*
Barriers = *What are the major barriers to replicating this elsewhere? What barriers have you overcome?*

	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS01	No data	No data	As far as rewards, I think a standard of performance is expected. Any bonus should be shared by staff. Our MDs have seen no increase in compensation since 1994. If we don't define the cost of care and the cost of quality, we will destroy healthcare. To develop a financial structure, we need to take a multi-factorial equation that defines the micro-system, the outcomes, the number of patients and the patients' morbidity. We can use the multiplier based on our level of quality target achievements. For example, in a practice producing 30,000 hands-on units producing at the 99th percentile of quality targets and 20,000 remote targets it would be: 50,000 x $50 = 2.5 million. Take a model practice and see what it would yield to support the site. Then come up with the formula. If you want to survive you need to perform at the model practice level.	Leadership must be a dynamic living example of CQI. In 1987, I brought CQI into this practice. Those who have the same values, dedication, and mission can accomplish this. That special understanding has to be there. We as a society have to allow it to be. There are unconditional principles - independent of the condition the principles prevail. This is a social issue that is at a critical level. We as a society must make value judgements.	In this country, MDs are disillusioned, patients are disillusioned. Financial mavens started saying "we're failing". What has happened is that we have failed to properly educate the laymen. We have partnered with the bottom line.
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS02	It provides money! Provides support for billing. It provides cross coverage for weekends. These systems were in danger. It took a big risk in supporting the EMR. Another large IM group is also implementing this. The group has been working on a pension plan. We use an RVU system for incentives to get productivity up. I don't feel comfortable getting rewarded for others' work, and one issue I have been pushing is for a plan that would share some of the bonus with staff. It works this way. From revenues, we take 3% for retirement and divide this 66:33 with 33% of that distributed among staff.	Our System includes 30 providers, including outlying hospitals. We are working to develop a values statement. They have had focus groups, town meetings. It has an Exec. Committee trying to form an integrated system. Each of the PC sites (5) are unique, and are spread over a wide geog. area. There was a large clash of values when they first formed the health system. The are doing business plans. I am helping them develop systems thinking.	It doesn't make any difference if you operate on the principle that if you don't need to do something, don't do it. For example, we stopped doing certain tests for patients with diabetes and htn because the literature showed it was not needed. There is plenty of other work to do! Managed care has not changed our behavior.	No data	1. Pay attention to the mushy, cultural issues. Learn how industries train and use people, on developing collaborative relationships. This is a particular problem for medicine and its fierce socialization process. It requires the recognition, training, a management philosophy. 2. The medical schools are way behind in understanding system and having a commitment to training. 3. The integrated systems like HCA might have been a locus for this change. Now there is a tremendous pressure to divest themselves of practices that are losing $80,000/provider/group. The financial problems stem from making strategic decisions, not organizational ones. They made faulty assumption about purchasing profitable practices and the benefits that would be derived by using the pc practices to feed patients to the secondary orgs. They were profitable before, but when bought, they draw on finances and are asked to do things they weren't asked to do before. For example, they were making money on their labs (about $15,000/year), but after purchase, the office labs were discontinued and went off the bottom line. Same with x-ray. They shouldn't have to lose that much money, or any money. We are still far in the hole and are so far behind business. For example, information is the quintessential business tool. This doesn't require a huge capital investment. Medical education is even further behind than we are. At one point, HCA (before collapsing) threatened to build its own school. The implications are too threatening to them. If you exist as the font of knowledge, and if that knowledge is now part of tools that are available to anyone, then you have lost your reason for existence

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS03	The administration has continued to support the geriatric unit by providing both staffing and general resources. Getting a yes for a request from the administration depends on how they feel about you and department.	On the converse, rarely do units exist in a vacuum. So, where there is a larger structure, there are always potential negatives.	I think we need a national health system and a system that pays. health workers well. We need a staff that wants to be there and an administration that is responsive	No data	Dedication, hardwork, and patience to organize, implement, and stay committed is vital. I have a bias to the team approach. I am "content" oriented as opposed to "process" oriented. The latter deals with who is in charge and who gets to speak, etc. The former depends on a team of professional people who have various experiences and expertise. They respect each other and their opinion. They substantively add to the issues at hand. It is impossible for one individual to take care of an elderly person. Older and frail people have many health needs that can only be met by a group of dedicated individuals. The other thing that is needed is buy-in from all care givers.
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS04	No data	No data	No data	1. Importance of support from top: (hospital management) VP Patient Care Services (a nursing position) coordinates all nursing workforce issues, very important to have her help. CEO and COO -- strategic planning, support when they need help, equipment, etc. Sometimes all 3 come to unit meetings; he has "learned to speak COO language. Sr. VP for Medical Affairs-- helps in understanding how medical staff and others will react, how to anticipate 2. Start slowly (we began with 1 protol for vent. management, 1 DRG, 1 unit, a few of his own patients) 3. Show they are serious 4. Show that everyone is part of the process	Goethe: not what we know, but what we dolt is here that the biggests gaps lie--what we do is not based on the best experience and knowledge. Specialist, subspecialist resistance-- income, referrals,practices threatened, thought they were being devalued; networking is critical; emphasize you are not trying to make others look bad; now they have track record and are comfortable with how they got there. Recognition that premorbid events important (Ex: JCAHO 72-hr eval of patient on admission not soon enough.) Transport services not good -- they organized their own mobile transport services to get patients admitted and stabilized in community/rural areas. Also found they need to attend to nutritional status, turning, mouth (oral) care after on floor.
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS05	They have been very supportive. The VP of Medical Staff has worked with the physicians. The Chief of Staff was supportive of disease management. The 12 Chiefs work closely with our department. If they are given numbers they don't like, the VP of Medical Staff will not let them get by with that. They have to work to improve it.	No data	No data	Databases are important - you have to make that investment. That has been a big deal for us. You need buy in from the physicians. You have to make sure that you keep the data concurrent. Make sure the databases are in place. Then the internal resources must be in place - the statisticians, the people who are working with the data. An electronic medical record would cut down on the need for some of the databases that we've bought. What has been most important is the manpower - someone who has the educational background and can work with clinicians. The administration must be supportive and endorse working with the data. They have to have the guts to support the work. There needs to be a structural link from the medical staff to the improvement staff. The Chiefs get education about improvement and use of data. We communicate regularly and give progress reports.	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS06	No data	No data	No data	First you have to believe in it. Then, you have to be committed --- a commitment to follow it through to the end, not just to get started.	No data
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS07	No data	No data	Some of the physicians here are in private practice so they are compensated via FFS or capitation. Others, in the Physician Division are on salaries, which are augmented by productivity results. I am pretty much on a hospital salary. Thus, there are a variety of payment schemes. I don't think that the current payment scheme is ideal for improving quality of care. I think that the incentives need to be aligned better. For example, trauma surgeons are paid $1000 for 24 hours here. If the hospital is full, however, the patients go under "Divert" and go to the university. However, the surgeons are still making money. There should be incentives for moving the patients into our hospital quicker so that surgeons here can take care of them.	When you get to the bottom line, it deals with leadership. An RN, and I work as a team, almost 1 person. I can't overemphasize how close she and I work. She has a unique ability to communicate with people like I've never seen before. She makes people enthusiastic and is able to interrelate to everyone. My strength is my credibility. My personality is of a type that is able to let things go. I let others do things their own way. I think one of the reasons our cardiac service line is floundering is that they don't have good leaders. I maintain good relations with physicians. We present the ICU as a service, maintaining the environment is a key.	No data
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS08	We've reached a level of integration with diabetes.	We set corporate goals around diabetes (reduce complications by30%, increase screening to 90% for those at risk for diabetes) without including the physicians. A lot of the rank and file physicians didn't even know that we had these goals. At times we've gone around the clinicians to the patients and that has been a big problem. One time we sent aspirin to physicians, saying "here, you should be giving these out to your patients."	No data	To replicate this model you need: To know who the population is and their risk; Leadership support; Agreement among whoever is involved that these are our common goals, processes, roles; A shared vision - we will need to change the system to get there; Integrated, interactive changes at all levels.	There is a general distrust of programs developed outside here.
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS09	No data	No data	No data	Working with providers who are very interested in evidence-based outcomes. Look at results and apply results using CQI. You have to measure outcomes. I wish we could measure more outcomes. You have to look at the most important outcomes. Almost all health care system should be doing some clinical research. Analyze something important. Something important to us and important to patients too.	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS10	No data	No data	No data	Someone at the leadership level has to be committed to good	No data
	quality. You must keep the stimulus there to be the best. Leadership must think of ways to encourage, support change, and think of ways to change. In our survey of family care we asked "what is most important in your mind in creating a place where family care is successful?" We found that: 1) leadership 2) philosophy of ownership and unit culture (the philosophy, but then acting on that philosophy) 3) parent participation 4) a stated philosophy and core set of values 5) multidisciplinary care. You must have leadership that is forward thinking. Work on understanding the micro-system and organizing the micro-system so that they can make changes. Communicate the core values so that people can act on them.				
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS11	No data	No data	No data	You have to start with the buy-in process. Identify the non-diabetes	No data
	opinion leaders to get the system's attention. (It's a given that the diabetes opinion leaders will already be on board.) We had a series of meetings and asked, "Why don't we have the best diabetes care here?" We heard everyone's opinions. Then said, "I think we have a way to do this . . ." You have to look at the information system capabilities. Look at the flow of information. Find out whether you will do case finding directly or by referral. Then put a team under good leadership. The leader must be attentive to detail and supportive. The issues that come up are strictly economic and political. The model has to be clear. We can recommend but we can't legislate. I'm really proud when people listen. I think micro-systems for cancer, diabetes, and heart are the most replicable. There is a clear need that is readily identified. They are costing us lots of money. Things are changing quickly. And no one person can do it alone --- there is a great need for people to work together.				
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS12	No data	No data	No data	Information management has been the lubricant to improvement. I	No data
	think that is key to our success. We have a seamless flow of communication. Our information system has allowed us to move through many barriers. People need to have on-site tracking for problems. The development of an instrument panel has been very important, then feeding this back to the staff has really stimulated our thinking. We are bringing on a new chairman who is committed to improvement and population based care. He has brought an open attitude to leadership				
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS13	The hospital system has shown great effort in helping us out with patient restraint protocols. "Restraint management" has been an area where they have excelled and this has made the ER a safe place to work. They are also helping us out in quality end-of-life issues and how cultural differences of people necessitate individualized care.	The hospital's fearful response has created an environment that is not conductive to quality improvement. There was a paranoia here before JHACO came. The hospital received a 98% or something. But, I told them, it's only an exam, and then it's an open book exam, for god's sakes! And if they had taught JHACO philosophy in the last four years throughout the hospital, they wouldn't have had to rush things in the end.	I think the way we have it now is in the right direction. We like performance linked compensation strategies. We like a "balanced scorecard" approach. However, we don't want to go too far in this regard, otherwise you overly incentivize things. We want a mixture of prospective and retrospective linked compensation. You have to stay in the safe zone.	Join the IHI collaboration! They are a not-for-profit. They are dead on in terms of error reduction, ICU improvement, ER improvement, etc. Hospitals are so frightened by cost-cutting. They need to realize that an investment in quality improvement will go a long ways. Other places should stay tuned to the IOM report! Hopefully there will be a lot of great and interesting things coming out of it!	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS14	No data	No data	No data	There has to be a high degree of commitment --- from	No data
	administration and also from someone willing to do the work, collect the data. There has to be a commitment of resources (human and $$). You have to ask what do we need to do to make this our own. How it is done doesn't have to be written in stone, but have the flexibility to make it work for us. Another important point is recognition of the staff. That has been key. Individual recognition and team recognition. It's intangible, but it really feels good to be recognized.				
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS15	No data	No data	You have to reoganize healthcare, not just the payment of	No data	We don't see young MDs being trained in our model. We need to
		healthcare. We need the healthcare dollars to come to the community and then we decide how to take care of the community. The trustees of the hospital has no idea about healthcare or affecting change		train MDs in systems. They must have a sense of accountability and they must have a sense of the pt-dr relationship. We don't know whether we are dinosaurs and going extinct or spotted owls and our forest is being cut down. Or shakers with a beautiful religion but no way to reproduce.	
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS16	Sr. management support is critical because it consumes system resources. Our CEO had the idea to work on diabetes, so we had his support.	At various times they have pushed back and said that really what we were doing were just individual quality improvement projects. This has been a bump along the road. We prevailed in saying that this is system-wide disease management, not just individual quality improvement projects.	No data	You have to have the right team. For us it was a joint effort of	The financial barriers are the biggest barriers to replicating this somewhere else. Often physicians have difficulty working with non-physician providers, giving them the control. Some physicians don't do well sharing responsibility for patient care like this. The need to develop programs that show short term costs savings is also a barrier. This is not achievable. When we started we had some cost savings indicators, but we dropped those. That just wasn't the goal.
			specialists and primary care providers. The administrative support from the senior leaders must be there. The financial issues have to be resolved before you start. If you can have those three things in place before you start - the right team, the sr. leader support, and the financial issues resolved - you can replicate what we have done. What we are doing is not undoable in other places. In many cases it's just common sense.		
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS17	No data	No data	No data	Wherever you have a community health center, you would need to	No data
	add the neighborhood component. We serve the neighborhood and help the neighborhood strengthen itself. A majority of our board of directors are registered patients. There has to be a tie to a neighborhood or small community. A key starting point is defining the physical boundaries of the neighborhood - that is where our outreach focus is. We'll serve anyone, but we focus on our neighborhood and the surrounding geographic areas. We have 5 small centers instead of one large one. When we want to expand we go to the boundaries and plop down another one.				

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS18	No data	No data	No data	Top leadership commitment, commitment to collaborative work, formal QI projects, and feedback on the perception of failure.	No data
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS19	We have a very decentralized practice management company. We can make changes quickly and are free to make investments and commit resources to change. We recently created a management services division here at VAC. We help other clinics and care sites to do marketing, quality improvement in patient flow, etc. This is our entrepreunerial spirit. They provided us with some resources to allow us to do this.	On the other hand, decentralization hurts learning from other practices. They help run 22 other practices. However, none of these practices knows what the other is doing in terms of improvement. No one is learning from each other. They could do a much better job in this.	I am a free market kind of guy. I believe in a system that shifts more burden on patients. Right now, in our system, there is no recognition of practice efforts for quality improvement. Sure, we makes money because of volume and because optometrists and patient are happy. But, still, I get paid the same for a cataract surgery as the guy around the corner though he doesn't invest in any quality improvement. The payment system needs to reward quality improvement, in and of itself.	Care givers need to aspire to a higher cause. They need to be something special. They need to be diligent, make fast changes. Many gains are only achievable with a leap of faith. A lot of commitment for excellence is required. Sometimes, it's a lonely feeling to believe in quality improvement, but you try and make a difference by being persistent. A leader has to accept the insecurity and ambiguity that goes with the job. It takes guts to lead. I guess you just need to make sure that at the end of day, you've enjoyed your work and that there is more net good than net bad.	No data
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS20	No data	No data	No data	No data	You need to have a good team. You need to have good leadership.
	Without MDs as part of the leadership, you aren't going to get anywhere. QI can't be directed from administration. I read a book about 7 teams that accomplished different goals. What were the common things they all shared? Good leadership. It keeps the energies from being disbursed in different directions. It has to start with the first step. For us it was agreeing to show up at the OR on time. That seemed easy. Then we decided to work on something else. The biggest barrier is the first step. All you need is a modicum of success.				
	macro-system helps	***macro-system is toxic***	***ideal financial structures***	***replication***	***barriers***
MS21	No data	No data	No data	You need to have the right people, and a basic philosophy to help other people and to educate other people. You can do the empowerment training, but then people have to learn by doing. You have to educate the patient, then let them work through the process. When one person is truly present to another person, something happens. I remember being with a patient one day and connecting with that person. I thought, "Take off your shoes you are sitting on holy ground." If you are not there for the patient, you might as well be a technician.	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS22	We have a regional CHF case management group. It is helpful to talk to other case managers. It is also helpful that Dr. D. is so well-known and highly regarded.	The administration is a barrier. Sometimes I wish that they would just open the door, and get out of the way. 1 FTE is needed, but the $ is not there. Budgetary problems are always there.	No data	No data	The key lessons for others are a systems stress on good education to the patient. Treating the body as a whole. Having staff that is knowledgeable and not just ready to pick up their check every week. We need RN's social workers,case managers, and others here. Right now, we just don't have the staff. It takes a lot of time commitment to do what we are doing.
	But, other places don't pick up patients with an ejection fraction of >35%. We've noticed that many of these patients also need help. Other places only have protocols that handle left heart failure. We do both right and left side failure. It also helps that we have someone who is bilingual. She also makes sure that labs are organized and correct.				
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS23	They have been very supportive in terms of wanting to do cutting edge work. The priority for the system is patient care. They identified areas where CQI teams were needed. That is where the Breast Care team came up. They supported us financially too. They have paid close attention to the results. They have identified breast care as an area where they want a center of excellence. It is a priority of the system.	They have not been a barrier at all. Of course they are limited by funding, but they haven't been a barrier.	No data	You need to have a clinician and a radiologist that want to make it a better system. You need to have overall leadership give the go ahead. You can train the support staff to make the system work. You need to have a CQI team to look at and improve what you do.	No data
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS24	No data	No data	No data	No data	No data
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS25	There are no ways in which they have been helpful. Unfortunately they only say we don't have the resources so you have to deal with less. On the one hand though, they did force us to stop seeing patients in the hospital. I think that the patient outcomes are better, but something is lost overall if we don't see our patients in the hospital.	There are pressures to see more patients in less time	A capitated system could work and be fair to everybody. A capitated system where there are both utilization and quality factors, but quality is valued at least as much as utilization. I believe that good care is cheaper care. It may be more expensive to give up front, but savings are realized on the other side. You have to build in rewards for quality. The rewards have to provide extra money depending on how you perform on member surveys, HEDIS outcomes, etc. Then you set up a grading system. The top 10% in the larger system get the biggest rewards and the bottom 10% have money taken away from them.	No data	Time and financial pressures are the biggest barriers. If you have the time to listen to patients you can figure out what to do. I have a 15-year contract that is coming to an end. I am the senior physician. I am a good physician - I provide excellent care. I don't know whether my contract will be renewed. I am not as productive as they think I should be, so they don't know whether they can afford me. Public opinion polls say that people are more satisfied with their care than 2 years ago. Why isn't there more of an outcry? Why isn't the public demanding change? If I were designing the system - I think there are a lot of good organizations providing good data. HEDIS, NCQA, JCAHO, etc. I would put a priority on providing that data to physicians and incentivize them based on that data. There needs to be a system approach to this. Otherwise people will do what is expedient and not what is necessarily right. If it is not incentivized, it won't happen. People change what they do when there is an incentive to do so.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS26	No data	No data	No data	No data	Changing culture is a major barrier. I try to help people

understand that "we can work smarter". You can feel rotten about how you are practicing. It comes down to job satisfaction. I tell them "you are right --- and it's going to get worse." But change is possible. When I can deliver hope I know I got them. We have a workshop --- 3 days. Monday afternoon until Thursday at noon. During this time they forge a team. It's amazing how they don't know what the others are doing. You have them look at the process and they say, "you're doing that? I didn't know you do that." For example, the clerical staff were writing demographic information on each patient on the top of 7 different forms --- that's ridiculous --- someone suggested we print labels. That's so simple. We don't need a billion-dollar solution. We need a billion one-dollar solutions. You have to create the will to change. It's there --- I delve for it. Then I bring it out. There's the will to change, then execution, then ideas. A lot of my work is fighting the complacency to change. I work with those who are willing to change. You have to find the choir. To some extent I have to just trust my gut about who is willing to change. The top leadership support must be there --- if the CEO is directly obstructing you, just pack your bags and leave. You must have the CEO's permission pilot test changes. So I push from the top and push from the bottom.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS27	No data	No data	All incentives must be aligned. Then everyone wins	Build systems around what people want, and you can't lose. At every fork, if you have to decide	The habit of trying to manage demand. Not all doctors in this system are self-actualized. They are barriers to change. They put a lot of emphasis in autonomy and determining how they want to practice -- it is b-s and makes the

what patients want and what doctors want, side with the patient. Stay the between course. Knowledge is out there. Recognize that you will make mistakes. Viability remains a problem. Since I left the panels have gotten much bigger-too big, they are bulging. Patients want a relationship. They want someone whom they can trust. When you try to "manage demand" you teach them not to trust you.

system too chaotic for patients. This is understandable. They are conservative and worried about managing clinical conditions, they work under pressure and stress and try to find a way to control it. The myth is that they can control it with highly specified systems that raise barriers. They all claim that "my patients are sicker." Ireply; Give me your sickest patients--those with CHF, the ones on coumadin, patients with diabetes, hypertension, the old, sick people, anyone who seems to require more than the average resources and time. When they ask why I would say this, I reply: Because I will enlist help, resources -- clinical pathways, care managers. We provide these resources to the practice and should never charge [or penalize] the doctors for this help. The doctors have not learned yet how to enhance the team with other kinds of providers -- e.g., health education, behavioral medicine, physical therapy, pharmacy.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS28	I am the institution - it is up to me to make it work. Making time	Nothing, really.	No data	You need to have the leadership in place - have the vision, be able to	No data

available for the key people was very important. They haven't gotten in our way either. In the late 80s our hospital's CEO was smitten by quality. I was just a rank in file surgeon then. I took it upon myself to go to a conference to learn about quality. I was the only physician there. I saw the value in creating a customer centered culture in healthcare. We created a workshop - half a day on Friday and all day on Saturday. This was supportive too - that they helped make this happen and financed it. They also facilitate the regional work we do.

articulate it, and have the passion to carry it through. And you also have to have a high level of credibility. Must have leaders who are effective - without effective leadership we would be back to where we were in 1985.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS29	No data	No data	No data	We've done a lot of work in replicating this model, so I can talk about replication. We started other sites nationally. We had funding in 1986 to start 6 other projects. All diverse populations. One thing that came from this was that in 1997 Clinton signed the PACE Provider Act. We always had to go through the waiver process, which is only for a few years and has to be repeated. And of course you may not get the waiver next time. So the PACE Provider Act sets up a permanent system of care that is available to anyone without the waiver system. One thing that is important in replicating this is the collection of partners. You have to have energetic and powerful leadership that believes that this is the right thing to do. They really have to be willing to take this on as a mission -- understand and embrace it. It has to be collaborative in nature. You can take the ideas and principles but then you have to be able to breakthrough with the implementation.	A big barrier is hiring people who have some experience working this way. You have to find the people with the clinical competencies, but then train them. You have to train people to work in a different way. This is the only place you see true integration of acute and long term care. In the first three months after hiring people we provide in-services on team work, resolving conflicts, working together, etc. We are an established program, so we have the critical mass - by that I mean that the experience of the team and bring new people along. New people can see what it is like to work that way. A lot of the physicians have a problem working this way. Sometimes they aren't used to working as a team player instead of in the starring role. Another barrier is financing - if financing isn't integrated, then forget it. Also, payment varies from state to state. A lot of our most costly services we contract out. Then when we renew contracts the people we are contracting with want more money. We can get squeezed in the middle of the contracts and Medicare and Medicaid. Also, we have to be competitive. We have to compete with other providers. We need time to be able to create the relationships but often physicians won't refer patients to us until they are very frail. We don't get them until it was a problem for someone else. Hospice has a similar problem. I think the average time they have a patient is 15 days. They can't build a relationship with a family in that amount of time. Another barrier is just making all this work. We do this and we do it in three different languages.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS30	The NHS has begun forming primary care groups. In their area this involves 130,000 patients in about 60 offices. They will contract for secondary care on behalf of the practices. It began in April so too soon to know whether they will develop a sense of ownership. It will not take into account the different populations and their characteristics. It will not reward efficient offices and may hinder them. Q: Do you think it could be helpful? A: Perhaps. The group dynamics needs to settle. I hope it will result in a levelling up of quality, not downward. It could be a vehicle that helps in deploying improvement. They are developing the idea of "clinical governance. This is analogous to corporate governance. The standards would be something that offices should ensure.	I am not employed by the NHS, I am self-employed and contract with the NHS. Some advisor has had 2 "bright" ideas that have resulted in the NHS instituting two new programs:1)NHS Direct -- a national phone number to get you through to a triage nurse2)Drop-in Primary Care. They have 40-50 pilot locations [for urgent care].I worry that the traditional strengths of the system of care we have may be weakened. These include: 1. The GPs are independent with a flat, flexible structure 2. They are gatekeepers to secondary care. This keeps down costs 3. The have a registered, defined population to look after. All three are threatened by widespread adoption of these programs.	No data	Isn't the pattern: norm, form and storm?!	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS31	Support of management	No data	I am not sure that ICUs can be money making for an institution. They are necessary, but it is not possible to charge what it really costs. It is a "loss leader." Whatever financial system it has, it would be important to have a small controlled, closed system with a small group of MDs and nurses managing the care. Payment should be based in part (above a base) on indicators of patient satisfaction, decreased mortality and infection rates. Rewards might be in the form of pay or an extra day off. Until the doctors and hospital are paid globally, we cannot get every one's cooperation. For example, under Medicare, I get paid for each day the patient is in the hospital. I have no incentive to get them out and no incentive for good care and to get the patient out. It doesn't matter to the doctor — they get what they get, regardless. Performance-based payment would bring about the most rapid change and improvement in quality. If LOS is used as an indicator, it has to be balanced with mortality and readmission.	No data	Well, I've already mentioned the importance of support form high, senior management. It is critical. Second, support of the nursing staff. They drive this, they are the core group who are there 24 hours. They are crucial to making change. Third, the MDs must be willing to give up some of their autonomy and to be a part of a team.You can't bring someone in from outside to do this. It has to be someone who is there and well respected.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS32	No data	No data	Capitated network, risk adjusted Pay for other types of care, for example phone calls, e-mail. If I spend 20 minutes on the phone with a patient and then the patient doesn't have to come in, that's great. But I don't get paid. There is all sorts of kookiness in how things are paid. Measurement has to change too.	Well, I think I've already told you. But they are: Listening. Our values are reflected down the line. We listen to the staff. We take serious the whole patient. We see our role as primary care. A problem isn't solved until the patient agrees that it is.	The barriers are huge. Getting through on the phones compound the patient's problem. This is all extremely challenging. Coordinating all this is daunting. They talk about the hospitality industry --- it's easy to respond to someone who feels good and is on vacation. The work of primary care isn't rewarded. We are reimbursed at $35/visit. That makes it hard to recruit good people. We had trouble finding someone to do our billing because the dollars are so small, compared to orthopedics or other specialties.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS33	No data	No data	No data	No data	Administrative structures and leadership that will go out on a limb and make time available. They estimate the direct cost savings (ROI) to be 5.8:1 But it takes guts. A credible change agent is necessary. Everett Rogers talks about homophilia -- a change agent seems to be most effective if he/she is like the people he/she is trying to change. For their setting this means being a physician leader, but not an administrator. Find a partner to work with. For us, it is IHI. They will push you and point out where you need to go. The collaborative was invaluable. It was not for getting the project done, but for training the change agents and providing technical assistance. Allow the teams to do the work. Empower them to make change, spend $$ if necessary. Example: in the record room project, they had been once been told that although the files were arranged around the perimeter, and it was an inefficient arrangement, they could not move them because the files would not stand up. We told them this was crazy, and they could do whatever they thought best. After the meeting ended, they did it. Our philosophy is Just Do It!

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS34	No data	No data	No data	You have to be able to do what it takes. In December 1996 I started this job. This effort was already well underway. I just stood back and tried not to screw it up. It took a lot of vision to pull this off. I think what is important is to have a visionary medical director. A capable management group. Other physicians were champions. There was a combination of physician leadership and administrative leadership. They started with a challenge to reduce unit cost by 30%. I pointed out to them that they weren't focused on cost but on increasing value for a population. It seems to be similar to pioneers, scouts, and urbanites. Look at open access, for example. A few years ago this was radical but now lots of people are trying it.	The financial craziness is a major barrier. Systems can trap people with the financial craziness. Community Health Centers vary -- - often there is the tyranny of piece work. We don't have that. The redesign of our medical center was world class change. Being small helps. Going to the team aspect has its barriers --- the elitism, there is a tendency to be in professional boxes. It really sets up a caste system. When I got here some work had been done around the learning organization. A lot of training in interpersonal communication. We try to equip people to bring themselves to the change. We have a manager for staff development. She works on skill building and coaches the teams in how we get along. It's important to assign the role of staff development to someone. There is a lot of variation in how well teams are working. We have a culturally diverse staff. 150 staff, 31 different languages. Some of the teams aren't great and they need outside coaching from time to time. This would be especially true in an environment where physicians are self-important.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS35	No data	No data	No data	Leadership paves the way, then keeps them involved. We have put diabetes on every important meeting agenda. The good evidence around diabetes care helps. We got into this because it would help us get money for our patients. But then we came back from the first learning session 120% behind doing this. The excellent way in which IHI presented the work and their experience made a difference. We've been doing TQM for years - they just snail along looking at old data. It's an incredible relief to try small changes on a small scale. It's so simple it's brilliant. My time was dedicated to this - a dedicated person's time helps. A dedicated person keeps everyone connected. The team makes use of the strengths of the individual team members. People were not pushed to do more. We had been managing indigent diabetic patients for years and didn't think we could do any better. The provider attitudes and beliefs were that these people are so hard. But the patients responded to the changes we made - they felt it and responded to it. You have to craft something that is doable. Create steps and plans that are doable. Don't try to tackle things that aren't doable in a short period of time. You have to look for the simplicity in complex things.	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS36	We are lucky that there was enough money in our health care system back then to create an automated clinical data system. The leadership in 1985 put in the personnel, the $, and with some vision created something pretty good.	The problem is that right now, the vision is not there. And we have a problem that requires on-going support. We need to update the data system, modifying it has been very difficult. The administration needs to start helping us.We also have a problem with capacity that the administration is not doing enough about.	No data	You need population-based clinical information systems with data. You need the system to be flexible so that change can be accommodated. You need leadership to understand what you are doing, however boring it may be. People have to know what you can do. The leadership must stress integrated multidisciplinary cross-department projects. Currently, our leadership doesn't have the experience to do this. They weren't taught like this in medical school.	No data

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS37	It is a mixed message. The organization talks about team care but then subverts their vision. They talk about team-care but then put in a centralized phone system with a nurse in charge of scheduling appointments. Well she has no way of knowing whether Doctor X and Y are on the same team. If a patient of Dr. X cannot go to Dr. X because he is on vacation, the nurse may send the patient to Dr. Z though Dr. Y is on Dr. X's team. So instead of the patient going to Dr. Y, they go to Dr. Z.	No data	Capitation reflects the reality of the world. Culturally, America is not ready to hear this, I am not too optimistic about this.	No data	First you have to train leaders. I don't think that nurses are well used. Nurse practitioners are used as cheap docs instead of being used to play a complementary role to physicians. They have unique skills which are an asset to the care process. Doc's have to be better leaders as well. Second, you have to have some kind of IT system. Third, the environment has to be stable for teamwork to prosper.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS38	I'll tell you what is critical: that the CEO focuses on patient needs and expectations. That is fundamental to what is important to me--that the focus be on the individual--a complex person--and you try to do the best you can for them. It seems odd to say, but that is what is fun. The rest is just dials. We did focus groups with families and learned 4 key things that are important: The organization and delivery of care. Shared medical decisionmaking. Treating each person as an individual. Attending to those who care for and love the dying person. The building blocks to accomplish this are: information and education of the patient and family coordination and continuity	No data	A focus on number of visits is wrong. For us it is median length of stay. The hospice benefit ($109/day) is loaded up front such that we lose money the first few days. It is not until patients have been there 5 - 6 days that you begin to break even given DME needs and paperwork. Yet a quarter of our patients have a 3-day or shorter stay. In this environment, it would be better to have a longer, not a shorter LOS.	No data	Top down leadership. Information about quality in aggregate. Understand patients' expectations and needs. The nurses aides are members of the team. Include them, listen to them.

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS39	They have a sense overall of an organization trying to learn, develop, and improve. They provide training for managers that places a high value on communication. If changes are made they are well advertised within the group. There is some interaction between micro-systems. The psychiatrists have meetings --- we know what is going on in the other micro-systems	It is too much work to get anything out of Information Services. The child team has been trying to collect information from intake and the information resources have been a real problem.	To encourage improvement you need a structure that makes you responsible for a defined population --- some sort of capitated system. In a couple of sections, the payment scheme is FFS --- this makes people less involved in the team. The incentive is to maximize own profits. This hurts improvement efforts.	It is helpful to have a clear sense of goals, a philosophy of the service. Line everything else up with that. Funding must be aligned somehow to make the model possible. It is helpful to have some leaders who are in the micro-system all the time working on the administrative and organizational support of the model of care. We get visitors a lot. It helps them see where it is happening. They	It is hard to get a clear notion of consumer satisfaction. We can't get a clear idea from a very small group. We have found it hard to get that input. We need to identify ways to assess needs more effectively. How do we get information from the quieter people in the community?
			are interested in how everyone involved understands the goal of the care, the high level of communication. Productivity expectations, but paid on salaries, are helpful for improvement. Plus recognition for those working on improvements. There isn't a hierarchy of how much opinions are valued. Everyone's opinions are valued. The meetings and care plans are done for a thought out reason. It isn't by accident that this is how we got here. It would help to have supervision from someone who has done the model. Our vocational model has been replicated --- mentoring has helped. There needs to be a connection over time. Someone to talk to about difficulties and barriers as they occur. Talk it through with someone who has been there. It's hard to set up a model just by reading about it. A longitudinal ability to talk with people, connect with people is very important.		

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS40	They provided space, money, people, and a chance to make my vision a reality.	They don't understand me and haven't spent the time in planning this. Things haven't been done this way before and it's hard for them to understand.	No data	When things are successful it is because someone had a vision.	Barriers are that no one lives here, we are just a place to visit. Also, we have no residents --- so we aren't teaching. We are still overcoming the barriers.
			There are people that aren't replaceable. I've watched what has happened to the program I started somewhere else. The longer I've been away, the more it has fallen apart. Computers can continue to work the same way, but people aren't computers. They won't work the same way once you walk away from them. You have to look for the person with the fire in their eye who will take the ball and run with it. Only certain people have that. A lot of people want what we have here but if you can't give it to them and turn it on it's dead in the water. You can provide the tools but only a handful of people will be able to do anything with it. I try to become unimportant --- give people the tools that will enable them. It's all in the leadership, you have to enable the people around you to be successful. I think it is possible to take a system that is working and transfer it someone else. Some of the people will take it and make it better. Some people will want an off the shelf product. But if you aren't continuously improving it won't work.		

	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS41	In 1994 the system commissioned the design team. We had 1/2 day meetings every 2 weeks. We had lavish amounts of time. This was a major investment. We had a facilitator, a management engineer, 4 MDs, a diabetes educator, and someone from behavioral medicine. The vision was that the core team would be the patient, the RN, LPN, and PCP. Then there was the extended team - the endocrinologist, the nutritionist, clerical/administrative support, podiatry, and opthalmology.Then there was the ongoing sponsoring of the team. We followed the Juran Institute process of design. The last step is to hand off to operations. We never did that, so we created a new program "Chronic Disease Programs". It would have been better to have a robust enough operations department to hand it off to. There has always been a tension between us over that. We fight this on every front - space, receptionists, support, supplics.	There really were no toxic ways.	We need to be reimbursed for education.	There has to be a cost justification (show averted costs in the short term or that you bring in revenue). The program has to break even. We will use Medicare FFS patients to generate revenue --- incident 2 billing. You have to include the care management role, protocols, and behavior modification.	An initial barrier was getting MDs to sign standing orders. This was a wholesale change in physician practice patterns. But as we reduced work for the pcp, the barrier was removed.
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS42	The system is the basis for quality assurance activities. Our Ob/gyn development team is a group of 6 sitting around with nurse managers, perinatal managers, and others who critique best practices. They generate flow charts, implementation tools, education material. They help in bringing it all together.	We hope that we don't impede the microsystems. But it works both ways. For example, the Northern region can't just go off and set its own priorities for programs. We hope that we are not holding regions back, but it is important in having some organization and structure. This is why we have guidance councils for each clinical program, so that everyone is involved in discussions. There is no "taxation without representation."	No data	No data	It takes a major commitment to do what we are trying to do. It is very expensive. But once someone has done this, and there is a model out there of data driven quality improvement, the cost of replication will decrease. We have commercial vendors involved in some of our projects who will develop and sell these techniques. So, we are just one success story away. We happen to be dominant in this area, and we have talent, however we are no more unique otherwise than anyone else. Just like quality improvement theory was applied in the automobile industry, quality improvement theory can be applied to medicine.
	macro-system helps	*macro-system is toxic*	*ideal financial structures*	*replication*	*barriers*
MS43	No data	No data	No data	First, we are very cost effective. The total cost is 50 - 60% of a general hospital. Second, we do only 1 or 2 techniques. There is definite merit in having all staff familiar with this. It decreases complications and is more cost effective. Is it monotonous? Some would say yes, but there is certainly diversity even within this area! *Q: Have you considered broadening your work to include more high risk patients? A: Yes, we have approached hospitals as partners to provide back up for high risk patients. We wouldn't need to block OR time and thought we might have 3 - 4 per month. Now we have to refuse 10 - 15 patients per month because they present risks. We have not yet been successful, though, in finding a partner hospital.	No data

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