

Dartmouth Coach-The-Coach

Dartmouth Microsystem Improvement Curriculum

Thursday, January 12, 2006

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www.clinicalmicrosystem.org



WELCOME!

DHMC Heart Failure Team

DHMC Intermediate Cardiac CareUnit

Review of Yesterday

- **Meeting Skills/Timed Agenda & Roles/Ground Rules**
- **Global and Specific Aim Statements**
- **Theme/Global Worksheet**
- **Process Mapping: Flowcharts**
- **Cause and Effect Diagrams: Fishbones**

**“Quality is never an accident.
It begins with the intention to
make a superior thing.
It is always the result of
intelligent effort.”**

John Ruskin

Why are we here?

To develop people

- Head
- Hand
- Heart



To improve care &
respond to new
pressures for quality

To grow your
microsystem from
the inside out

Why are we here?

- **Learn about our practice**
- **Improve our practice**
- **Improve our work life**
- **Participate in “studio course”**
 - **Learning in action**
 - **Action in learning**

A Great Practice for Staff...

*...while maintaining and improving
a joyful work environment and a
financially viable organization.*

In The Future

Staff Will Say..

“We continually monitor and manage our resources in order to match our capacity to the profile of our patients’ need for care, information, non face-to-face care, and other services.”

Becoming a “Community of scientists”

Your Practice IS a Microsystem

“Every system is perfectly designed to get the results it gets.”

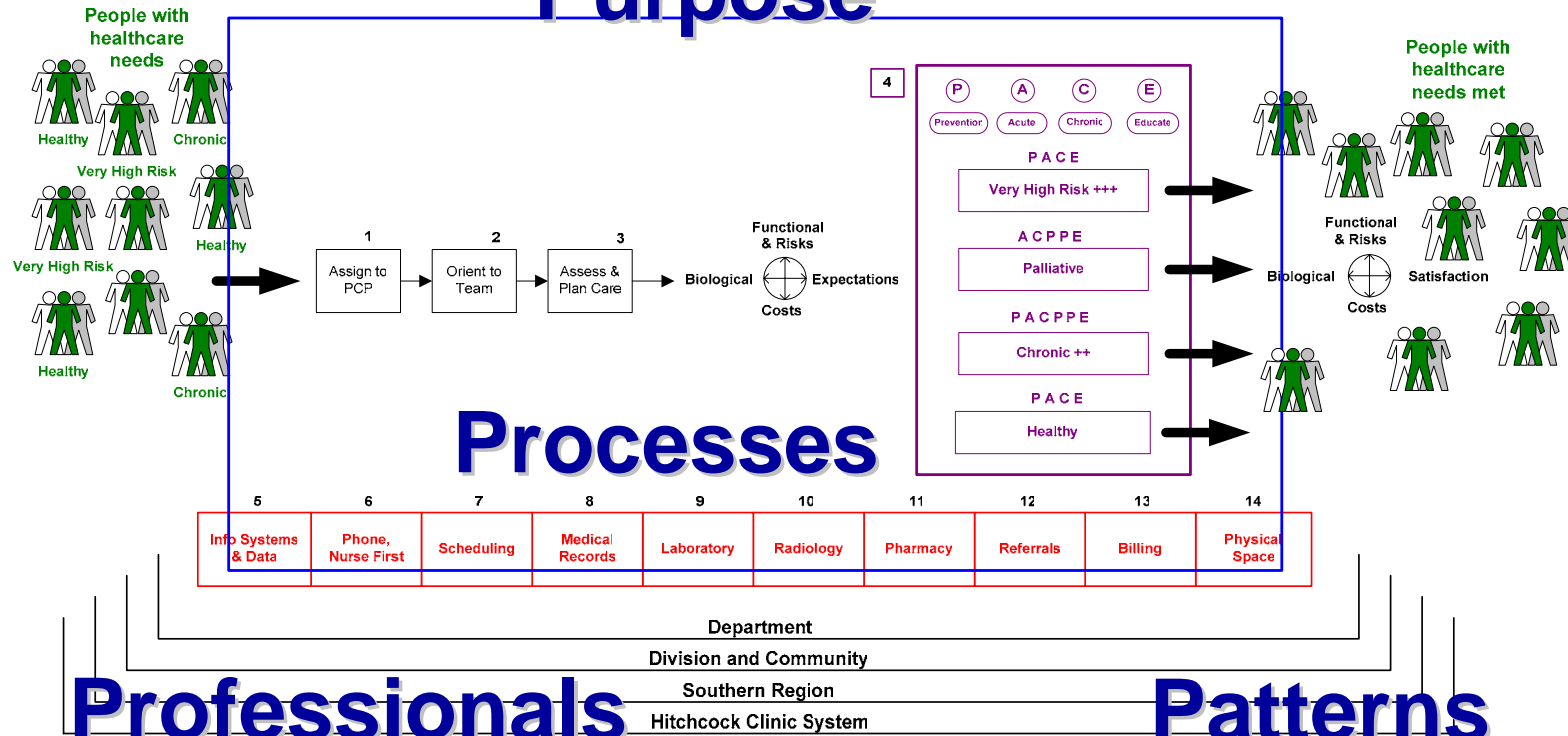
- Your practice is a small system**
- A complex adaptive system**
- A clinical microsystem**
 - Emerging changes**
 - Making changes**

Microsystem Thinking

Patients

Building a Team to Manage A Panel of Primary Care Patients
 Mission: The Dartmouth-Hitchcock Clinic exists to serve the health care needs of our patients.

Purpose



Processes

Professionals

Patterns

TEAM MEMBERS:		
Sherman Baker, MD	Missy, RN	Amy, Secretary
Leslie Cook, MD	Diane, RN	Buffy, Secretary
Joe Karpicz, MD	Katie, RN	Mary Ellen, Secretary
Deb Urquart, NP	Bonnie, LPN	Kristy, Secretary
Ron Carson, PA	Carole, LPN	Charlene, Secretary
Erica, RN	Nancy, LPN	
Laura, RN	Mary Beth, MA	
Maggi, RN	Lynn, MA	

Nashua Internal Medicine

Skill Mix: MDs 2.8 RNs 6.8 NP/PAs 2 MA 4.8 LPN SECs 4

Measuring Team Performance & Patient Outcomes and Costs					
Measure	Current	Target	Measure	Current	Target
Panel Size Adj.			External Referral Adj. PMPM-Team		
Direct Pt. Care Hours: MD/Assoc.			Patient Satisfaction		
% Panel Seeing Own PCP.			Access Satisfaction		
Total PMPM Adj. PMPM-Team			Staff Satisfaction		

Micro-System Approach 6/17/98
 Revised: 1/27/00

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 Paul B. Batalden, MD
 Dartmouth-Hitchcock Clinic, June 1998

Agenda

January 12, 9:00-3:30pm

9:00	Review Big Picture/Muddy Points/Preview Today	Gene
9:15	Change Concepts	Gene
9:30	Meeting Skills: Brainstorming/Multi-Voting	Margie
9:45	Exercise 8: Select One Change Idea	Margie
10:30	Report Outs	Margie
10:45	Improvement Model PDSA ↔ SDSA	Gene
11:00	Exercise 9: Plan for PDSA	
11:45	Report Outs	Gene
12:00	Lunch	

Agenda

January 12, 9:00-3:30pm

- | | | |
|--------------|---|---------------------|
| 12:30 | Measuring and Monitoring | Gene |
| 12:50 | Value Stream Mapping | Margie |
| 1:10 | Exercise 10: Draft Value Stream Map | |
| 1:45 | Report Outs | Margie |
| 2:00 | Break | |
| 2:15 | Measuring and Monitoring: Clinical Value Compass | Gene |
| 2:45 | Creating an Action Plan for the Lead Team | Margie/Sandy |
| 2:55 | Exercise 11: Create an Action Plan | |
| 3:15 | Report Outs | |
| 3:20 | Wrap Up and Evaluations | Gene |

Thursday Team Aim

**At the end of the session,
participants will be able to:**

- Describe various change concepts to test in the microsystem
- Design PDSA to test change ideas
- Describe tools to measure and monitor improvement
- Create value stream maps of processes to improve
- Describe balanced measures for improvement using the Clinical Value Compass
- Create an action plan to use an Action Plan for improvement over time

Welcome and Muddy Points

Yesterday ... about aims

Today ... about ways

Coach Feedback

9:00-9:15 Gene

Change Concepts

9:15-9:30 Gene

The Short Skinny on Change Concepts

- **Unbelievably valuable when built on process knowledge ... popularized by book**

Improvement Action Guide

- The Improvement Guide : A Practical Approach to Enhancing Organizational Performance. Langley, G.J., Nolan T, Nolan K., 1st ed. The Jossey-Bass Business & Management Series. 1996, San Francisco: Jossey-Bass Publishers. xxix, 370
- Clinical Improvement Action Guide. Edited by E. C. Nelson, P. B. Batalden, J. C. Ryer, JCAHO, Oak Brook Terrace, IL., 1998. ISBN 0-86688-553-6
- **Example: a great change concept ... turn the customer into the supplier**
 - **What examples of this can you think of?**

Change Concepts

- **DeBono suggests that if we understand the underlying concept on which a specific idea is based, we can use that underlying concept as a cue to develop numerous ideas or options**
- **Change concepts can help clarify your thinking about where in the process you should begin your changes**

Change Concepts

- Change concepts are stimulants to develop and design detailed and specific tests of change
- A change concept combined with your knowledge of the process will help lead to new thinking about the process
- Use change concepts to “jump start” your thinking

Caution

- You ***cannot*** use change concepts as a substitute for thinking through your process and your problems with that process

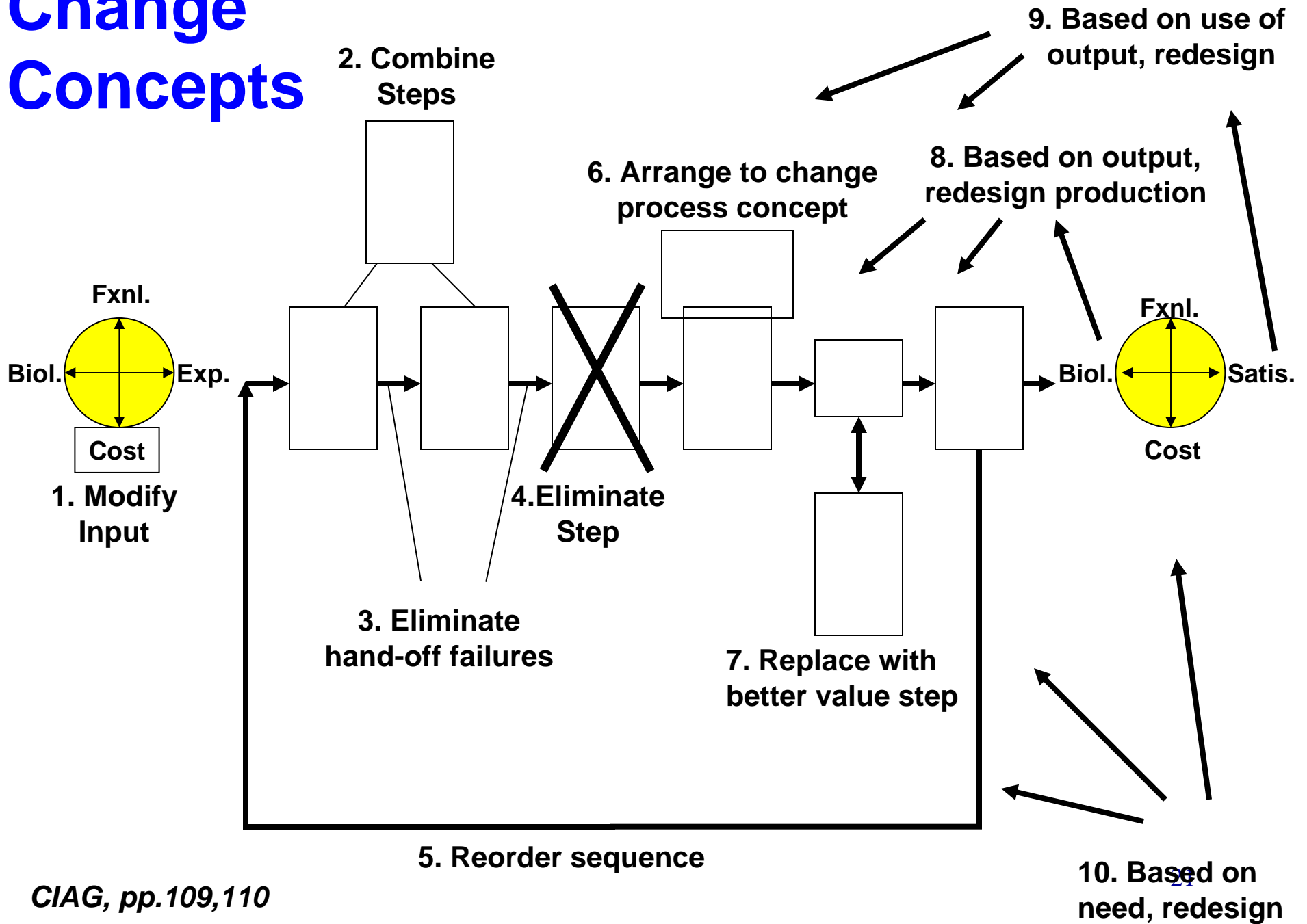
Change Concept Categories

The Improvement Guide pg 293

See full page handout

- **Eliminate Waste**
- **Improve Work Flow**
- **Optimize Inventory**
- **Change the Work Environment**
- **Enhance the Producer/ Customer Relationship**
- **Manage Time**
- **Manage Variation**
- **Design Systems to Avoid Mistakes**
- **Focus on the Product or Service**

Change Concepts



Change Concepts in Action

“Improving Access to Care”

- **Aim: “Improve patient access to care by increasing SDA to 50%”**
- **Change Concept:(in red)**
 - **Shape the Demand**
 - **Work down the backlog**
 - **Reduce f/u appt frequency**
 - **Create alternatives to one-on-one visits**

Change Concepts in Action

“Improving Office Efficiency”

- **Aim: “Improve efficiency and flow of practice while increasing patient and staff satisfaction”**
- **Eliminate Waste**
 - **Eliminate things that are not used... surgical trays**
 - **Reduce classifications... appt types**
 - **Reduce controls on the system... Dr X says, only so many of these appts per session**

Change Concepts in Action

“Improving Office Efficiency”

- **Improve Work Flow**
 - **Create standardized “bin systems”**
 - **provider office messaging**
 - **Minimize hand offs**
 - **patient-provider e-mails**
 - **Move steps in the process close together**
 - **dictate note with patient present**
 - **Use automation**
 - **refraction by MA, PKC by patient rep**
 - **Co-location of staff**
 - **Keene FP pods**

Change Concepts in Action

“Improving Office Efficiency”

- **Optimize Inventory**
 - Standardize stocking of exam rooms
 - Reduce multiple brands of same item
- **Change the Work Environment**
 - Separate greeters from those answering the phone
 - Separate “non-visit” activities from “visit” activities
 - Provide advanced training for staff
 - Implement “cross training”

Change Concepts in Action

“Improving Office Efficiency”

- **Enhance the Producer/Customer Relationship**
 - **Ask and listen to patients**
 - **Coach patients to use service**
 - **Focus on the outcomes of the patient**
 - **Reach agreement for expectations**
 - **(Use Visit Expectation Card)**

Change Concepts In Action

“Improving Office Efficiency”

- **Manage Time**
 - Reduce wait time
- **Manage Variation**
 - Standardize processes
 - Improve predictions
- **Design Systems to Avoid Mistakes**
 - Use reminders

Change Concepts In Action

Office Efficiency

Focus on the Service

- Differentiate from others using quality dimensions
 - “We treat you like family”
 - “One stop shopping”
- Offer services when the patient wants
 - “Open Access”

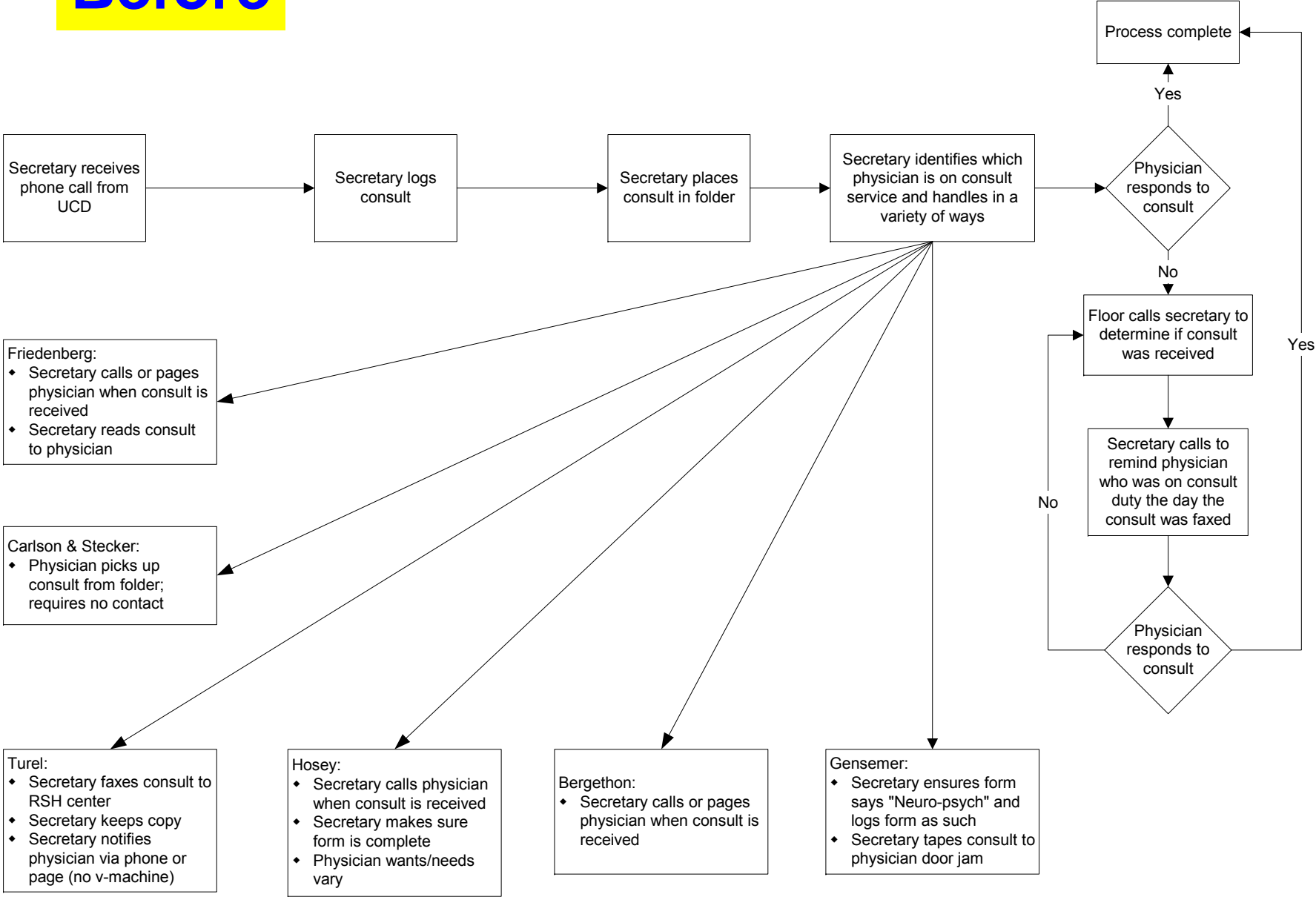
Change Concepts in Action

“Improving Access to Care”

- **Match Supply and Demand**
 - Create staff schedules which “match” demand volumes e.g. High volume calls on Monday and Fridays
 - Smooth out the provider schedule
- **Redesign the System**
 - Optimize the Care Team
 - Optimize rooms/equipment
 - Predict and anticipate patient needs at time of appointment (huddles)

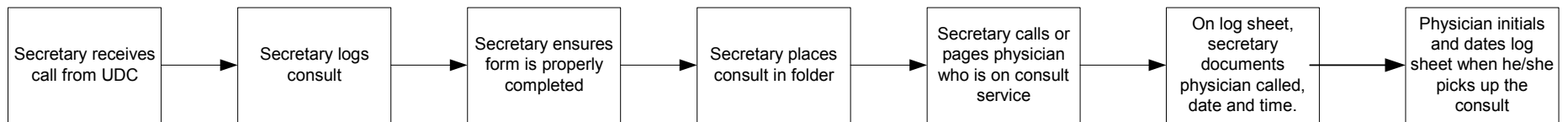
Neurology Department
 Draft Consult Flowchart (in-house)
 9/14/2001

Before



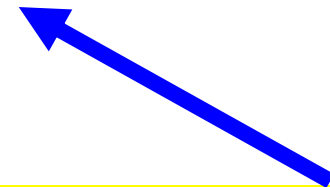
After

Neurology Department
Consult Flow Chart



- **Manage variation**
- **Reduce controls on system**
- **Eliminate waste & rework**

(3 change concepts used)



New Meeting Skills

- **Brainstorming**
- **Nominal Group Technique**
- **Multi-voting**
 - **Review of meeting skills**
 - **New skills**

Meeting Skills

- **New Tools**
 - **Brainstorming (to expand ideas)**
 - **Nominal Group Technique (to expand ideas)**
 - **Multi-voting (to reduce ideas)**
- **Old Concepts**
 - **Roles**
 - **Processes**
 - **Aimed & Timed Agendas**

Roles

- **Leader**
 - Prepares agenda, moves agenda, elicits participation,
- **Recorder**
 - Visual record for group, next actions list
- **Timekeeper**
 - Verbally announces amount of time remaining and when time is up
- **Facilitator**
 - Helps to manage group process, to balance participation, to keep group focused on objectives

Phases & Processes

- **Pre-meeting plan**
- **In meeting**
 - **focusing on aims**
 - **working on aims**
 - **setting up next actions**
- **Post-meeting follow through**
- **Making decisions**
- **Managing time**
- **Sharing leadership**
- **Listening**
- **Managing conflict**
- **Giving feedback**
- **Learning**
- **Having fun**

7 Step Meeting Process/Agenda

- 1. Clarify aims: what we will get done**
- 2. Review roles: leader, recorder, timekeeper, facilitator**
- 3. Review agenda and determine time for each item**
- 4. Work through agenda items**
- 5. Review meeting record: review flipchart record, make changes/additions, decide what to keep for meeting record**
- 6. Plan next actions & next agenda: who will do what off line & aims for next meeting**
- 7. Evaluate the meeting: went well, could improve**

New Tools and Techniques

- **Brainstorming**
- **Multi-voting**
- **Nominal Group Technique**

Brainstorming

- **Generates a wide variety of ideas from ALL participants WITHOUT criticism or judgement**
- **Successful brainstorming:**
 - Encourage creativity
 - Involve everyone
 - Generate excitement and energy
 - Separate people from the ideas they suggest

Brainstorming Steps

- **Clarify as needed**
- **Take a minute or two of SILENT thinking**
- **Either go around the table for each person to speak, or let ideas be Review the topic and called out until all ideas are exhausted**
- **When ideas start to flow...let them come!**

Brainstorming cont.

- **NO DISCUSSION** during brainstorming
- **NO CRITICISM** of ideas...not even a groan or a grimace!
- **Build off of each others ideas**
- **Write ALL ideas on flipchart for all to see**
- **(Page 4-14 Team Handbook)**

Nominal Group Technique

- **Structured method of generating a list and then narrowing it down**
- **The first phase is SILENT BRAINSTORMING**
- **The second phase is VOTING TO REDUCE THE ITEM LIST**

Nominal Group Technique Steps

- **Clarify the task/question**
- **Members asks questions prn until everyone is clear**
- **Generate ideas SILENTLY. Do not allow any distractions, no joking, no whispering**

NGT Steps cont.

- **When everyone is done creating their list, go around the table and have each participant read ONE idea off their list and write the idea on a flipchart**
- **Continue the round robin until everyone's list is posted or 30" is up**
- **No discussion, not even questions for clarification are allowed during this step**

NGT Steps cont.

- **Display and talk through each idea for clarification and discussion of ideas**
- **The person who generated the idea should be the one who provides clarification**
- **At the end of this step, like ideas are combined**

NGT Steps cont.

- **Narrow the list of ideas**
- **(Pages 4-16 through 4-19 Team Handbook)**

Multi-voting

- **Uses voting to select the most popular items on a list with limited discussion and difficulty**
- **Accomplished through a series of votes, each cutting the list in half**
- **Often follows a brainstorming session**

Multi-voting Steps

- **Generate the list of items and NUMBER each item**
- **Combine two or more similar items if the group agrees they are the same**
- **Renumber the items as needed**
- **Each member chooses $1/3$ of the total number of items on the list**

Multi-voting Steps

- **Each member writes their choices on a piece of paper**
- **After all members have SILENTLY completed their selections, the votes are tallied. Vote by a show of hands as each number is called out.**

Multi-voting cont

- **Reduce the list of items by eliminating the items with the fewest votes**
- **Repeat the voting process until only a few items are left**
- **(Page 4-15 Team Handbook)**

Change Idea List

- **MA responsible for patient flow only**
- **Support staff arrive 1 hour before clinic opens**
- **Standardize exam room supplies/inventory**
- **Use assignment sheet to assign MA to stock exam rooms**
- **Separate MA role: Paper flow/patient flow**
- **Standardize rooming with v/s guidelines**

Change Idea List- Consolidation

- ~~MA responsible for patient flow only~~
- Support staff arrive 1 hour before clinic opens
- Standardize exam room supplies/inventory
- Use assignment sheet to assign MA to stock exam rooms
- Separate MA role: Paper flow/patient flow
- Standardize rooming with v/s guidelines

Change Idea List

Multivote Top 2

- ~~MA responsible for patient flow only~~
- 1. Support staff arrive 1 hour before clinic opens
- 2. Standardize exam room supplies/inventory
- 3. Use assignment sheet to assign MA to stock exam rooms
- 4. Separate MA role: Paper flow/patient flow
- 5. Standardize rooming with v/s guidelines

Multi-vote Final Results

- **1. Support staff arrive 1 hour before clinic opens**

6 VOTES

- **2. Standardize exam room supplies/inventory**

6 VOTES

- **3. Use assignment sheet to assign MA to stock exam rooms**

2 VOTES

- **4. Separate MA role: Paper flow/patient flow**

5 VOTES

- **5. Standardize rooming with v/s guidelines**

2 VOTES

Top Ideas

- **Support staff arrive 1 hour before clinic opens**

6 VOTES

- **Standardize exam room supplies/inventory**

6 VOTES

Time to Exercise!

Exercise Process:

1. Review agenda and set roles: leader, recorder, timer, facilitator (1 min)
2. Set times for agenda
3. Focus on the Challenge



Exercise

- **Use meeting roles and agenda**
- **Review the list of change concepts & your aim, flowchart & fishbone**
- **Brainstorm which change ideas you might consider to improve your selected process**
- **Multi-vote to narrow the list and select one or two change ideas**
- **Evaluate the meeting**
- **Prepare a brief report out**

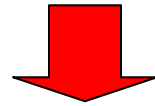
Report Outs

- **What is your specific aim?**
- **What cause and effect did you find in your fishbone?**
- **What change concepts did you select?**
- **How did the process of brainstorming go?**

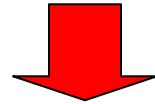
PDSA ↔ SDSA

10:45-11:00 Gene

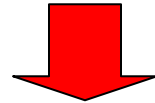
Assessing Your Practice Clinical Microsystem Workbook



Theme

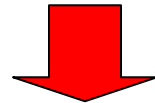


Global Aim

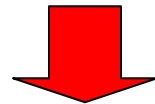


Specific Aim 1

Your overall flow ...

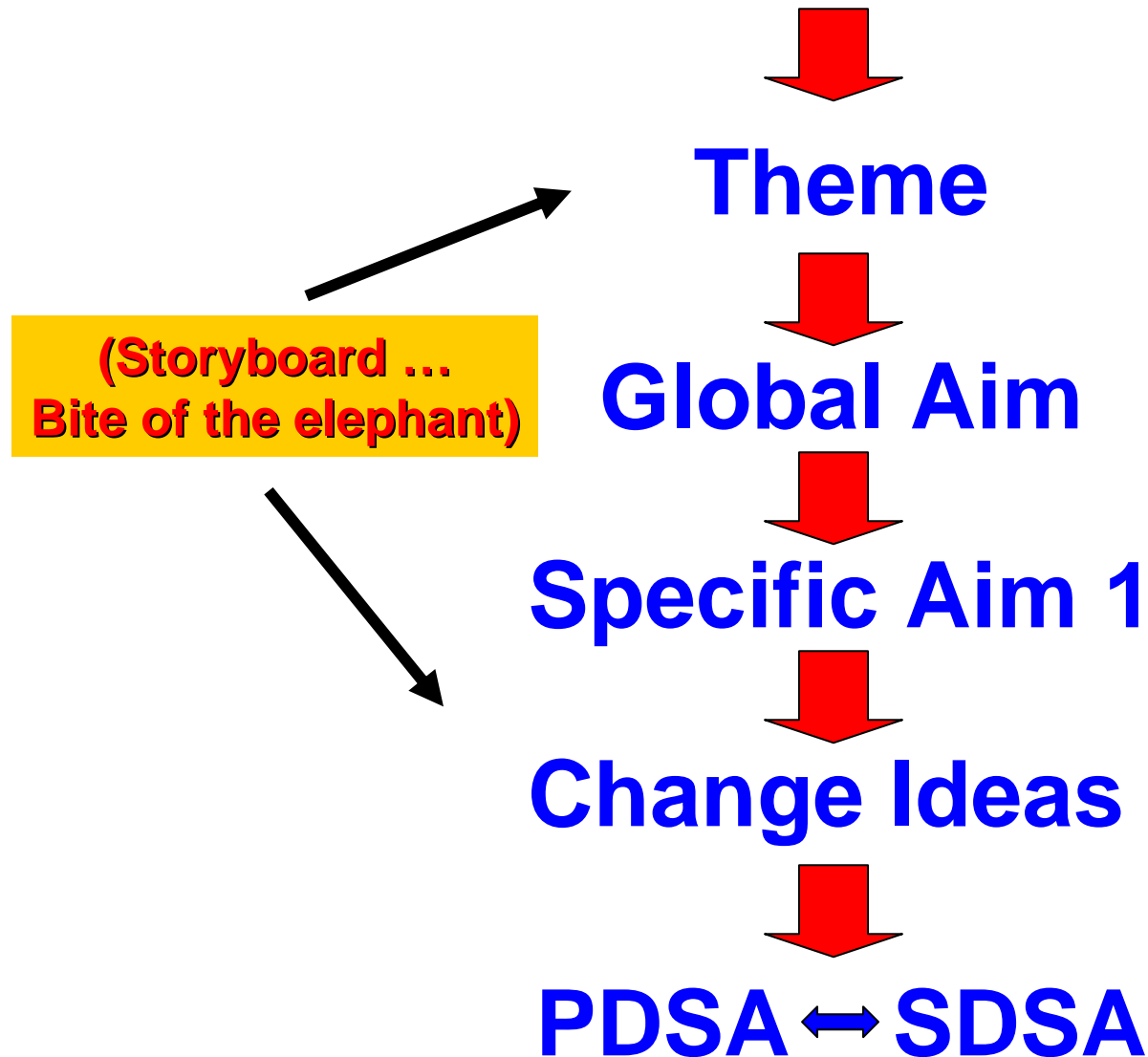


Change Ideas



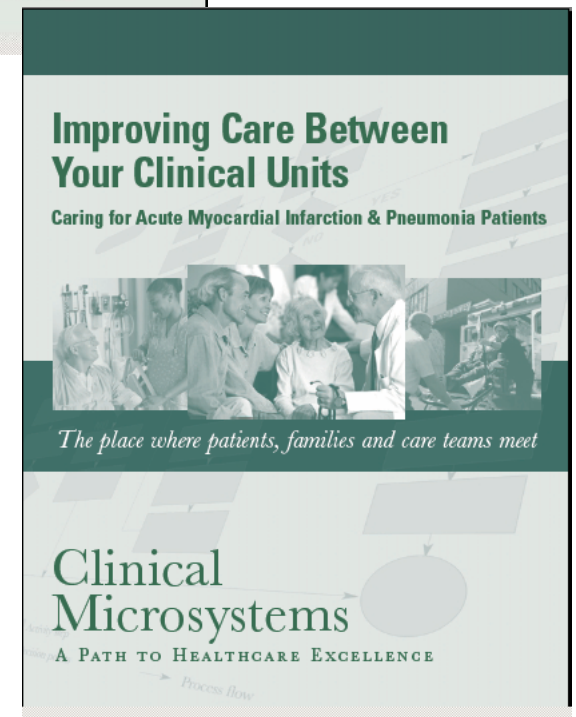
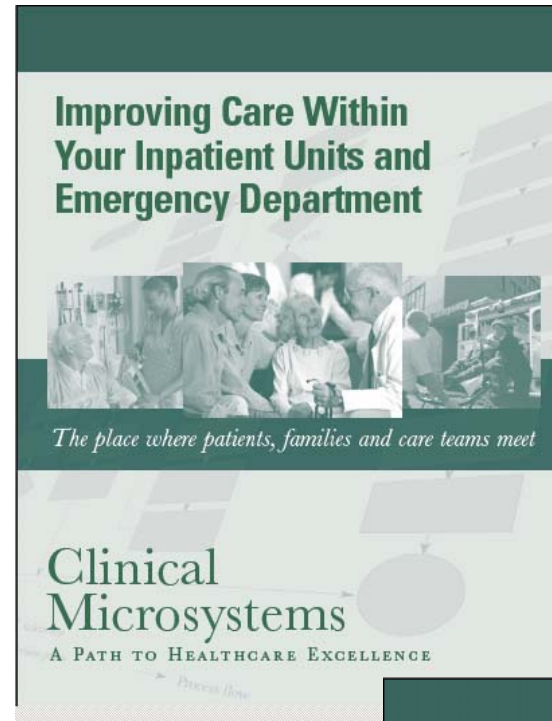
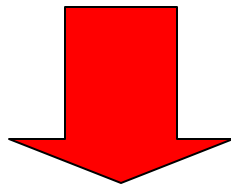
PDSA ↔ SDSA

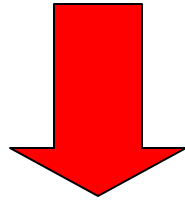
Assessing Your Practice Clinical Microsystem Workbook 5Ps



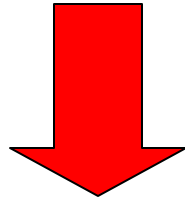
Assessing Your Practice

Clinical Microsystem Improvement Workbook

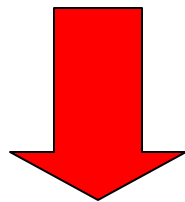




Theme



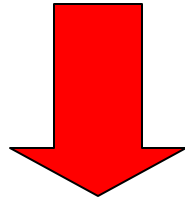
Global Aim



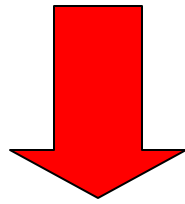
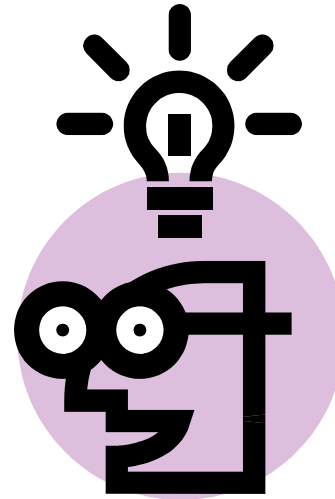
Specific Aim

IOM Aims

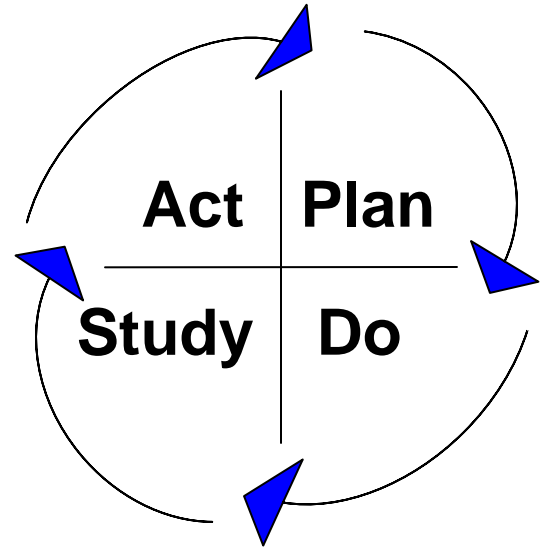
- **Safety**
- **Effectiveness**
- **Patient-centeredness**
- **Timeliness**
- **Efficiency**
- **Equity**



Change Idea

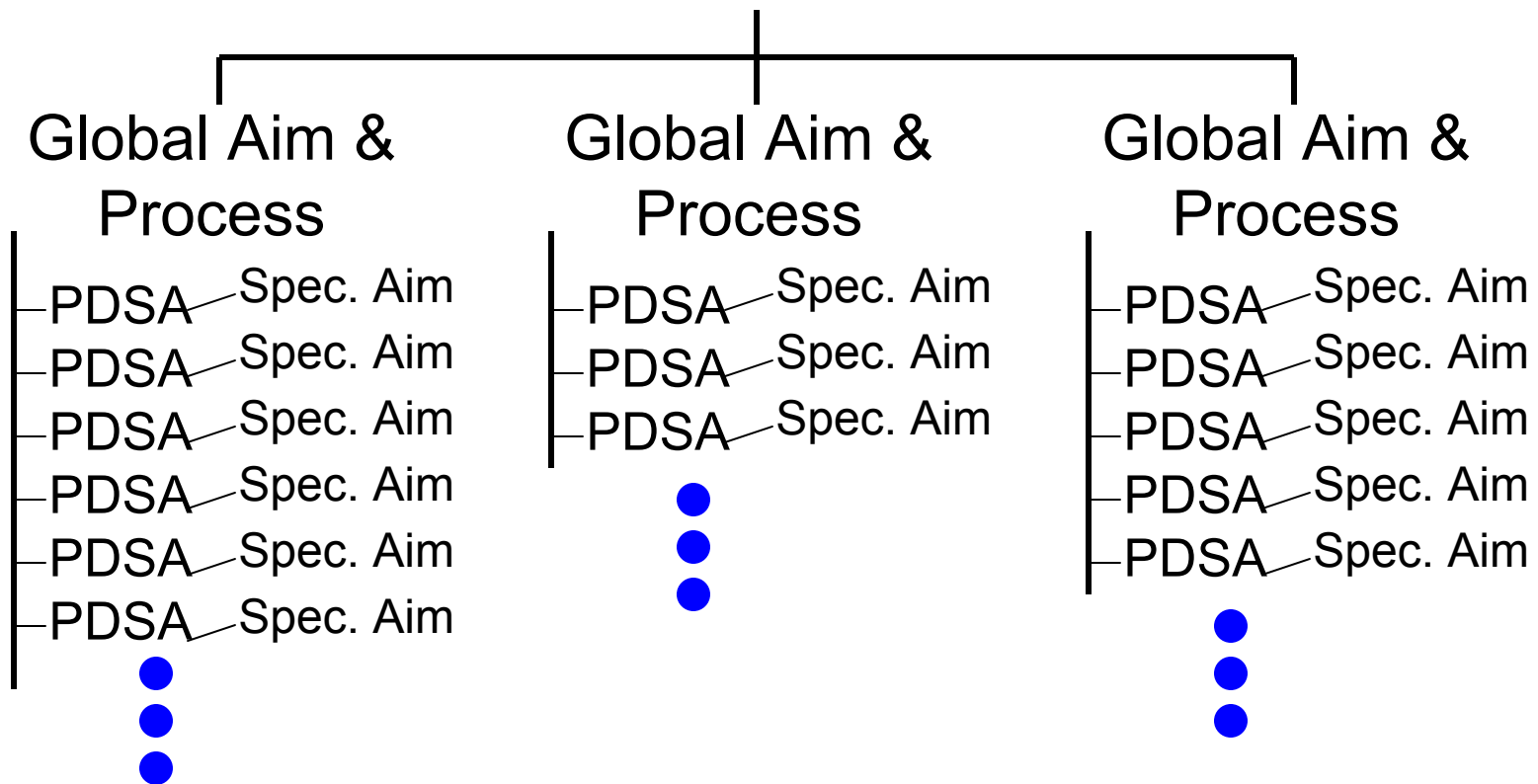


PDSA ↔ SDSA



Themes, Processes, Aims, and PDSA Cycles

Theme A

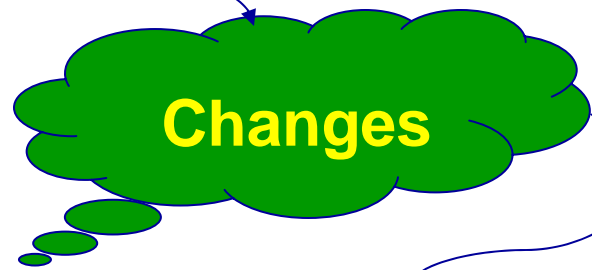


Aim

Measures



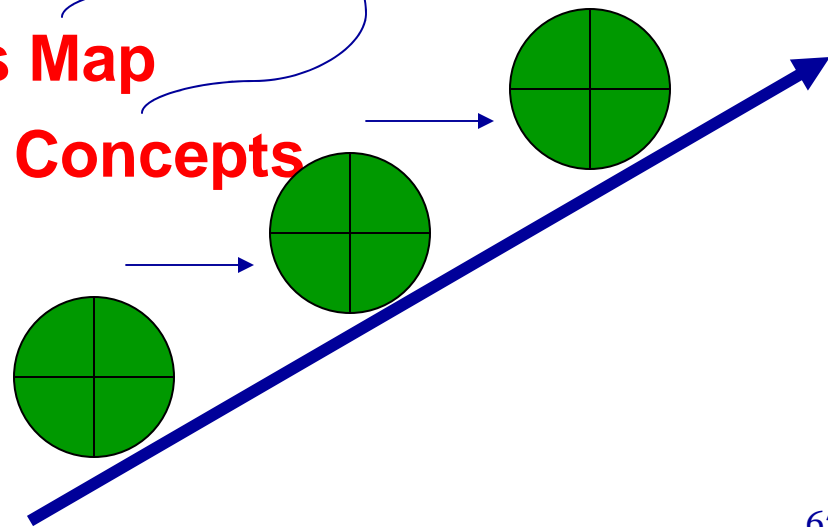
Aim



**“Fishbone”
Process Map
Change Concepts**



1

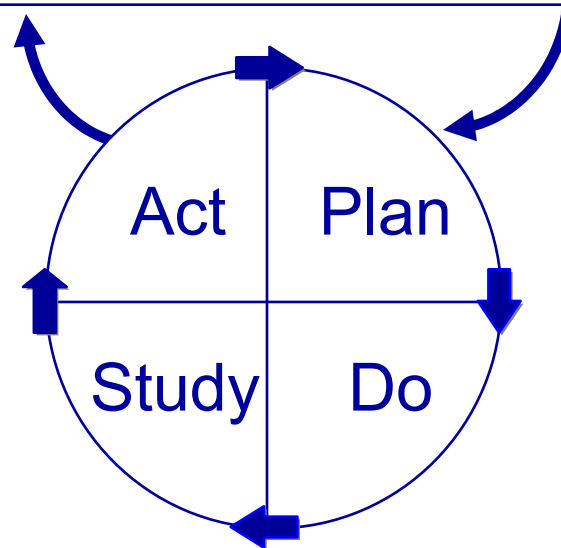


Model for Improvement

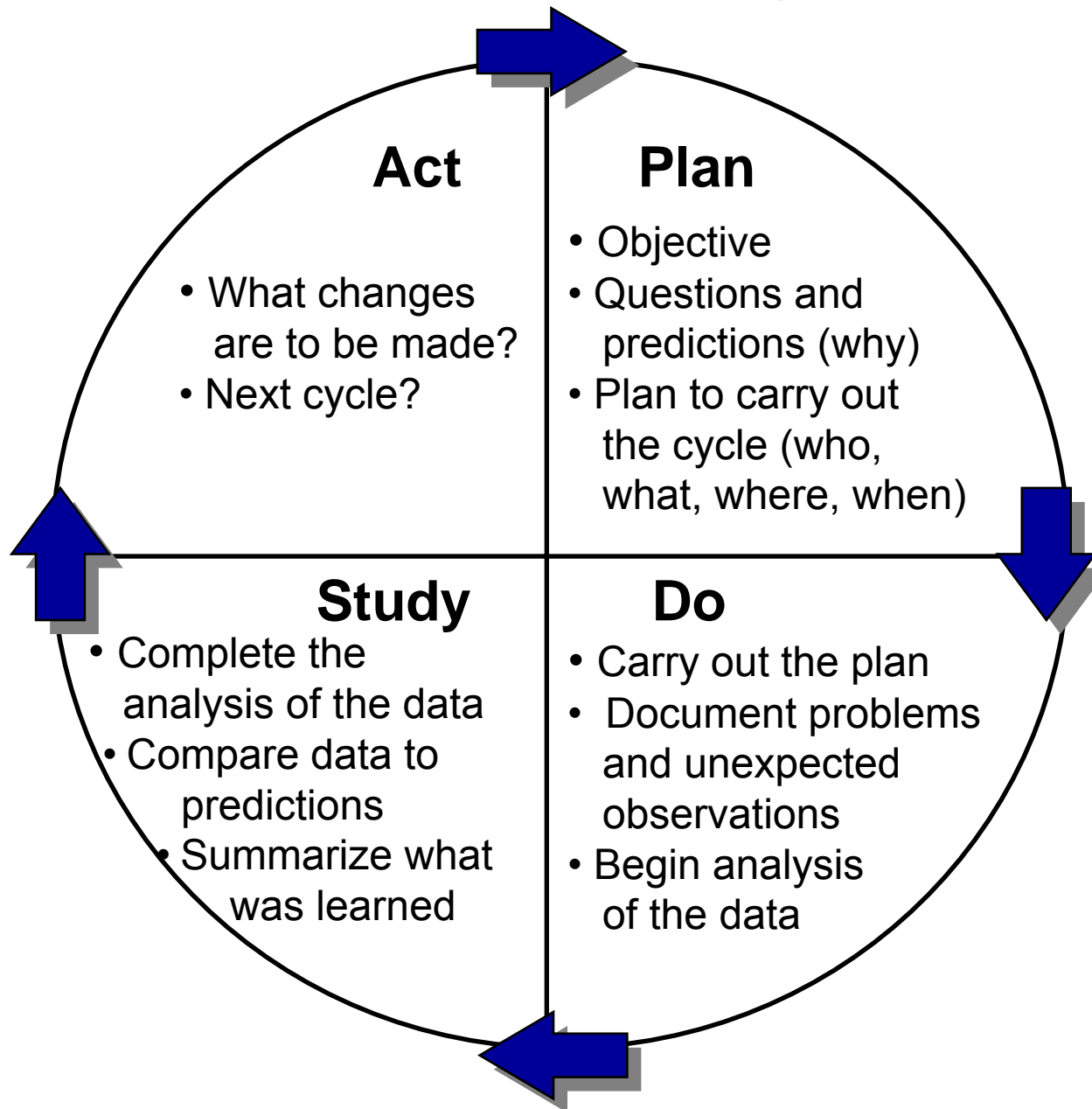
What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in an improvement?



The PDSA Cycle



PDSA

- **Plan**
 - Describe objective & specific change
 - Identify possible “upstream/downstream” impacts
 - Specify where fits into process flow
 - Who, does what, when, with what tools and training
 - Data collection plan: who measures what and displays how and where
 - Timeline, owners
 - Small sample
 - Short period of time

PDSA

- **DO**
 - **Carry out the detailed plan**
 - **Provide support**
 - **Huddle before starting the pilot**
 - **Check midway**
 - **Encourage debriefs end of day . . .**
 - **Participants keep notes**

PDSA

- **Study**
 - **Debrief at end of pilot**
 - **What went well?**
 - **What could be improved?**
 - **Lessons learned**

PDSA

- **Act**
 - **Plan next steps**
 - **Re-test**
 - **Enlarge sample**
 - **Adapt**

EXERCISE

- **Select Roles and Timed agenda**
- **Based on your specific aim/Process map/fishbone and the change idea you have selected write the PLAN of PDSA to begin planning the detail of your first test of change**
- **Use the PDSA↔SDSA Worksheet**

Keep your change ideas as a “savings account” for future improvement ideas

Report Outs

11:45-12:00 Gene

Lunch

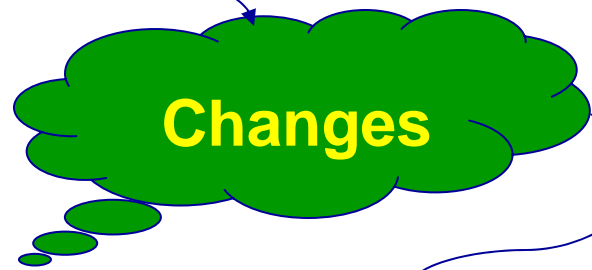
12:00-12:30

Measuring & Monitoring Improvement

- **If you can't measure it you can't improve it**
- **Science uses measurement to test hypotheses**
- **Data for learning**
- **Model for Improvement and Measurement**
- **Run Charts and Control Charts**

Aim

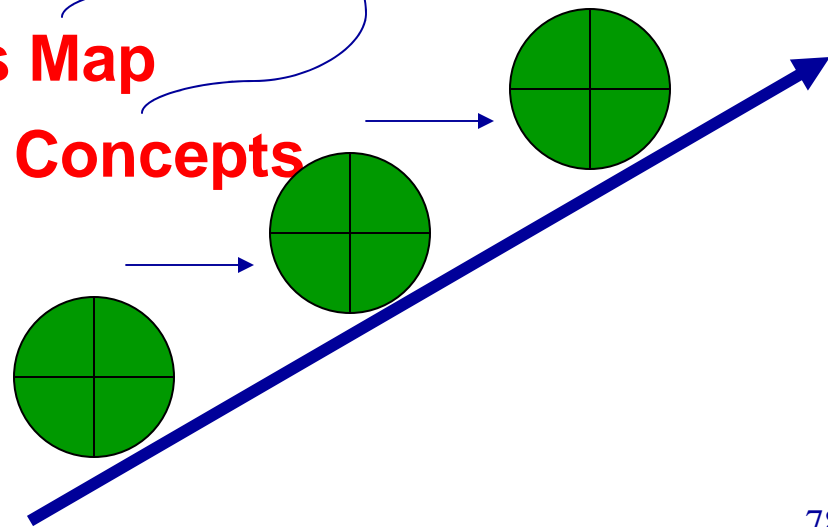
Measures



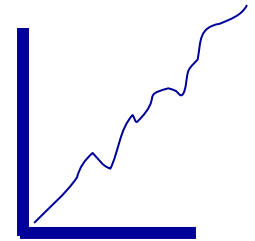
**“Fishbone”
Process Map
Change Concepts**



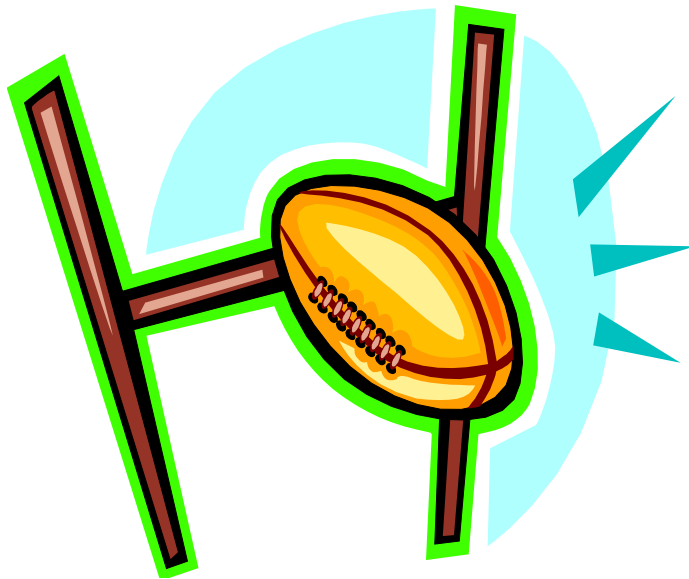
1



Aim

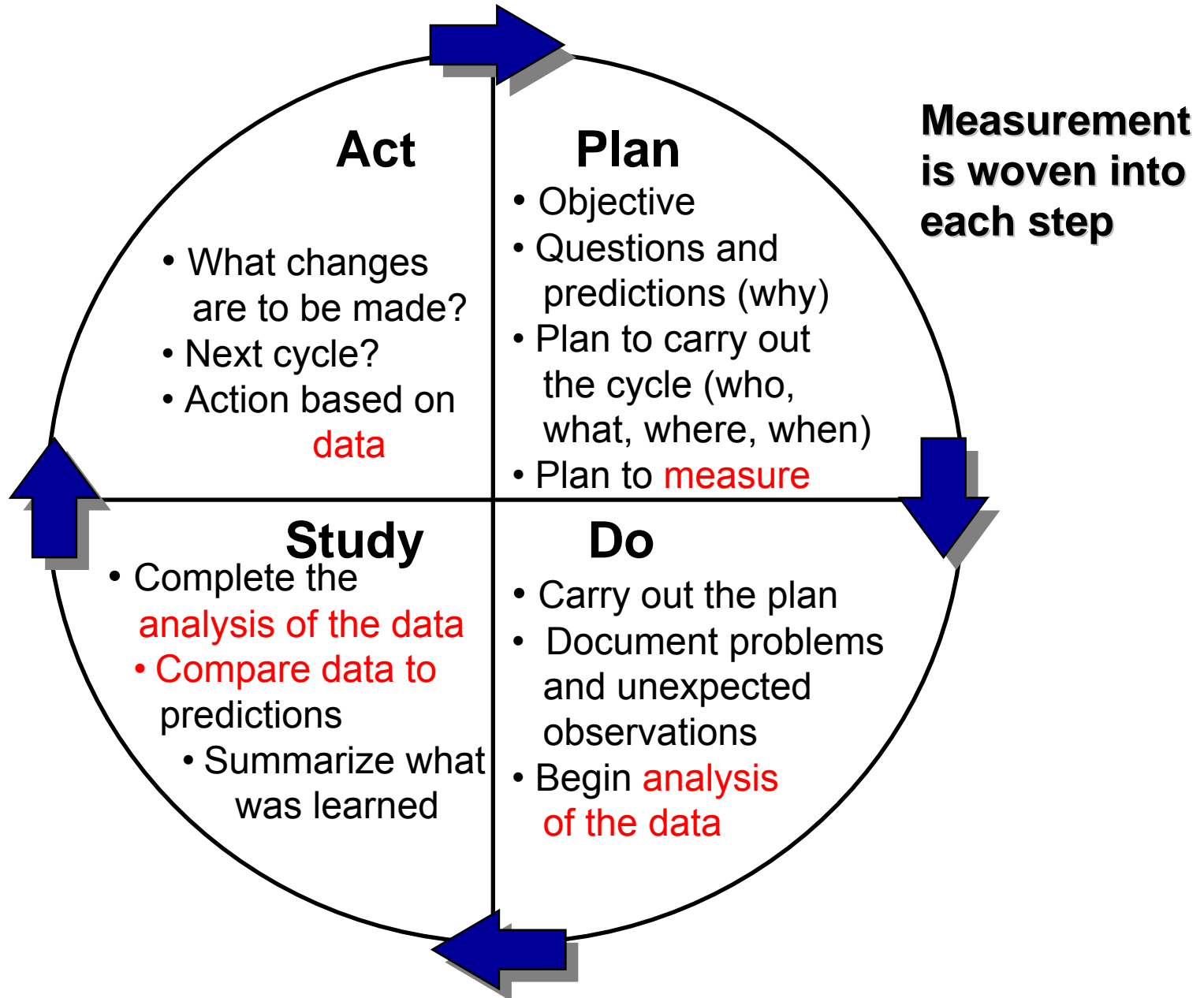


**“If you are not keeping score,
you are just practicing.”**



V. Lombardi

The PDSA Cycle



PDSA

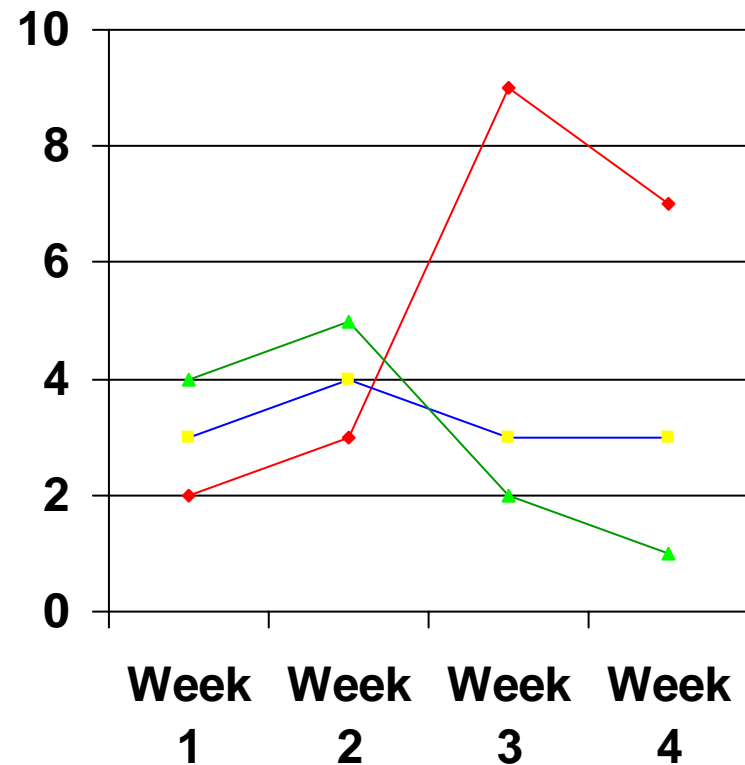
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Data Displays

- **Run Charts**

Tracking Your Progress Using Run Charts

- Define measures
- Collect measures
- Display data by
hour, day, week,
month



Scientific Approach

- **Systematic way for individuals and teams to solve problems and improve processes**
- **Seek to make decisions based on data rather than hunches**
- **Look for root causes of problems rather than react to superficial symptoms**

The Heart of the Scientific Approach

- **Collecting and using data to guide thinking and decision making**
- **Simple graphical tools are useful:**
 - Bar charts
 - **Run charts (Time Plot)**
 - Control charts
 - Pareto charts

The Value of Using Data

- **Many have spent years doing work without using data**
- **Frequently, experience and knowledge support our solutions**
- **Sometimes the problem would disappear, sometimes not**

Data

- **Data ... a powerful tool to add to our toolkit**
- **Does not replace experience or knowledge**
- **Help us understand what is really going on with a process, service, or product**
- **Help us focus our attention on factors that really do make a difference**
- **Using data helps us use our time, energies, and resources more effectively**

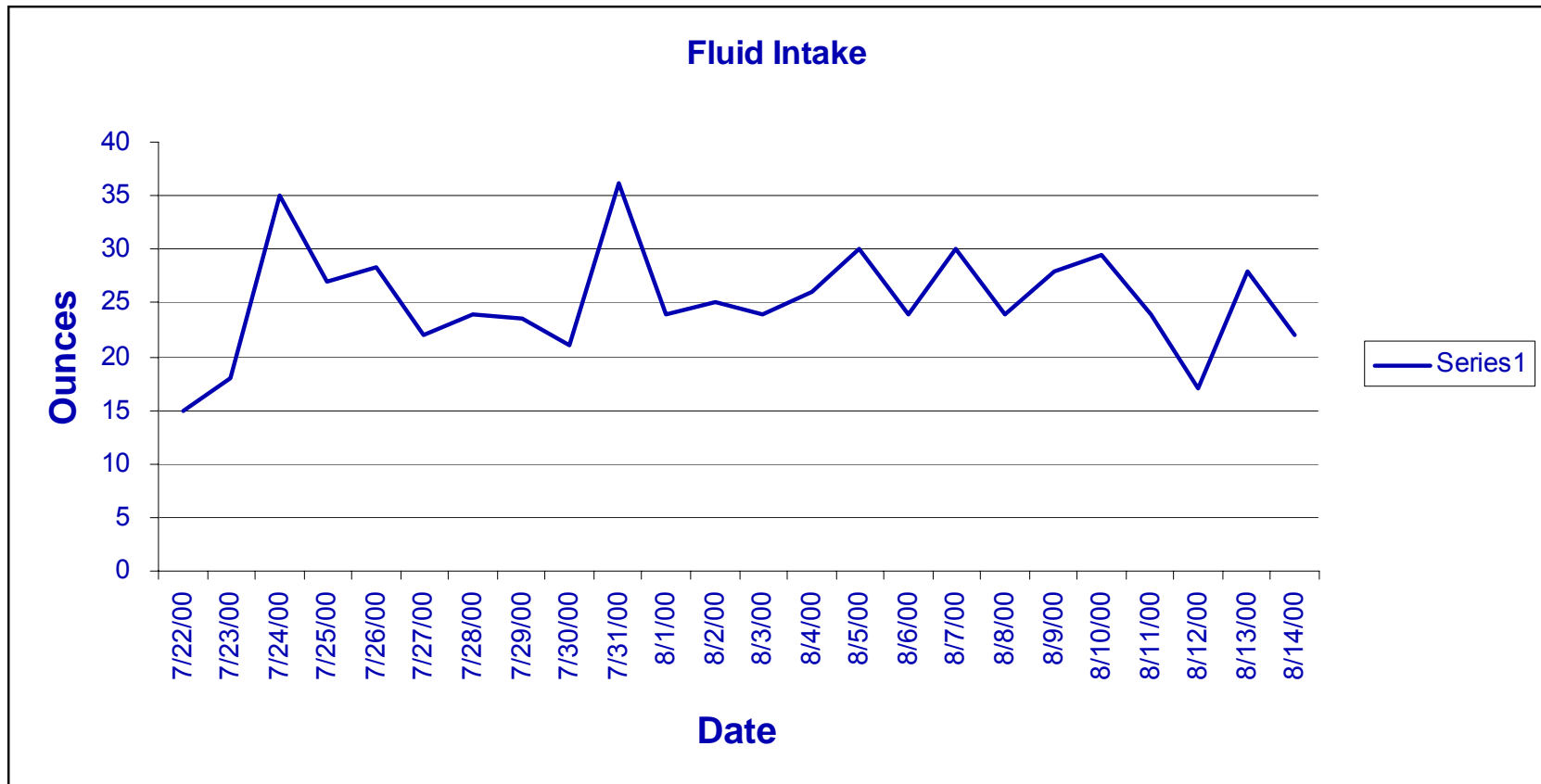
Data Tools

- **Help us see patterns in the data**
- **The patterns help us identify and understand the problem more clearly and choose better solutions**

Run Charts

- **A time plot is a graph of data in time order**
- **Often kept to identify if and when problems appear (proactive)**
- **Also used to see trends over time (reflection)**
- **Especially helpful when you implement a change to follow the results**

Run Chart Example



Run Charts

- **Many factors that affect a process can change OVER TIME**
- **Any change can affect data you collect from a process over time**
- **Detection of the time-related shifts, trends, or patterns is an essential step in making long-lasting improvements**

Run Charts

- **The best way to detect the effect of changes is to plot your data in time order**
- **Collect the data and plot regularly**
- **Supports timely action to stop problems before they get worse, or to capture and preserve good changes**

Variation Within a Process

- **Noticing variation**
- **Types of causal systems**

Noticing Variation

Write the letter “a” nine times:



Shewhart's Lesson

Write the letter "a" three times using your usual writing hand, then two times with your other hand, then three times with your usual hand:

Two Types of Cause

Drivers of within-process variation

- **Common Cause (“chance cause”)**
- **Special Cause (“assignable cause”)**

Run Charts

- **Help to determine if the variation in a process is due to common causes or special causes**
 - **Common Causes: Typically due to a large number of small sources of variation**
 - **Example: Variation in arrival time of a patient might include: weather, vehicle problems, parking issues**

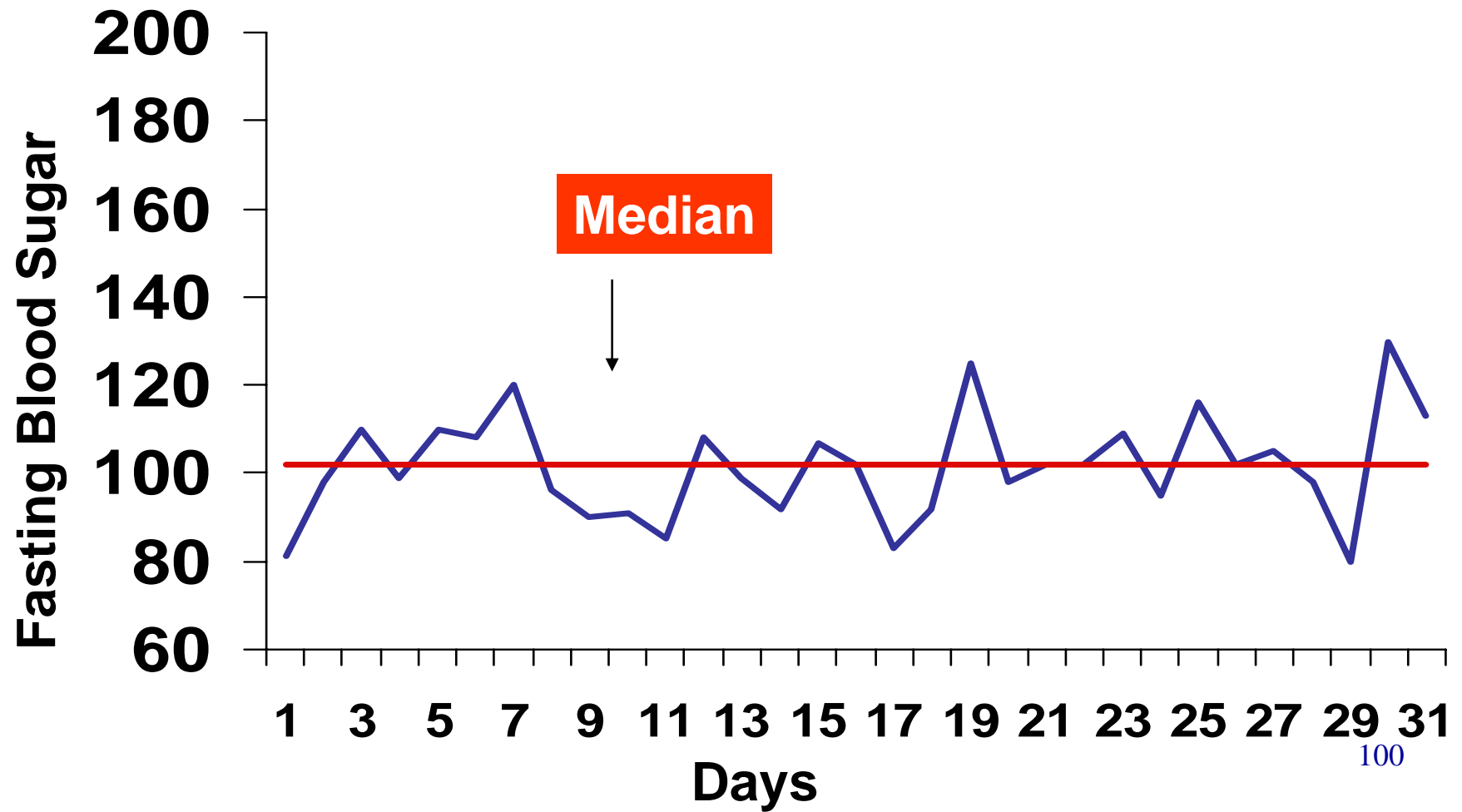
Run Chart-Variation

- **Special Causes: Are not part of the process all the time. They arise because of special circumstances**
 - **Example: Patients arrive late due to strike by bus drivers**

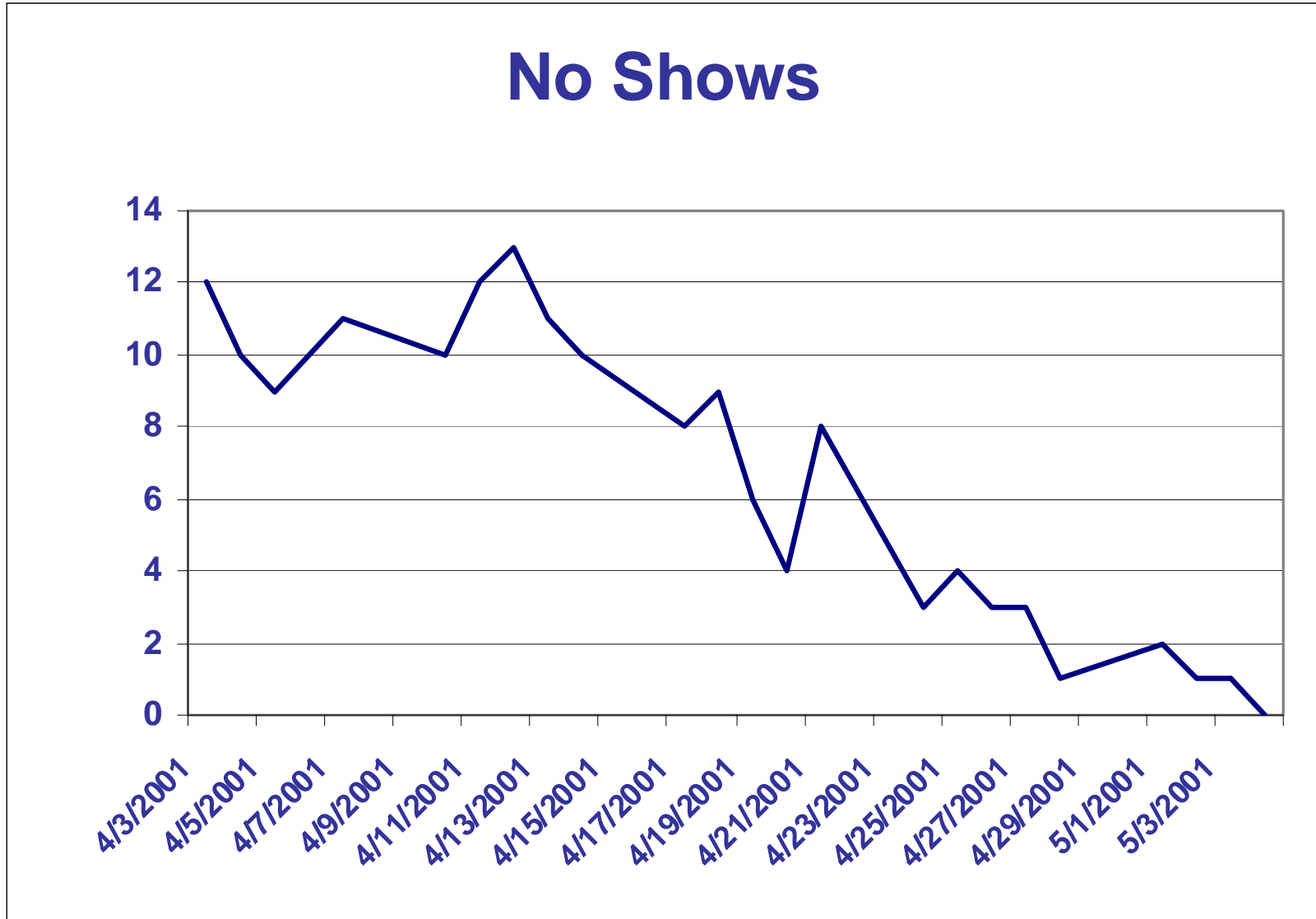
How to React to Variation

- **Dealing with each type of cause of variation requires different approaches**
 - **Special cause: Track down and eliminate if possible or just “note.” If **GOOD-identify and design in****
 - **Common cause: Reduced through disciplined improvement efforts**

Examples

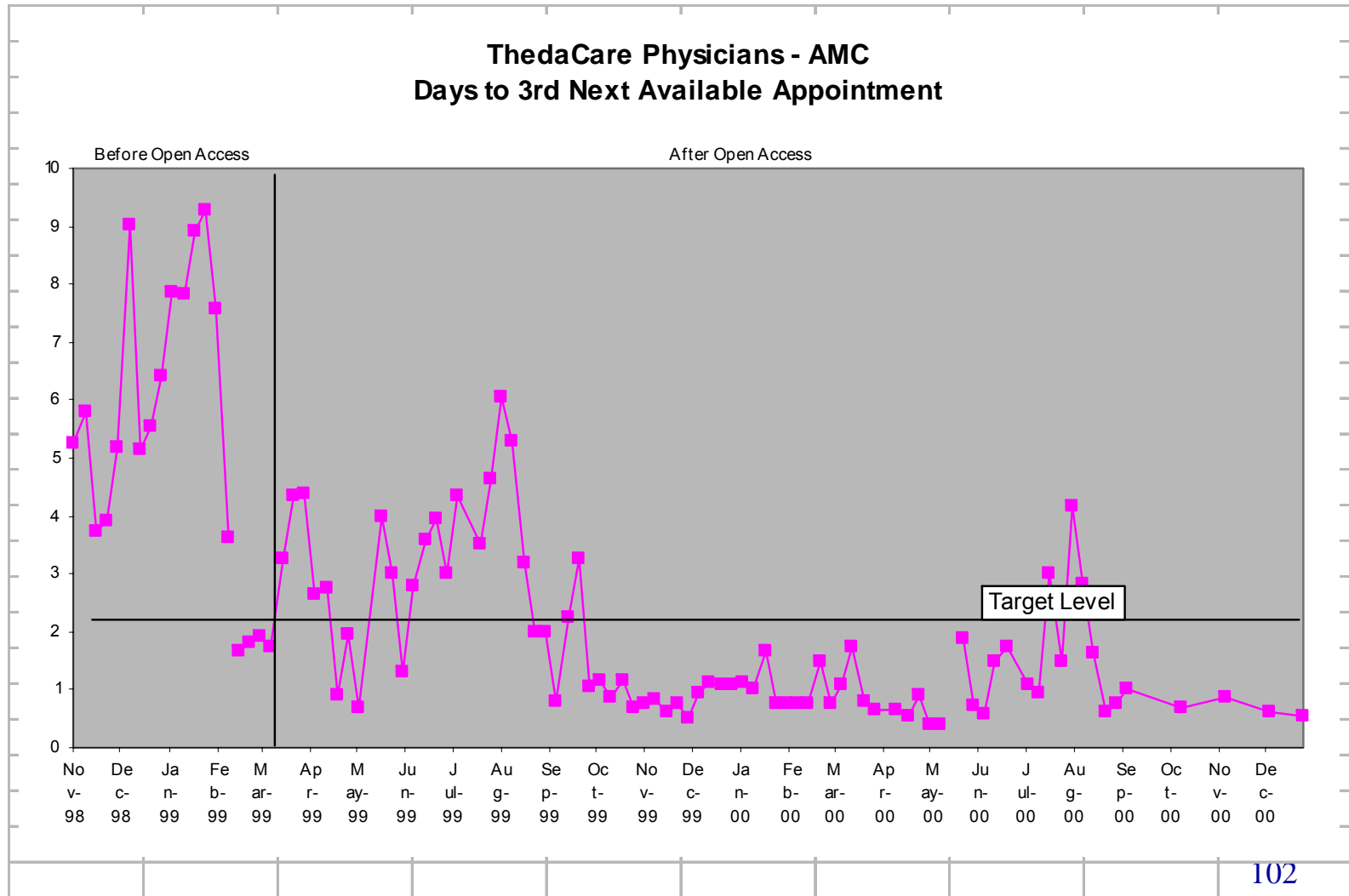


Examples



ThedaCare Physicians-AMC

Days to Third Next Available Appointment



Interpreting Run Chart Results

- **Evidence of “special cause” effects**
 - **7 points in a row above or below the median**
 - **7 points in a row going up**
 - **7 points in a row going down**

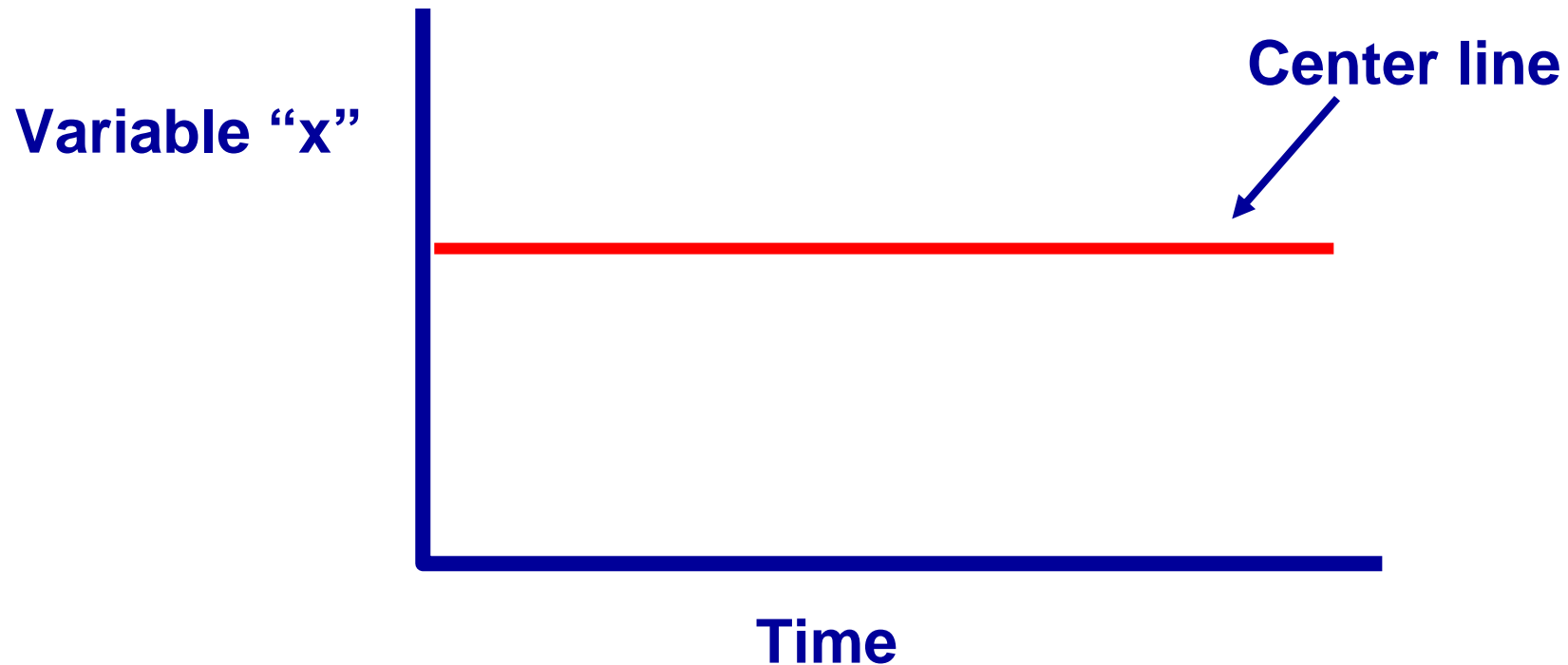
Special Cause Variation

- **Likely from an “extraneous cause” superimposed on the common cause variation**
- **Variation source most identifiable, if variation is promptly studied**
- **Improvement may be initiated by an individual owner of the process, if the source of the variation is recognized**

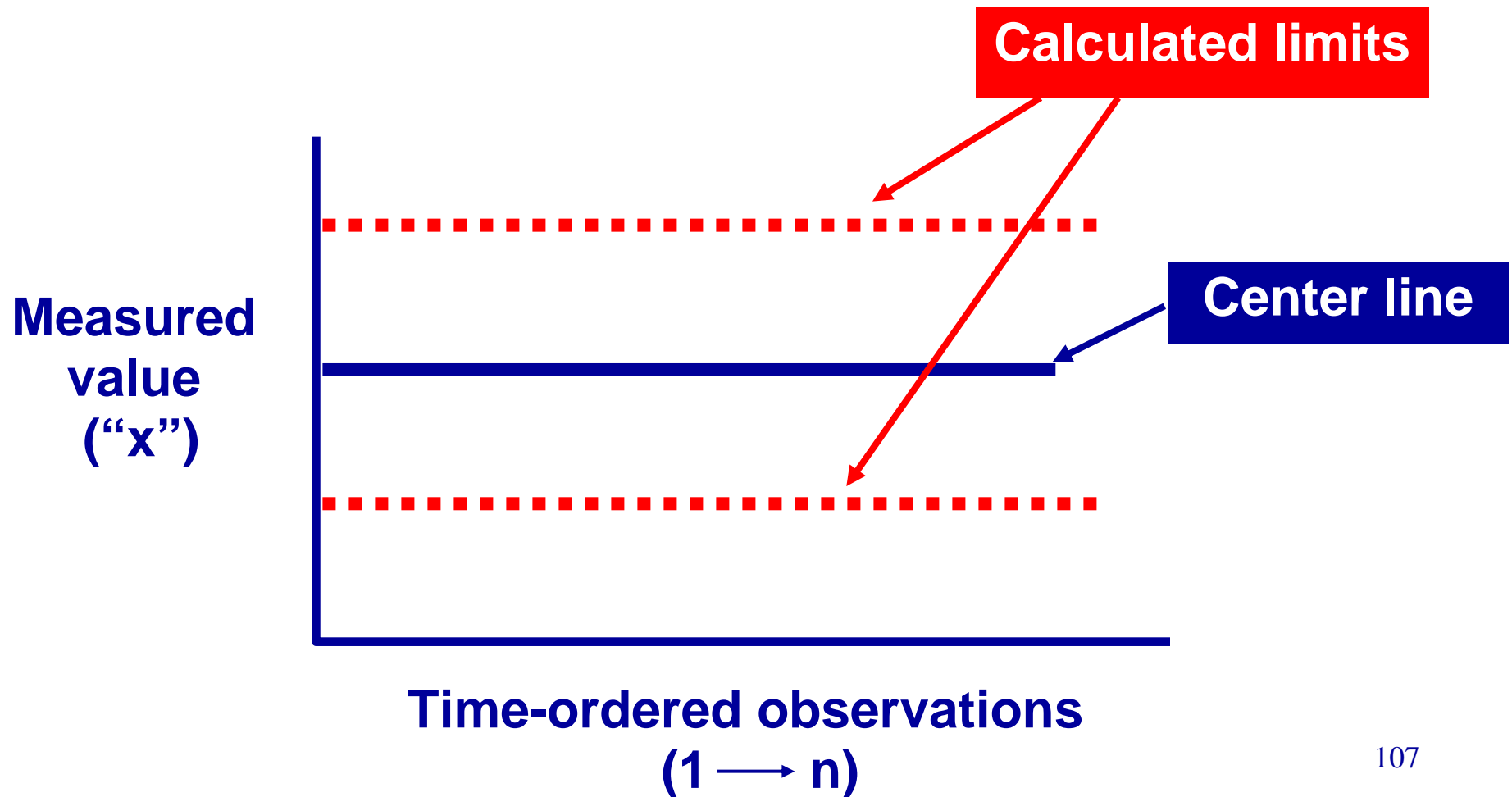
Control Charts

- **Recall Shewhart's advice...**
- **Present data in a way that preserves the evidence in the original data**

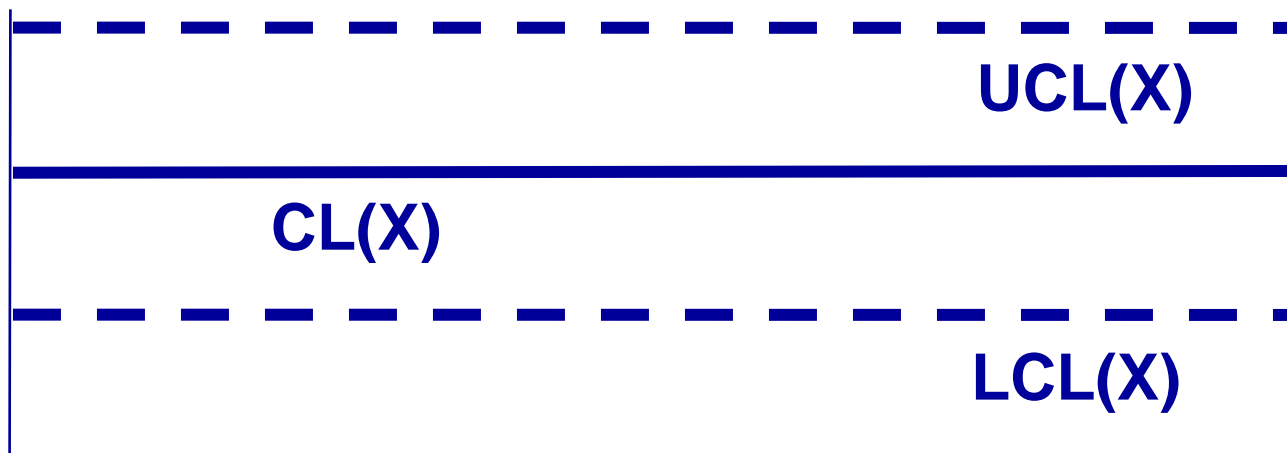
Gross Anatomy of a Run Chart (time plot)



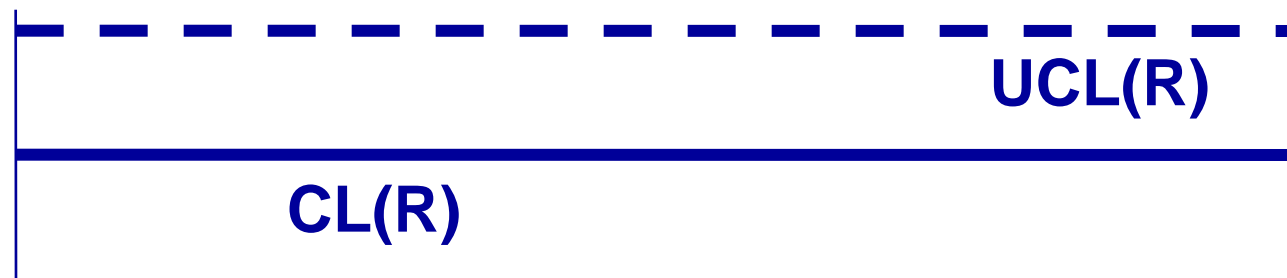
Gross Anatomy of a Control Chart



Anatomy of an XmR Control Chart

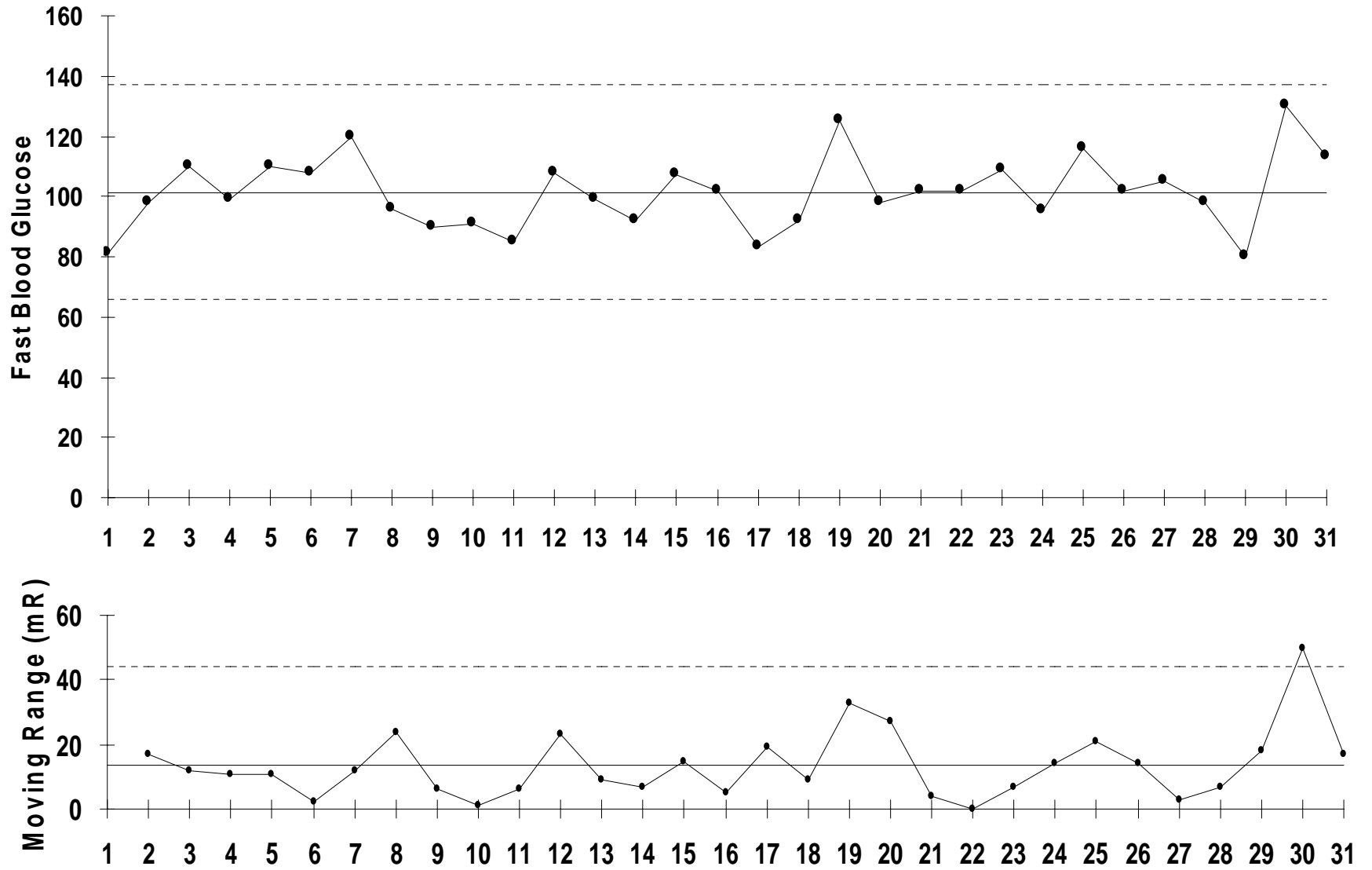


X-Bar



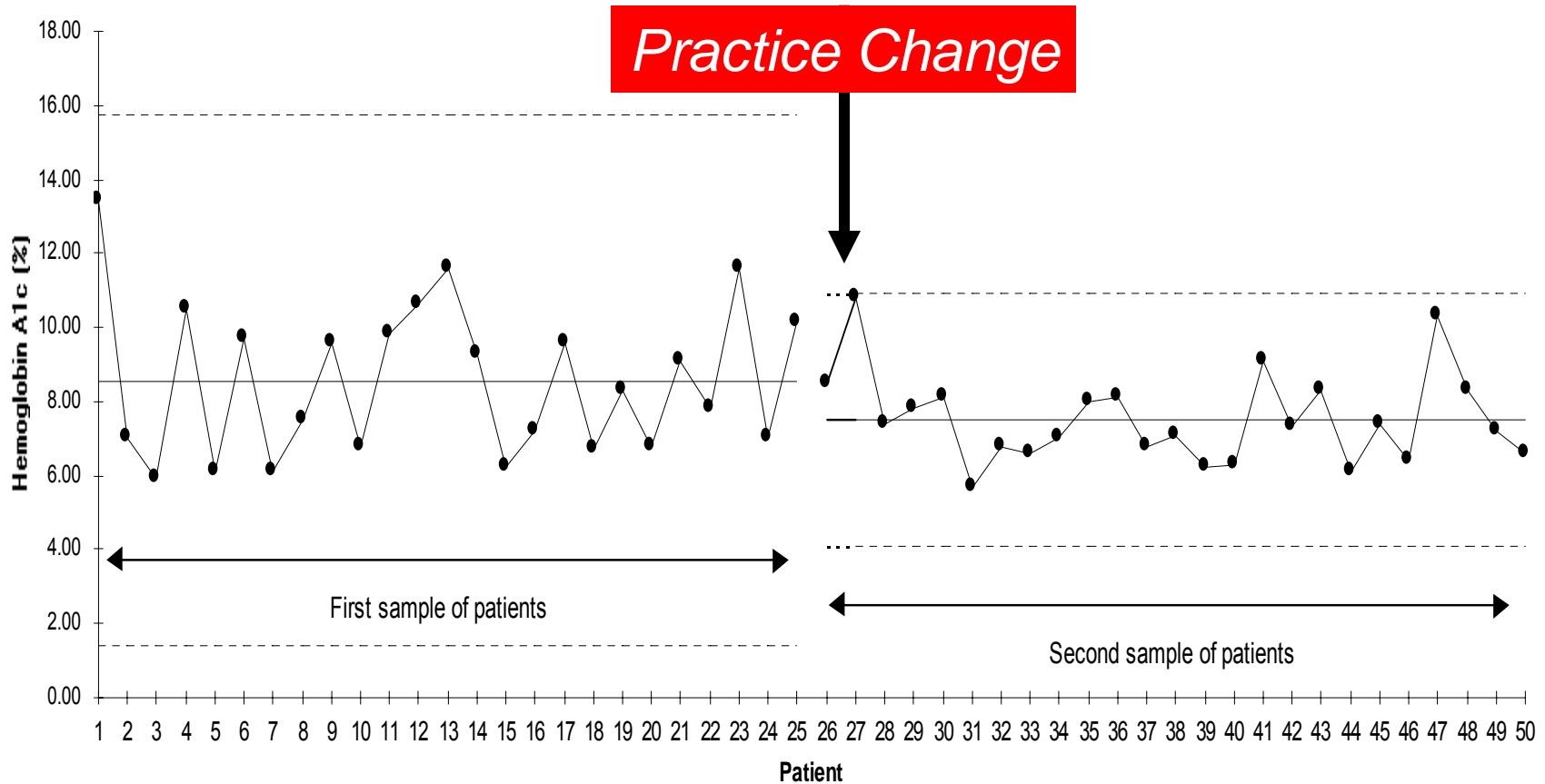
Moving Range

XmR Chart



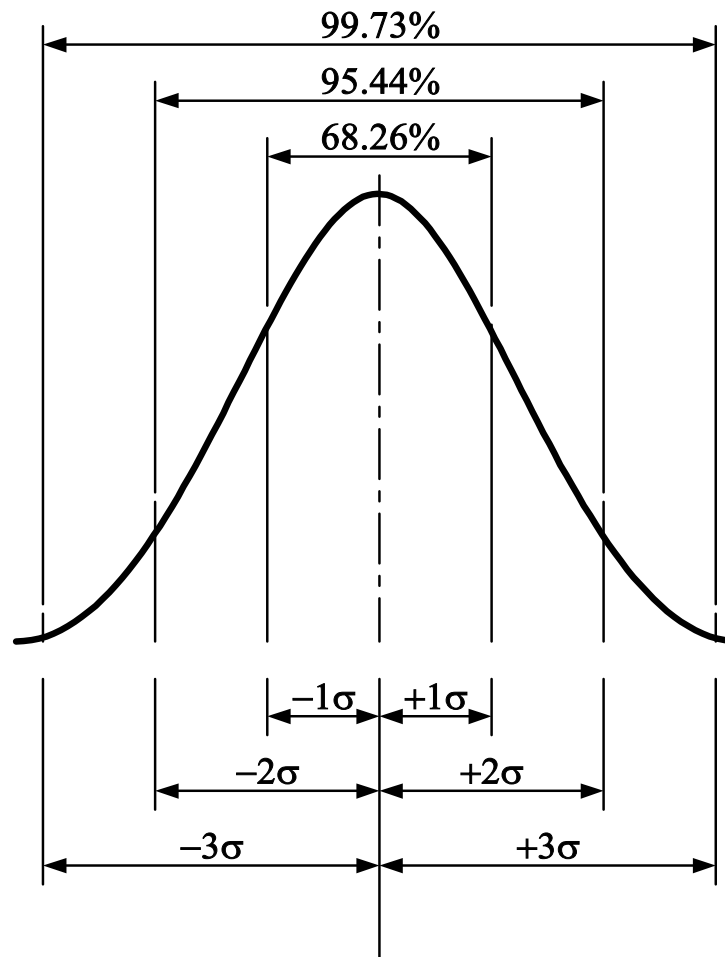
Diabetes Practice Change

Sample of Diabetics in a General Medicine Practice

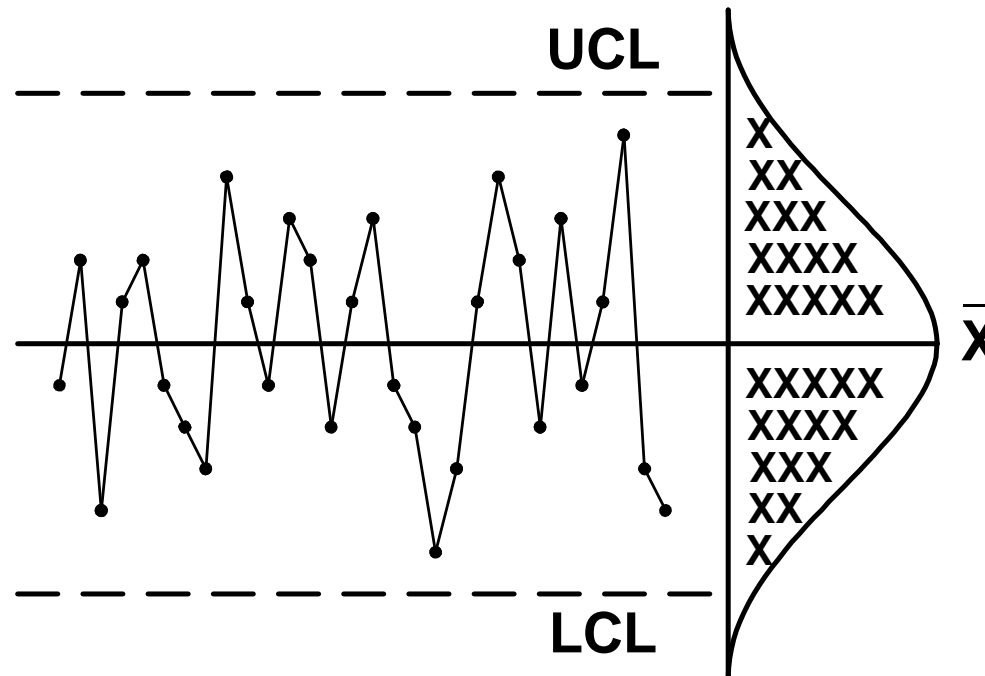


Control Chart Concepts (Cont.)

3-Sigma



Control Chart Concepts (Cont.)

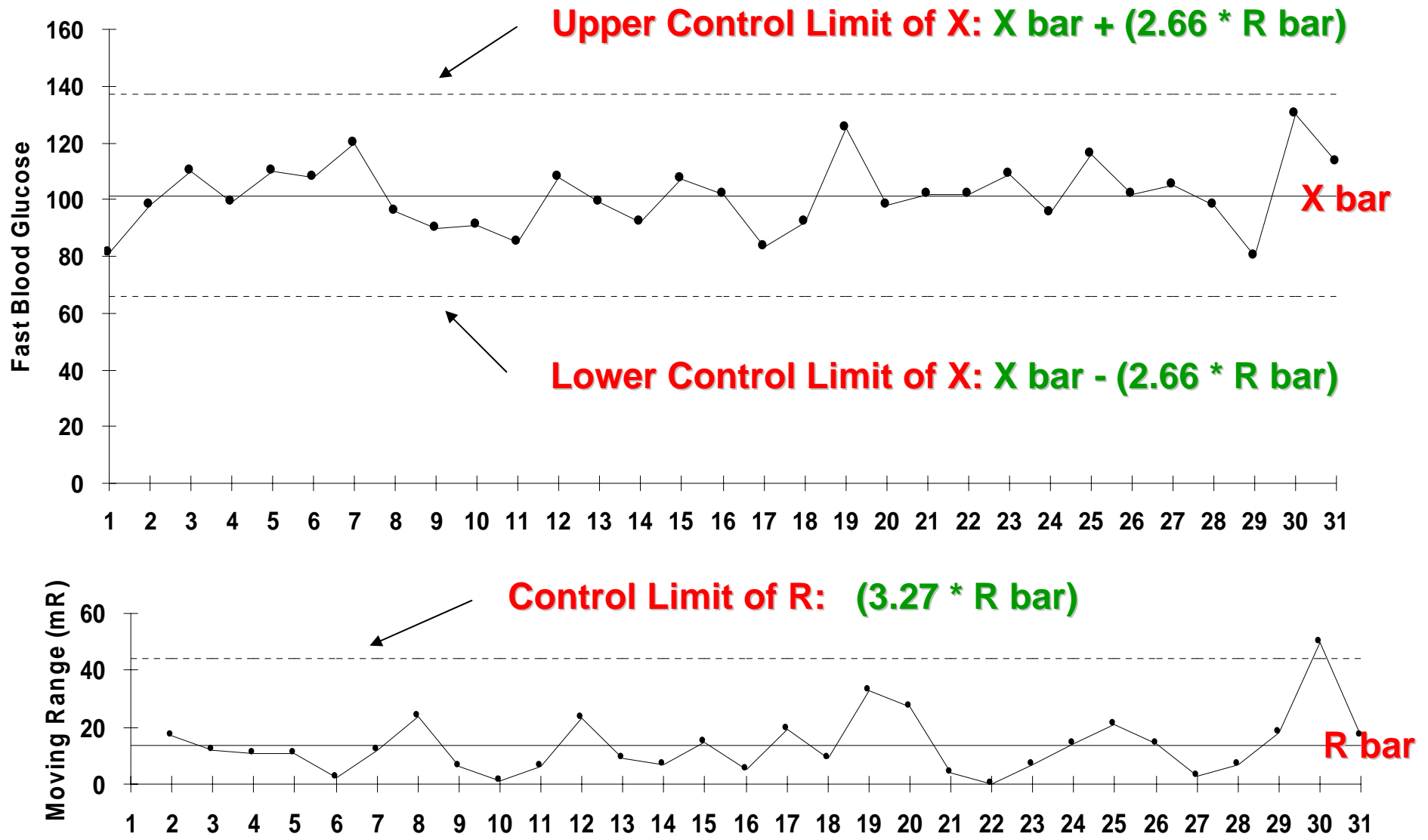


- **Relationship between normal distribution and a control chart**

Many Types of Control Charts

- **Variables data** (e.g., time, blood glucose, dollars, i.e. continuous counts) XmR Chart
- **Attribute data** (e.g., infected, defective, errors, i.e. present or absent) P-chart

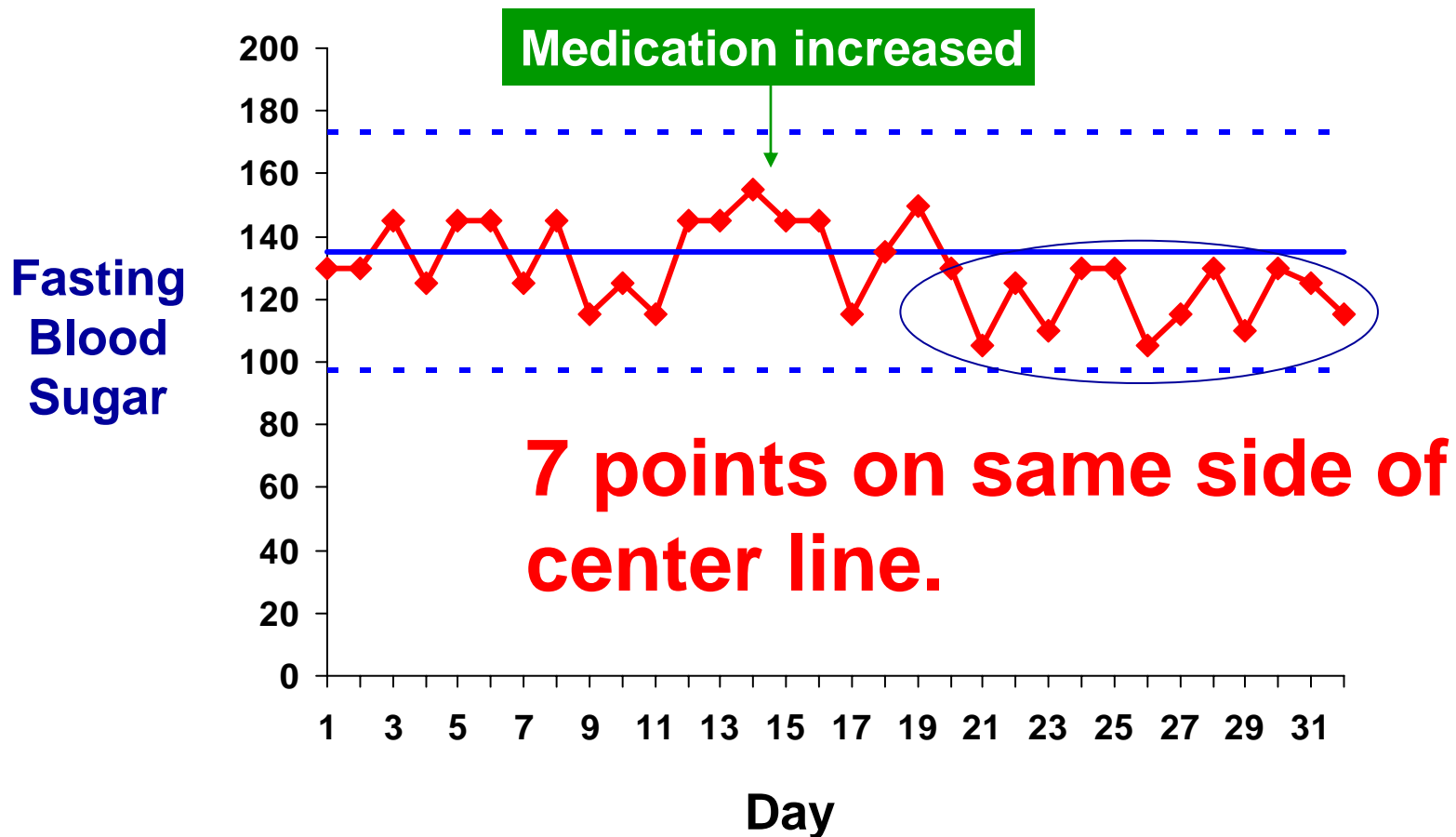
XmR Chart: Annotated



Basic Rules for Analyzing Control Charts

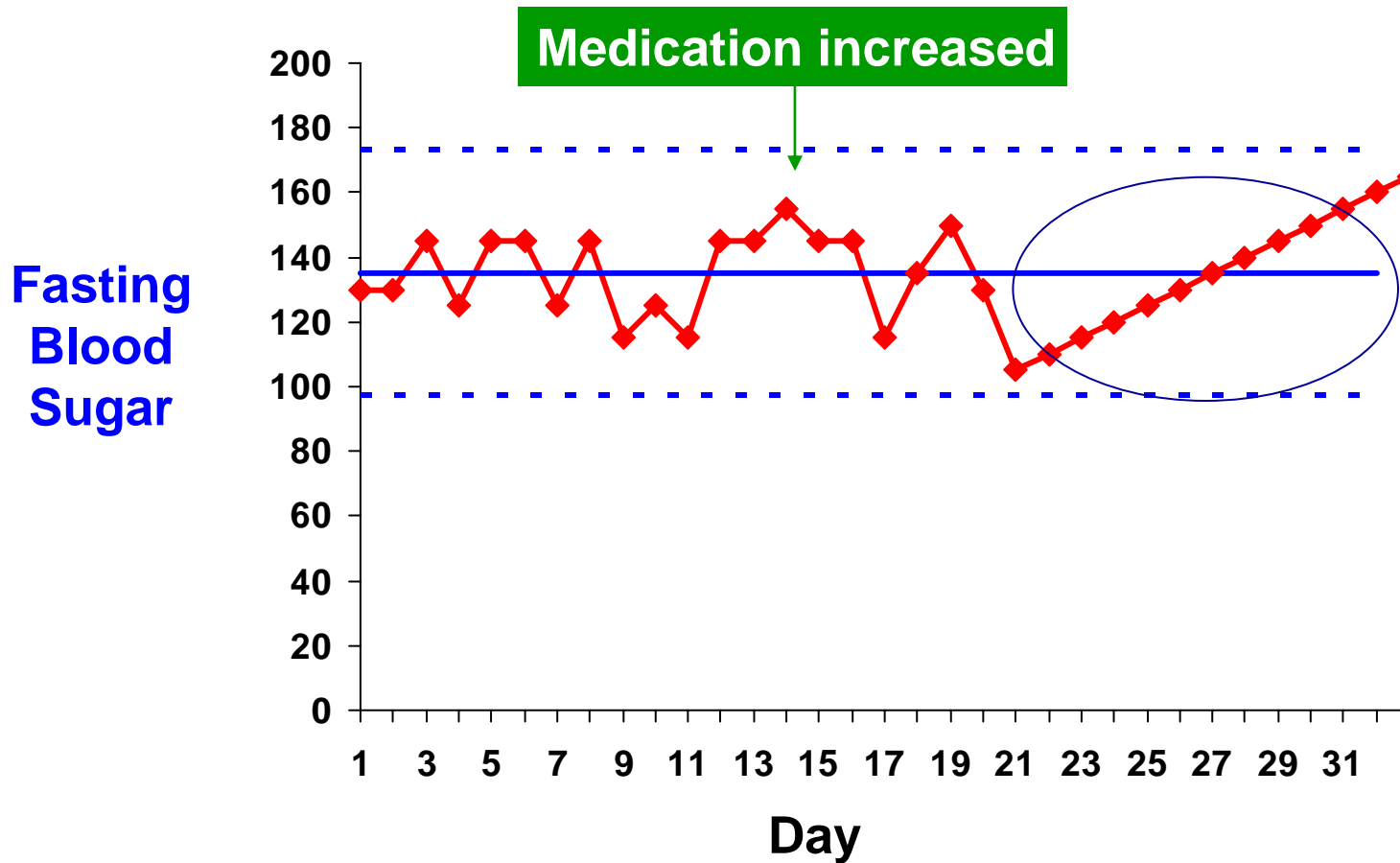
- **7 points on same side of center line**
- **7 sequential points going one way (up or down) without going the other way**
- **Any point out of the limits**

Individual Patient Monitoring: Self Monitoring of Diabetes Care

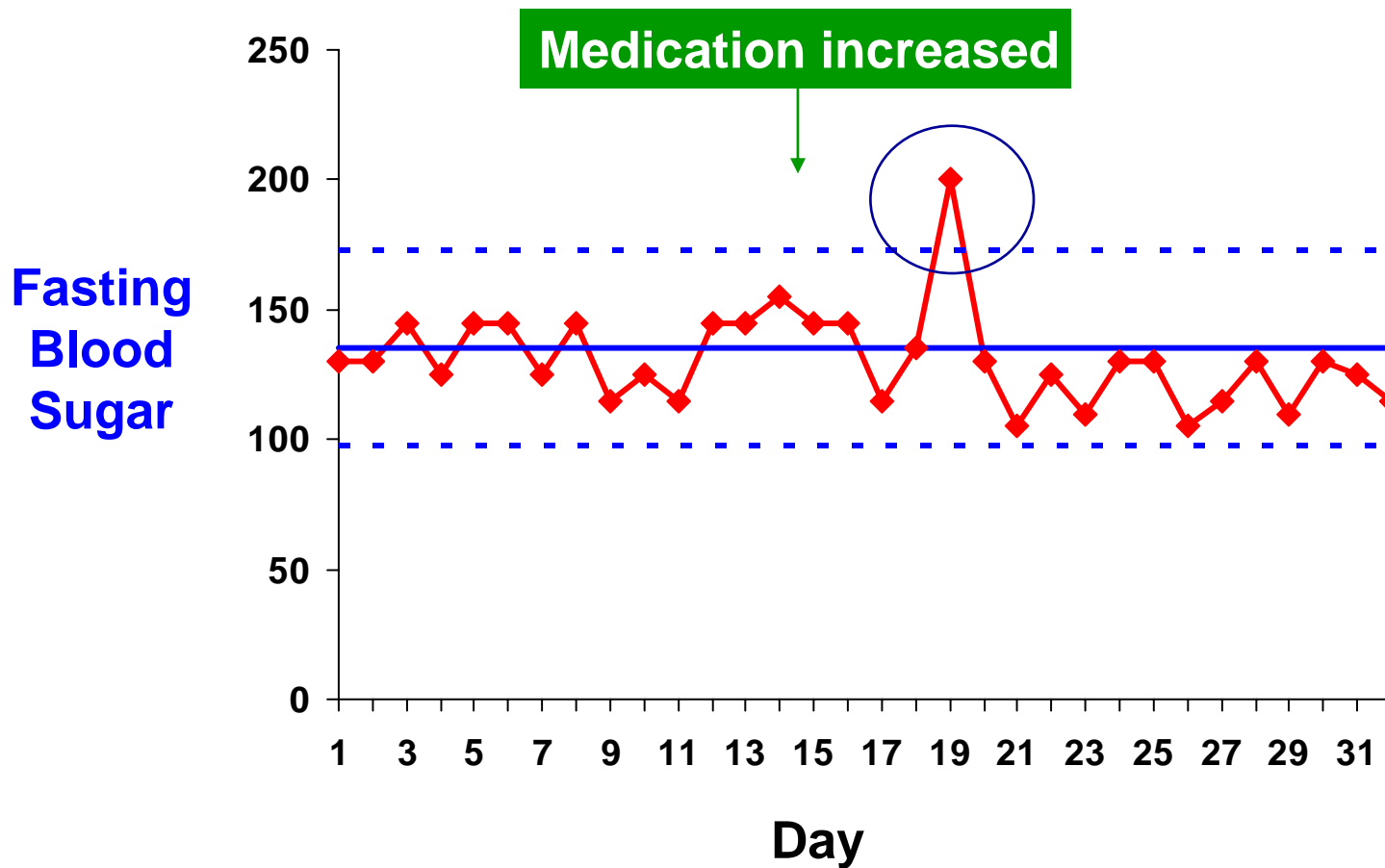


(Limits based on readings prior to medication change.)

7 sequential points going one way (up or down) without going the other way



Any Point Out of the Limits (Upper or Lower)



Interpreting a Control Chart

- **What does the chart tell us about the performance of the process?**
- **What can we predict about the future?**
- **What might be done to improve the performance?**

Relation Between Process Variation and Testing of Change

- **Special cause (Defective)**
 - Actions to take?
 - Actions to avoid?
- **Common cause (Engineer/process redesign)**
 - Actions to take?
 - Actions to avoid?
- **Is special cause ever present alone?**

Important Questions

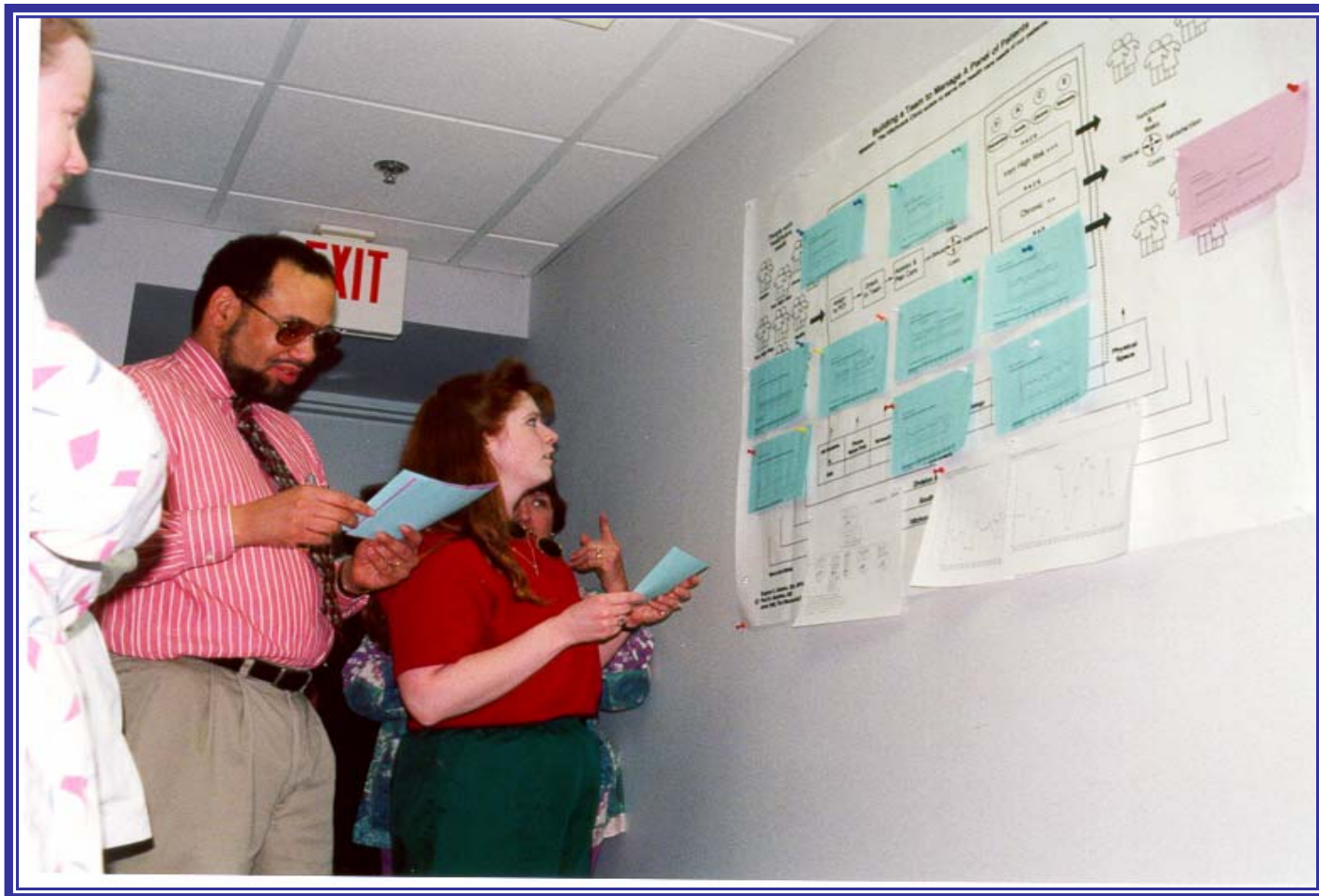
- **When do you recalculate?**
 - **When rule of 7 occurs**
- **When do you add control chart to a run chart?**
 - **When you want extra “analytic” advantage**

Uses for a Control Chart

Adapted from Wheeler

- Report card on process performance
- Adjusting a process
- Testing a process change. **PDSA**
- Extended monitoring of care, operations for prediction. **SDSA**
- Active interaction with the data for continual improvement, redesign. **Reflection**

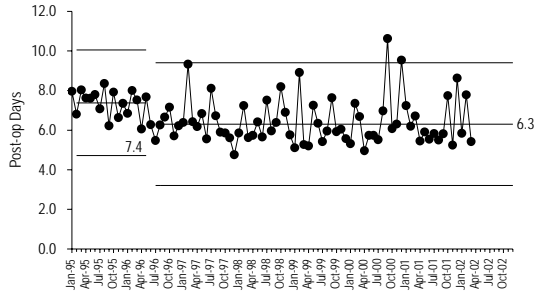
Remember, Make Data Wall



CT Surgery Indicators

Post-op Length of Stay

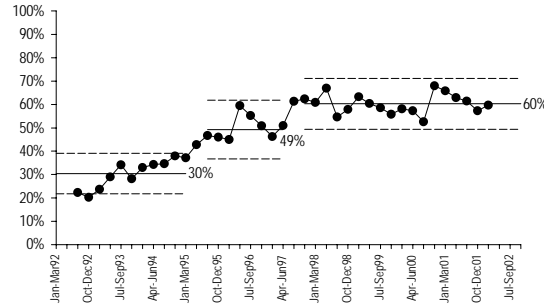
Isolated CABG Procedures, Live discharges only



Mean for Jul 92 - Feb 93 was 8.5 days.
 Mean for Jan 95 - May 96 was 7.4 days.
 Sep-00 & Dec-00 data excluded from mean and control
 limit calculations due to the occurrence of two outlier patients.

Discharges <= 5 Days

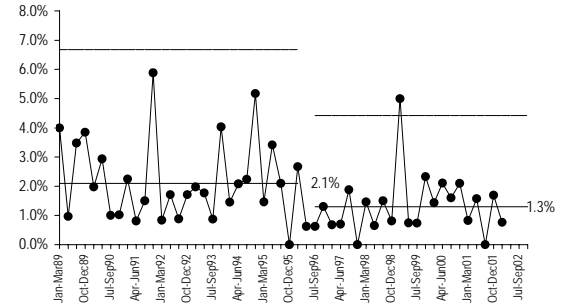
Isolated CABG Procedures, Live discharges only



Jul 92 - Mar 95 mean = 30.4%
 Apr 95 - Jun 97 mean = 49.3%
 Last mean starting Jul 97 = 60.3%

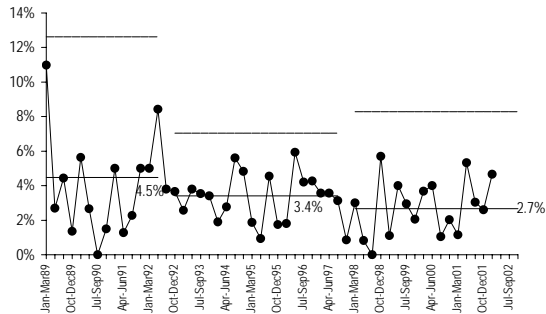
Sternal Infection or Dehiscence

Following Mediansternotomy



Moved to new facility Oct 91.
 Wound project started Jan 94.
 Insulin protocol started Jun 95.
 New antibiotics protocol started Nov 95.

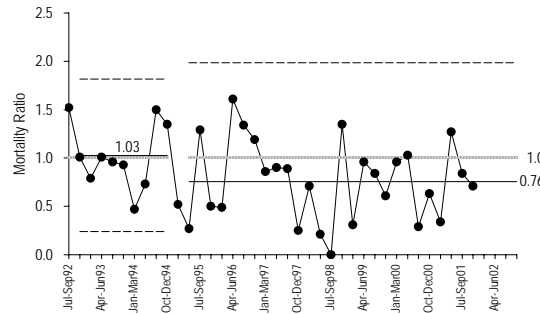
Isolated CABG Mortality Rate



Jul 87 - Jun 92 mean mortality rate = 4.5%
 Jul 92 - Jun 97 mean mortality rate = 3.4%
 Last mean starting Oct 97 = 2.7%

Standardized Mortality Ratio (SMR)

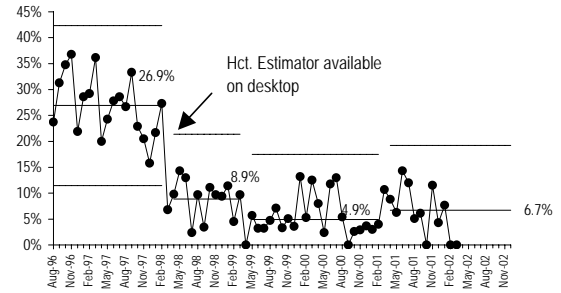
For Isolated CABG using NNECDSG risk model



A number greater than 1.00 (gray bar) means there were more deaths than the NNECDSG risk model predicted (based on patient data from New England between 1992 and 1995).
 DHMC Jul 92 - Dec 94 SMR = 1.03

Low Hematocrit Measure for CABG Pts.

% of Pts. w/ Hct. <21% while on Bypass Pump



Proportion of CABG patients who experience low hematocrit during operative period
 NNECDSG pre-operative hematocrit estimator was made available on physicians' desktop computers in Mar 98
 DHMC Aug 96 - Feb 97 = 26.9%

History of reflective, effective practice

Value Stream Mapping

**Enables systems perspective
to enhance value and
eliminate waste**

What is a Value Stream Map?

- Hands on tool to show *workflow* and *information flow* in a value stream, using process time/cycle time and first time quality as metrics
- Services and products are delivered to patients/customers through a series of processes *NOT* departments
- Must maintain a **PROCESS** view of health care
- Where there is a product or service, there is a *VALUE* stream
- Developed/refined by John Shook and Mike Rother in *Learning to See*

What Makes Value Stream Mapping Unique

- **Visualizes** work
- Points to problems
- Focuses direction
- Uses **system** perspective
- Focuses on **customer requirements**
- Links work and information flow
- Documents delivery and quality performance
- Allows **process redesign to meet specific agreed upon objectives**

Benefit of Value Stream Mapping

- **Highlight connections among activities, information and flow**
- **Move from single function/role to the entire value stream Systems Thinking**
- **Improve decision-making process**
- **Create common language and understanding**
- **Separate value-added activities from non-value-added activities**
- **Focus on the patient/customer**

How to Improve a Process?

- **Learn to “see”**
 - **Everyone is aware of the process as it works today**
 - **We all agree on current performance of the process**
 - **Everyone can be involved in improving the process**
- **Talk to people and make observations**
 - **Make a picture of what you see**

Value Stream Mapping Process

Preparation

Agree on what process to study, how to map and who will participate

Current State

Agree on well understood map of the current situation

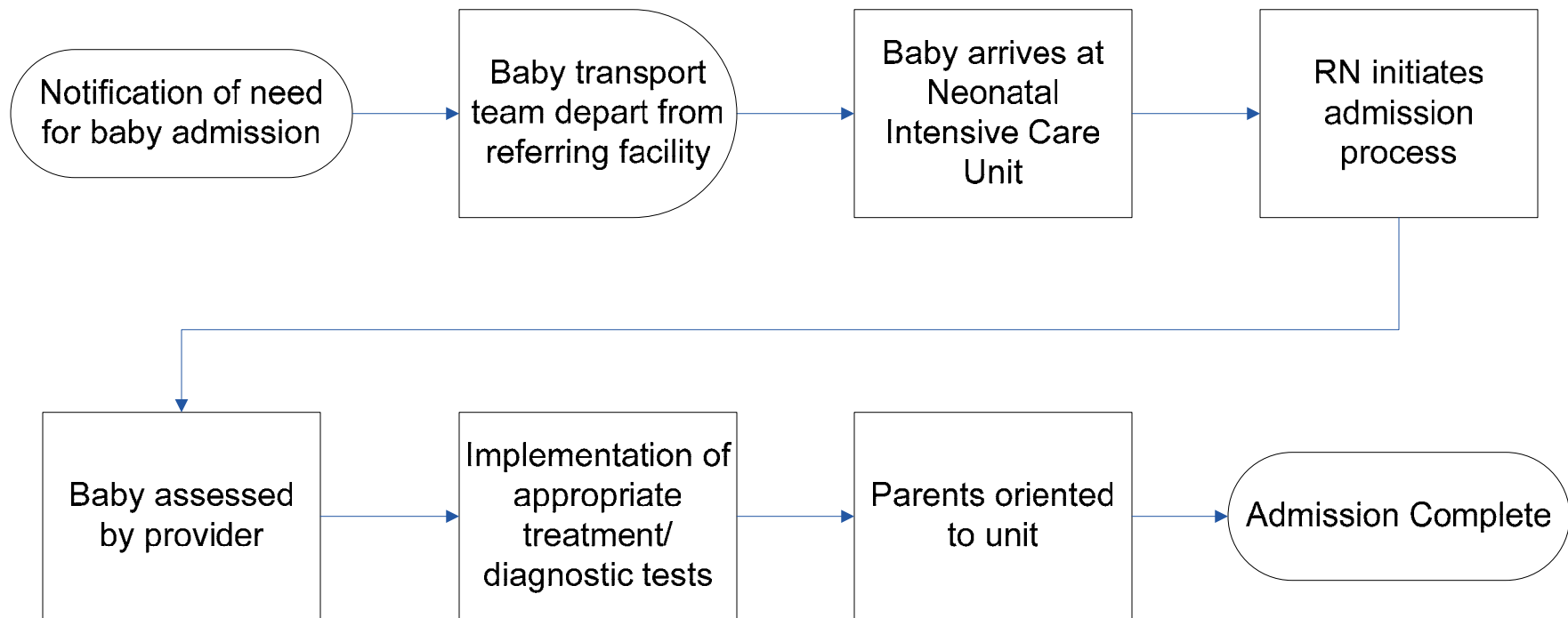
Future State

Agree on a shared vision of a lean future state in <90days

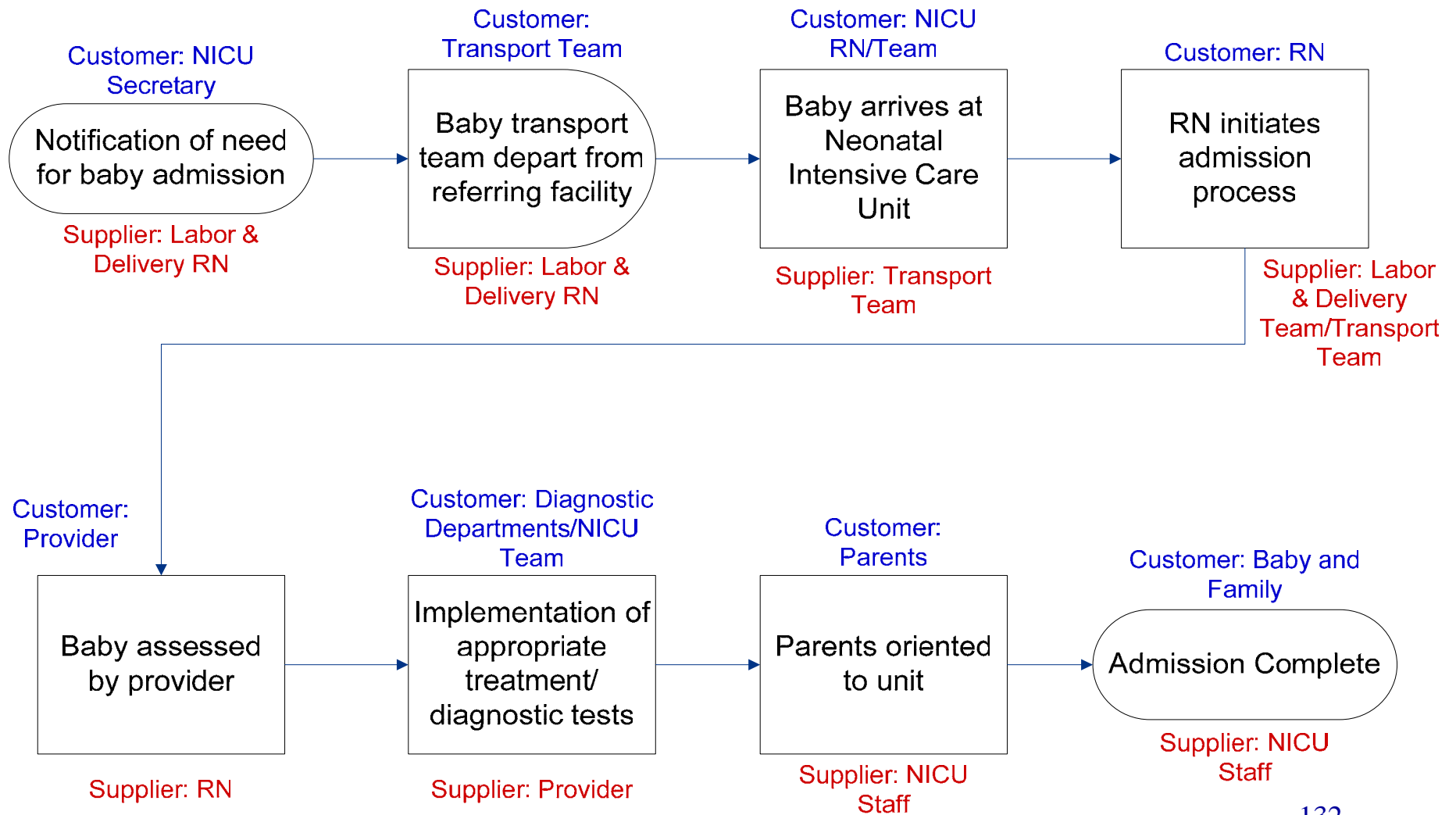
Planning

Agree on how to implement the future state vision

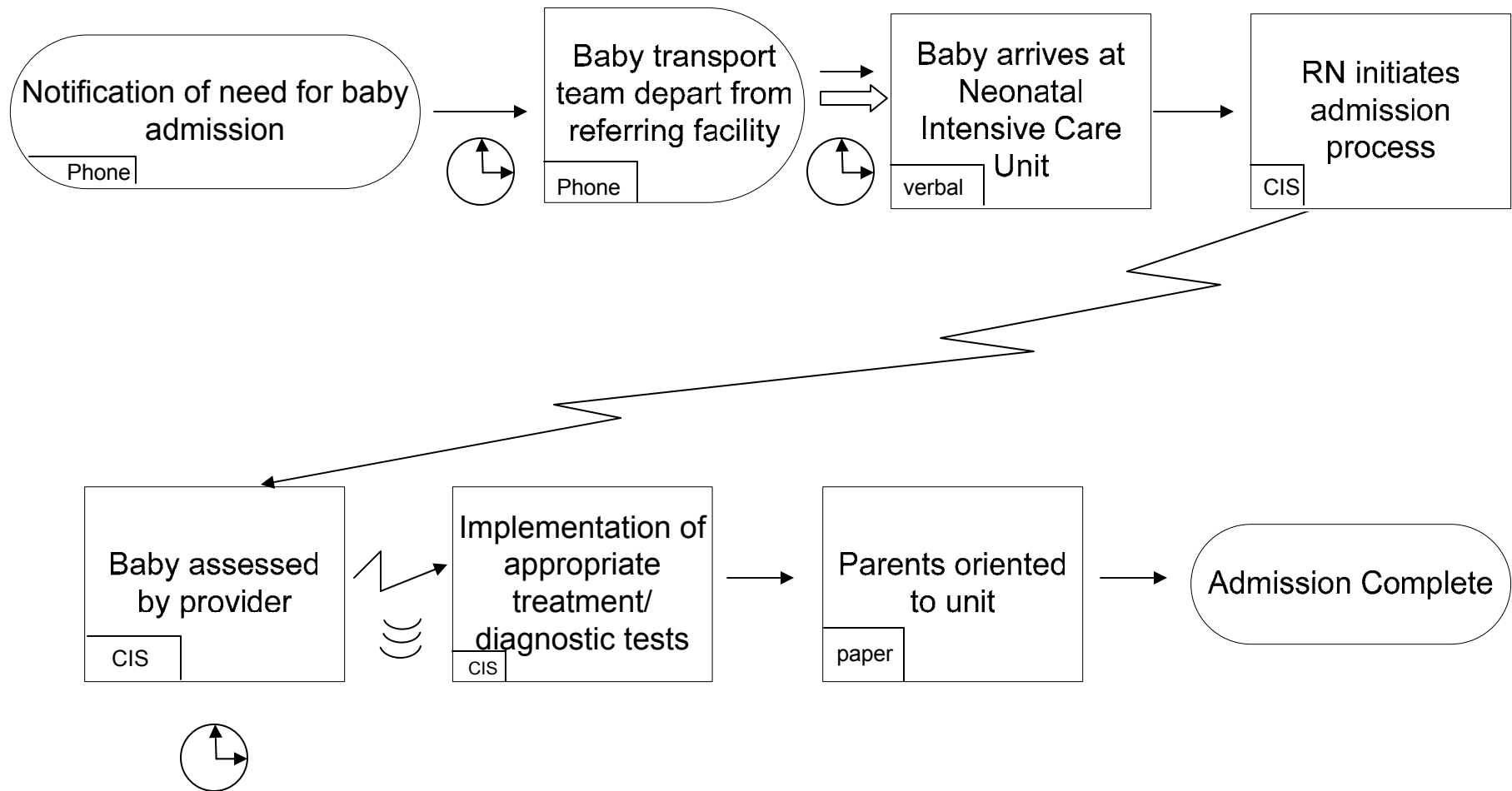
High Level Flowchart of Admission Process



Customer & Supplier



Value Stream Map



Customer/Supplier Connection

Customer: NICU
Secretary

Notification of need
for baby admission

Supplier: Labor &
Delivery RN

- **What is the customer's need?**
 - Baby's diagnosis/health status/urgency
 - Baby's name, record number, other demographics
 - Any additional health information, such as pre-natal/maternal health
- **Who supplies what to whom?**
 - L& D RN collects all relevant information to give to NICU secretary
 - L& D RN gives verbal report to NICU secretary
 - L& D RN confirms that all relevant information is in CIS
- **How does each customer make a request?**
 - NICU secretary asks the L& D RN for complete and accurate information
- **How does each supplier respond?**
 - L& D RN gives complete and accurate information
- **How does a supplier do his/her other work?**
 - By gathering all the information that will be necessary for the interaction with the NICU secretary, through phone, email and phone conversations with other L & D RNs and MDs
- **What problems exist and what problems are solved? By whom, when, where and how?**
 - Inconsistent methods for gaining information
 - Asking different people for the same information
 - Unable to collect complete and accurate information
 - PDSA of process for L& D RN to collect information with form on clipboard next to phone and computer
 - Protocol created for L& D RN to gather specific information from specific sources

Once you understand your **CURRENT** state...

- **You want to be able to create a plan and a picture of the **FUTURE** state**
 - **Eliminate waste**
 - **Eliminate rework**
 - **Optimize roles**
- **You must plan time to observe the process...we are so deep in our daily work we don't always see the waste and re-work**

Observational Techniques

- **“Through the Patient’s Eyes”**
- **Direct observation**
- **Observation worksheet to learn to see new things**
- **LEAN principles to guide observation**
- **Video power**

Lean Principles

- **Do work on time**
- **Identify problems before it's too late**
- **Eliminate waste**
- **Reduce reproduction**
- **Irregular workload with mixed model processing**

4 Rules for Design

- 1. All work MUST be highly specified; content, sequence, timing, location & expected outcomes**
- 2. Every customer-supplier connection MUST be highly specified, direct, clear yes-or-no way to send requests and receive responses**

4 Rules for Design

- 3. Pathway for every product & service MUST be predefined, highly specified, simple and direct (no loops or forking)**
- 4. All improvement MUST be done using the scientific approach at the lowest possible level with a coach**

The Future State

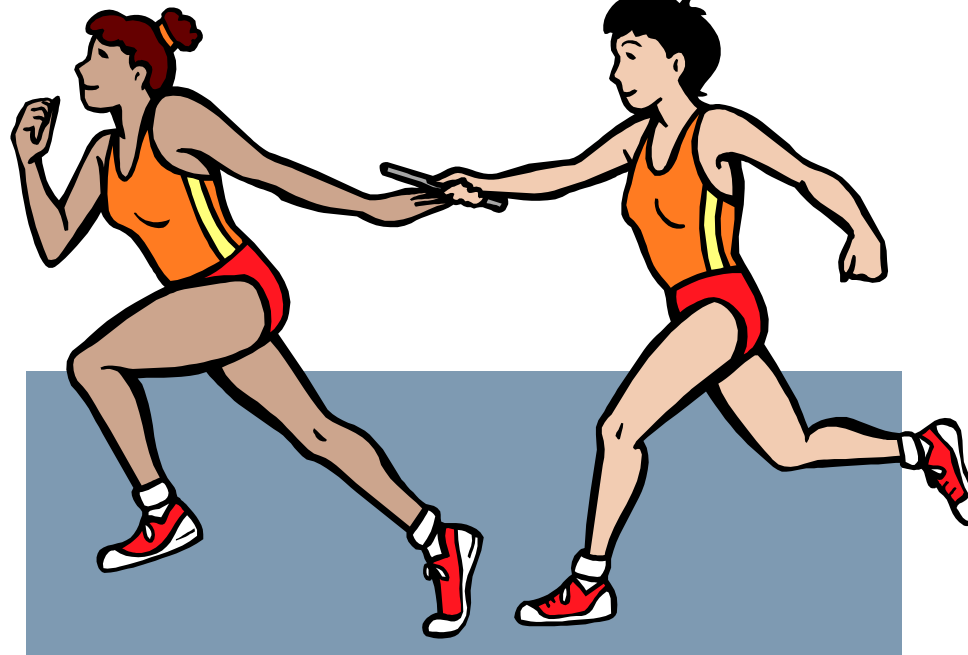
- **What are the customer requirements?**
- **Where and how will you trigger or sequence work?**
- **How will you make work flow smoothly?
(Reduce interruptions due to handoffs, delays, queue or rework)**
- **How will work progress, delays and problems be evident?**
- **What will you measure? Who will measure?**
- **What process improvements are necessary?**

Think: each hand-off must be DEFECT FREE

All work must be highly specified as to content, sequence, timing, location and expected outcome

Every customer-supplier connection must be highly specified, direct, and there must be an unambiguous yes-or-no way to send requests and receive responses

Customer



Supplier

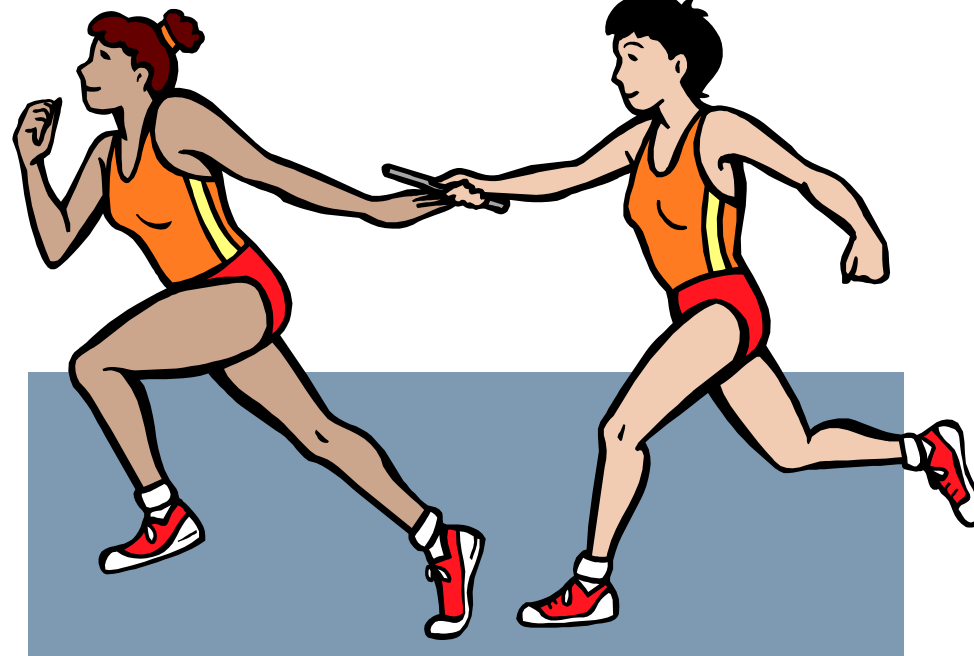
The pathway for every product and service must be predefined, highly specified, simple, and direct with no loops or forking

Think: each hand-off must be DEFECT FREE

What are the customer requirements?

Where and how will you trigger or sequence work?

Customer



Supplier

How will you make work flow smoothly?
(Reduce interruptions due to handoffs, delays, queue or rework)

What process improvements are necessary?

How will work progress, delays and problems be evident? What will you measure? Who will measure?

Add the Roles Deployment Flow Chart

- **Identify the names of the activities (actions) in the order that they occur**
- **Identify the “departments” or “actors” in the list of steps**
- **Draw the flowchart across the roles**

EXERCISE

- **Determine Roles and timed agenda**
- **Using the Value Stream mapping worksheet**
 - **Create your draft of your CURRENT value stream map**
 - **Determine dates/times for observation**
- **Evaluate your meeting**
- **Prepare to report out**

Report Outs

1:45-2:00 Margie

Break

2:00-2:15

Clinical Value Compass Thinking

- **Outcomes matter most**
 - to patients
 - to payors
 - to physicians and staff
- **A way to capture the hearts and minds of all the key players**

Today we are exploring the use of data in your practice for measuring and monitoring performance and putting it in the foreground of your setting.

**If you don't measure it ...
it is hard to manage it and to
improve it.**

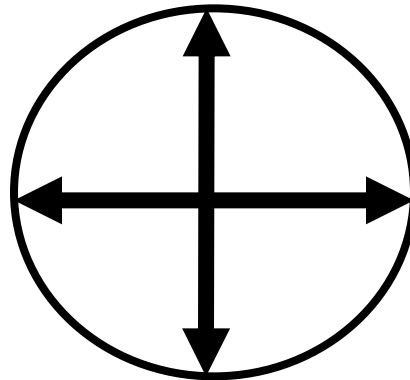
Spencer's Asthma Compass

- Able to play soccer
- Able to go to school
- Feel normal, like other kids
- Free from worry and fear

Function & Risk Status

Biological Status

- Acute exacerbations
- Lung Function FEV1
- Systemic side effects from inhaler meds



Costs

- ED visits
- MD visits
- Laboratory tests
- Meds
- Lost work time for mother

Satisfaction vs. Need

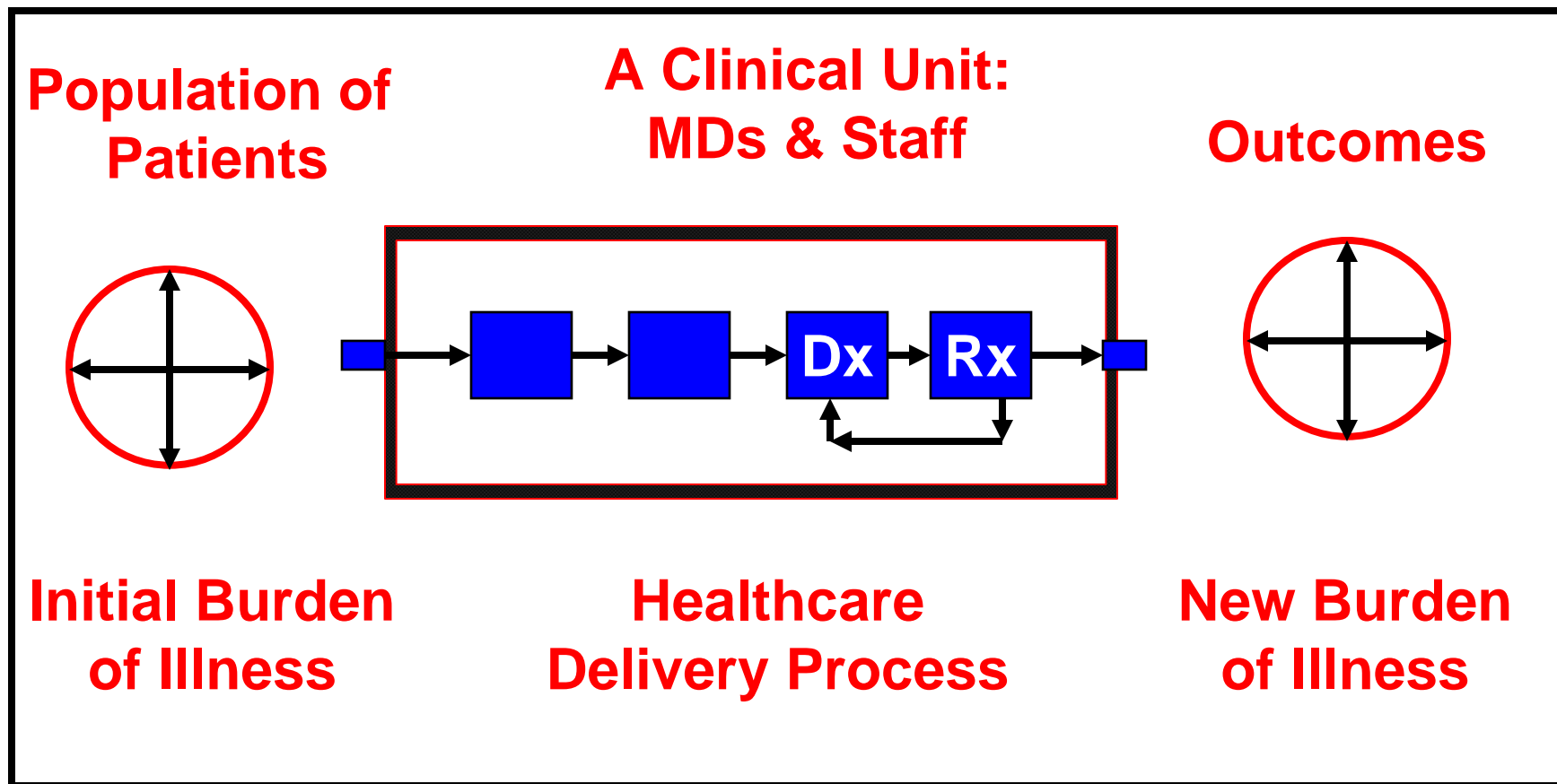
- Needed treatments given
- Prepared to prevent problems
- Able to manage problems
- Trust in doctor & nurse
- Doctor who is accessible
- Costs affordable

Value Compass Answers the Question

Is the system providing care and services that meet patients' needs for high quality and value care?

Note. Unit of analysis is the patient

Value Compass Offers a Way of Thinking about Patients' & Families' Needs Being Met by Health Care



Value Compass

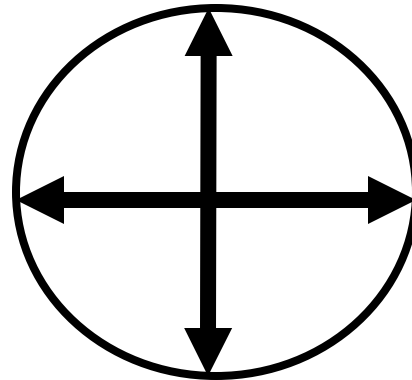
Value=Q/\$

- Physical
- Mental
- Social/Role
- Risk Status
- Perceived Well-being

Function & Risk Status

Biological Status

- Mortality
- Morbidity
- Complications



Satisfaction vs. Need

- Health Care Delivery
- Perceived Health Benefit

Costs

- Direct Medical
- Indirect Social

Value Compass Approach: The Benefits

- **Way to link fundamental clinical goals to measured outcomes**
- **Links patient case mix variables with real clinical care processes with key outcomes**
- **A place (compass point) for everyone – patients, families, doctors, nurses, employers, payors, et. al.**

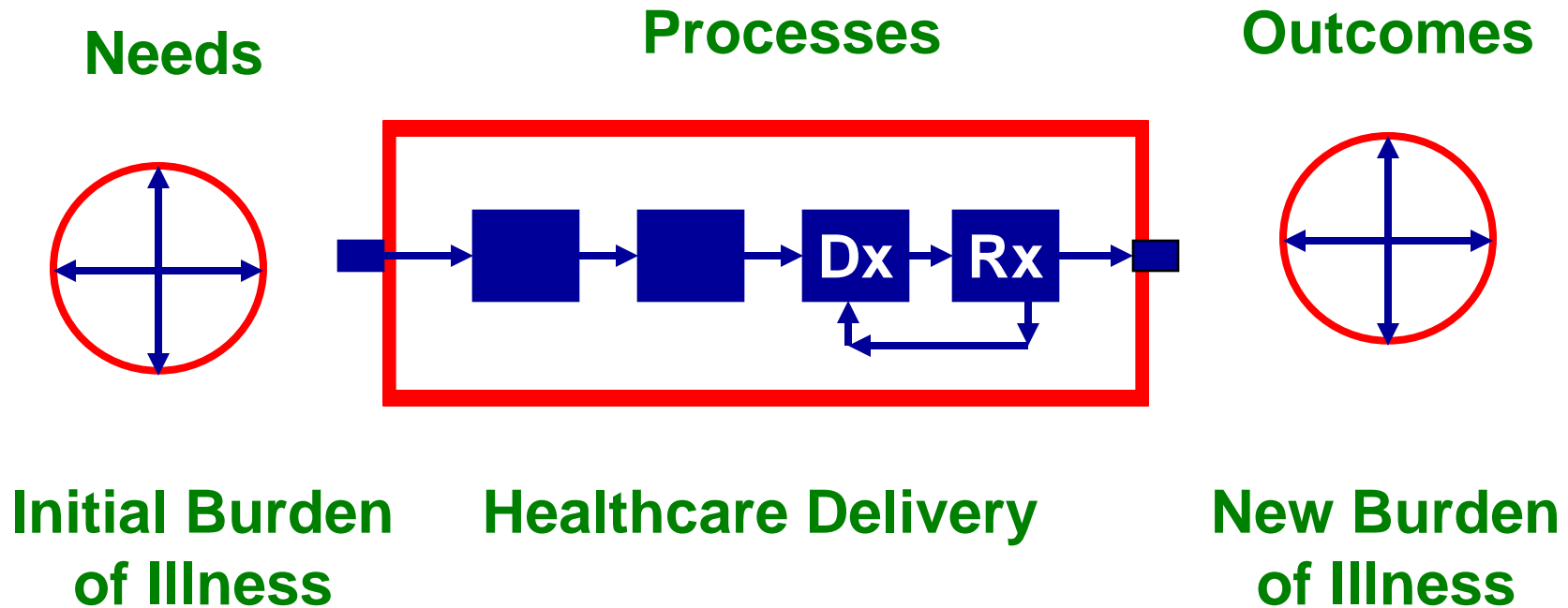
Basic Idea–IPO

Inputs, Processes, Outcomes

Inputs → Processes → Outcomes

- **Patients**
- **Staff**
- **Resources**

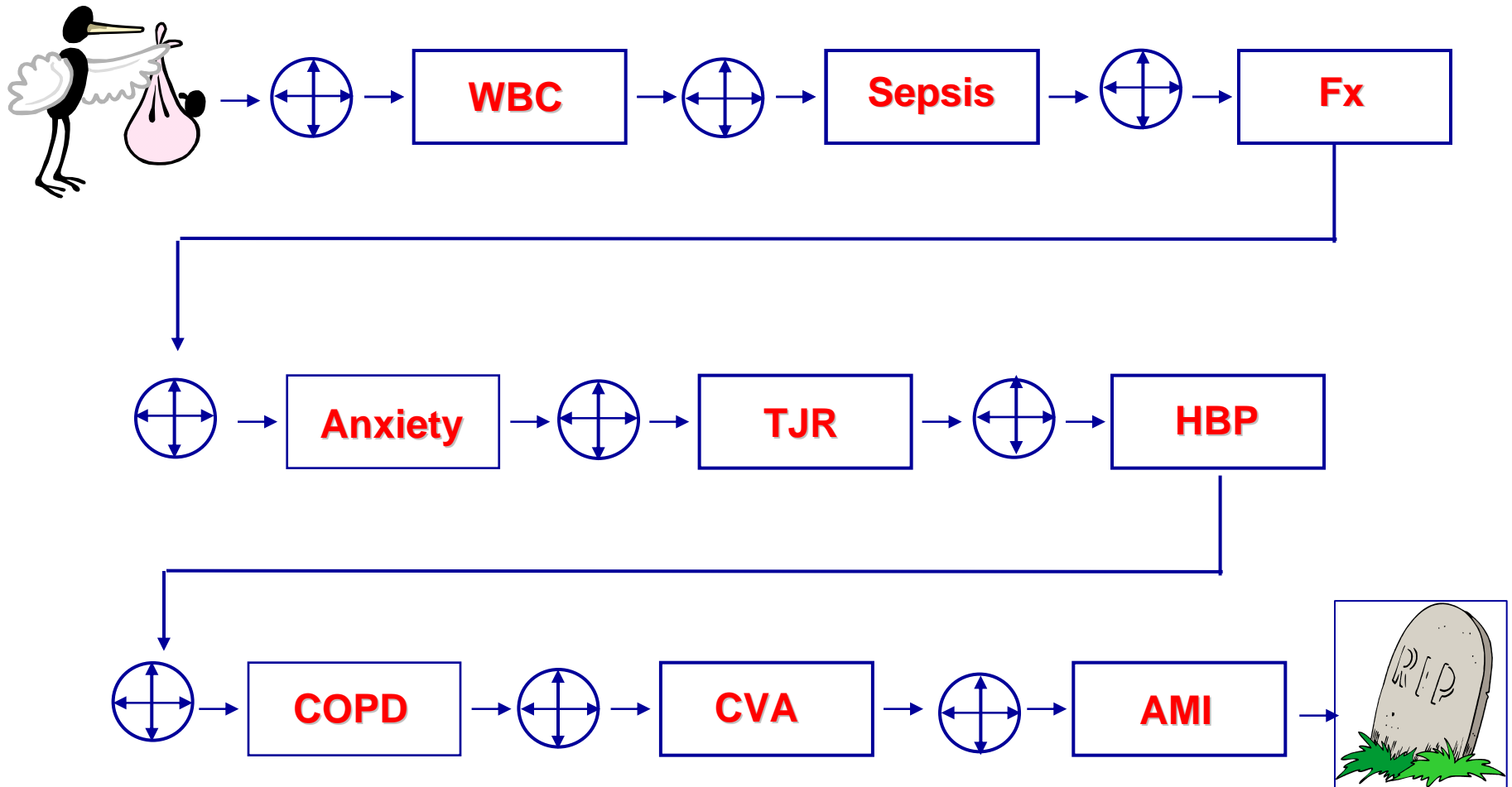
A Way to Think About Aims, Activities, Participants, and Results in Health Care



Clinical Value Compass

- **Value compass thinking helps you to see what process and outcomes you are working on**
- **Value compass can be adapted to any clinical setting**
- **Use Clinical Improvement Worksheet to adapt to your setting**

Birth to Life Ever After



Talking about outcomes tracking ... cradle to grave ⁵⁷

Value Compass Case Study

Dartmouth-Hitchcock ICN

ICN: Bottom Up

“Quality is never an accident ...”

*“Gene, I would like our
ICN to be as good as
any in the world”*

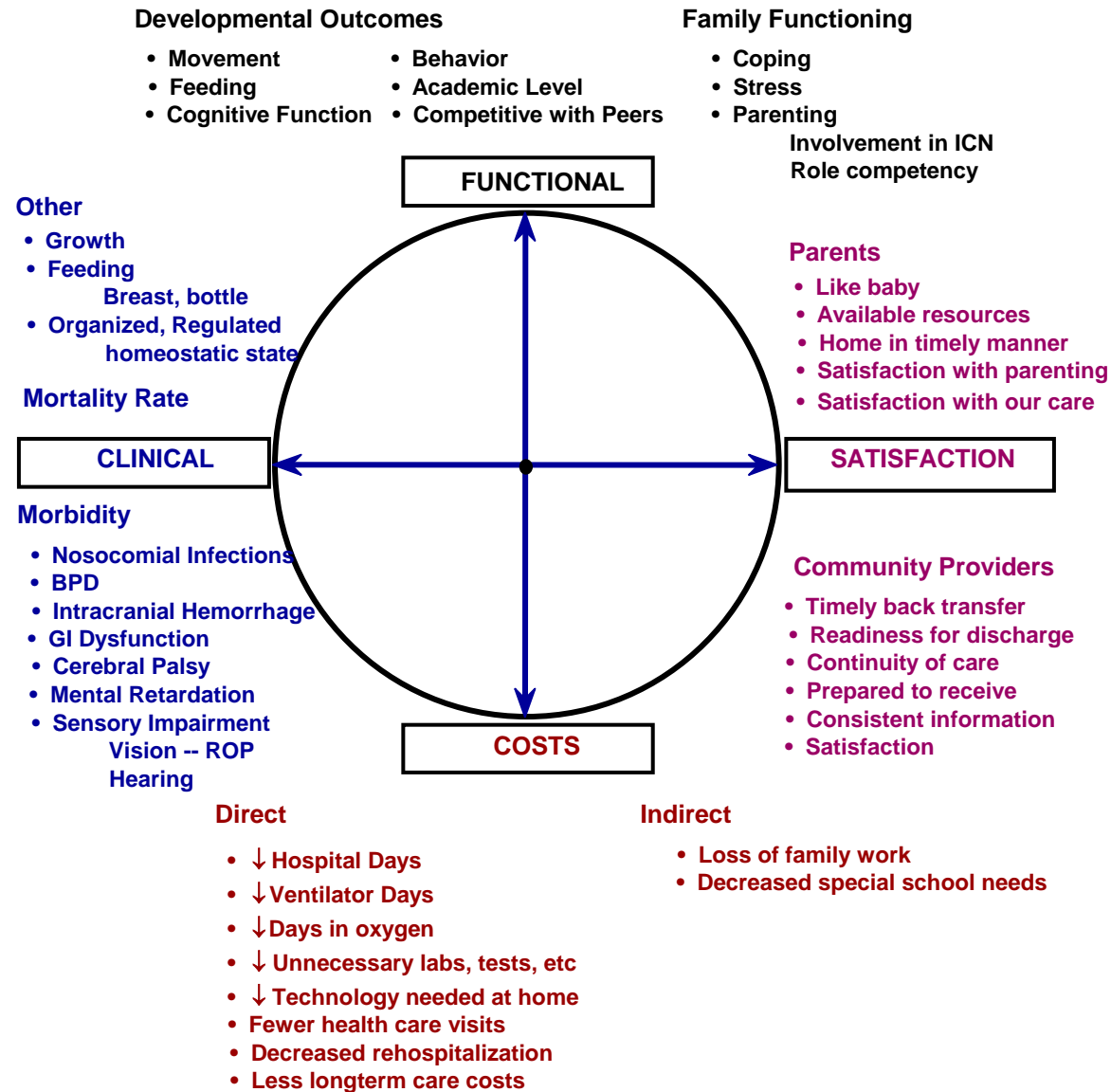
- Bill Edwards, MD

(Director, NICU)

1992



Outcomes: Babies ≤ 1500 Grams



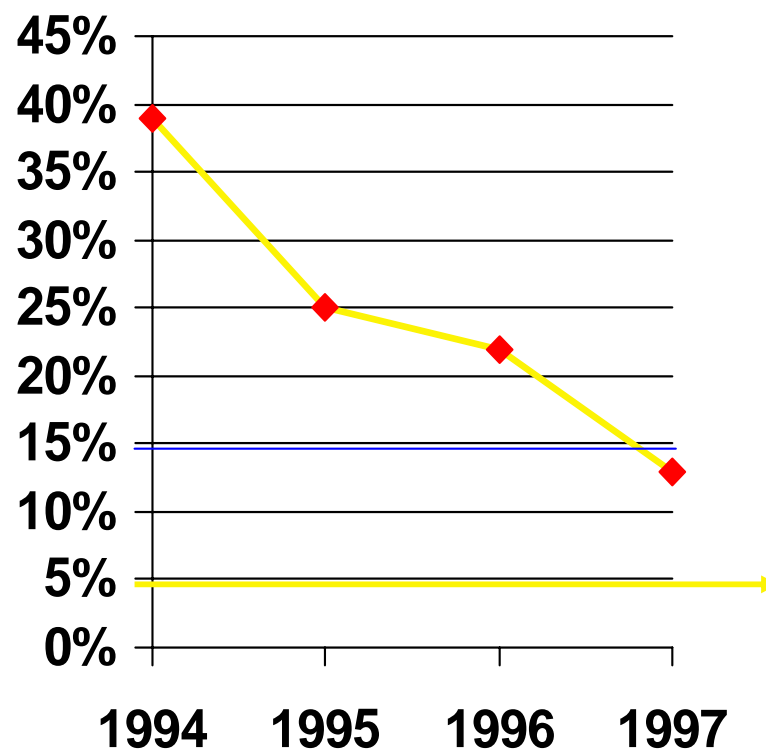
ICN Quality Improvement Nosocomial Sepsis in VLBW Infants

Nosocomial sepsis rates
Birth Weight 501-1500 gm

1994	39%
1995	25%
1996	22%
1997	13%

GOAL < 15%

BENCHMARK < 5%



**Clinical Improvement Worksheet
can guide improvement based on
populations**

Value Compass 500-1500 grams

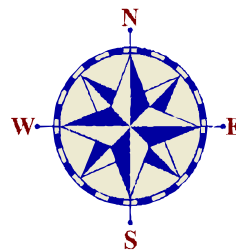
Center:

Year:

Patient Mix (Jan-Dec)		
	n	%
Patients (501-1500 grams)		
Birth Weight <750		
Birth Weight <1000		
GA < 26 weeks		
	%	%-tile rank
Inborn		
Male		
Multiple Birth		
SGA		
Antenatal Steroids		
Prenatal Care		
Race: BI --% (--%tile), His--% (--%tile) Wh --% (--%tile), As --% (--%tile)		

Functional Status (18-24 months corrected age)						
Category	Families/ Infants Assessed			Functional Status (% of those Assessed)		
	n	# eligible	%	Normal	Disturbance/Impairment	
					Mild-Mod	Mod-Severe
Family						
Anxiety/Stress						
Depression/Affect						
Activities of Daily Living						
Social						
Attachment (HYB '02-'04 n=861)	73%					
Infant - Health						
Growth						
Vision						
Hearing						
General Health						
Infant - Development						
Feeding (HYB '02-'04 n=861)	58%					
Motor						
Cognitive						

Clinical Outcomes				
	%	%-tile rank	SMR	95%CI
Mortality	8%	top 10th		
	%	%-tile rank	3-yr adj ratio	95%CI
Survival w/o morbidity	62%	top 10th		
Chronic Lung Disease	11%	top 10th		
Nosocomial Sepsis	8%	top 10th		
Severe IVH	4%	top 10th		
Severe ROP	2%	top 10th		
NEC	1%	top 10th		
Pneumothorax	1%	top 10th		



Satisfaction HYB.com 2002-2004 Top 10th percentile		
Met expectations	n	%
Parents know baby	861	64%
Parents participate in care	861	94%
Parents made own decisions	861	68%
Parents prepared for discharge	861	56%
Satisfaction		
Quality = Excellent	861	85%
Parents would recommend hospital	861	100%
Parents perceived infant experienced pain	861	6%

Costs			
	n	%	
Parents have financial concerns	HYB'02-'04 861	5%	
	days	%-tile rank	95% CI
Adjusted length of stay			

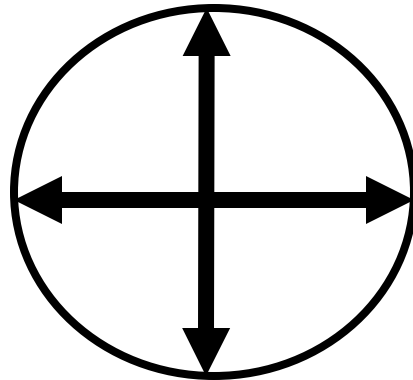
Value Compass

- Physical
- Mental
- Social/Role
- Risk Status
- Perceived Well-being

Function & Risk Status

Biological Status

- Mortality
- Morbidity
- Complications



Satisfaction vs. Need

- Health Care Delivery
- Perceived Health Benefit

Costs

- Direct Medical
- Indirect Social

Real Time Value Compass

Homework Exercise

- **Create your Clinical Value Compass in the coming month**

Timeline for Organizing Teams, Improving and Measuring

- **TIPS:**
 - Daily huddles
 - Weekly meetings
 - Monthly all-staff meetings
 - Put measurement into daily work
- **Planning Data Wall**
- **Continued work on what you've started this week, becoming a community of scientists. Running tests of change.**

Exercise: Create Your Action Plan/Gantt Chart

2:55-3:15 Margie/Sandy

Report Outs

3:15-3:20 Margie

Overview of Thursday

- **Change Concepts**
- **Meeting Skills: Brainstorming/Multi-Voting**
- **Improvement Model PDSA ↔ SDSA**
- **Value Stream Mapping**
- **Measuring and Monitoring: Clinical Value Compass**
- **Gantt Chart/Action Plan**

Evaluate Today