PA PQC

Pennsylvania Perinatal Quality Collaborative

Applying QI Principles across Sites in a System, Engaging a Team, and Rules for Data Display and Use

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Objectives

- Forming your QI team and keeping them engaged.
  - Difference between a Team Leader and a Coach.
- Coordinating efforts across a healthcare system.
- Using data for QI efforts.

Some Questions to Ponder

- What challenges have you had keeping your team engaged? How have you utilized your QI coach?
- If you are from a hospital system with multiple locations working on the same issue, how have you coordinated your efforts (or what is getting in the way?).
- What challenges have you encountered either collecting or analyzing your data for your project?

The Importance of Teams in QI


Phillie
Phillies
51

What is a Team?

"Two or more individuals, with complimentary skills, that have a common commitment and purpose and have a set of performance goals for which they hold themselves mutually accountable."

Why Teams?

- Changing culture of healthcare delivery
- Expectations for safety, quality, value
- Improved teams associated with:
  - Fewer errors, more safety
  - Improved staff satisfaction and retention; reduced burnout
  - Enhance quality of care and decreased cost
  - Increase patient satisfaction

Types of Teams in Healthcare

- Work teams (clinical teams)
  - Treatment/ward/surgical teams
  - Emergency/trauma/code teams
  - Research teams
  - Home care teams
- Quality Improvement Teams
  - Project teams
- Management Teams
  - Hospital boards

Critical Teamwork Skills in Healthcare

- **Situation Monitoring** – Following performance of team members and ensuring work and procedures are running as expected.
- **Mutual Support** – Providing feedback and coaching to improve performance; completing a task for a team member when needed.
- **Leadership** – ability to direct/coordinate team members.
- **Communication** – closed loop.

Salas, 2005; Alonso, 2006

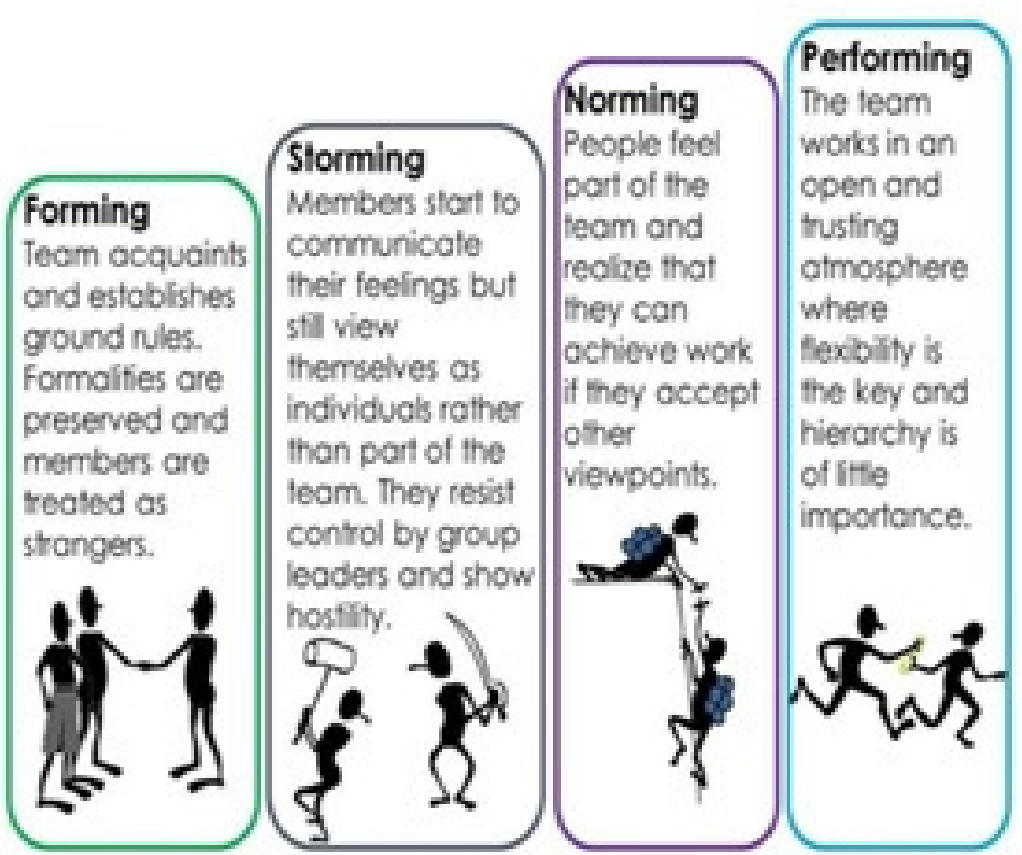
Other Conditions for Success

- **Interdependence** – Project must be important to the members. Complimentary skills are noted.
- **Leadership** – Has the desire to improve.
- **Joint Decision** – Team members all want to participate.
- **Equal Influence** – Each person has the opportunity to influence the agenda.

Lewin and Weisbord, 1987

Tuckman Stages of Group Development

- All stages are necessary to achieve success.
- Teams may move back and forth between stages – not necessarily linear.
- Tuckman later added a 5th stage – Adjourning



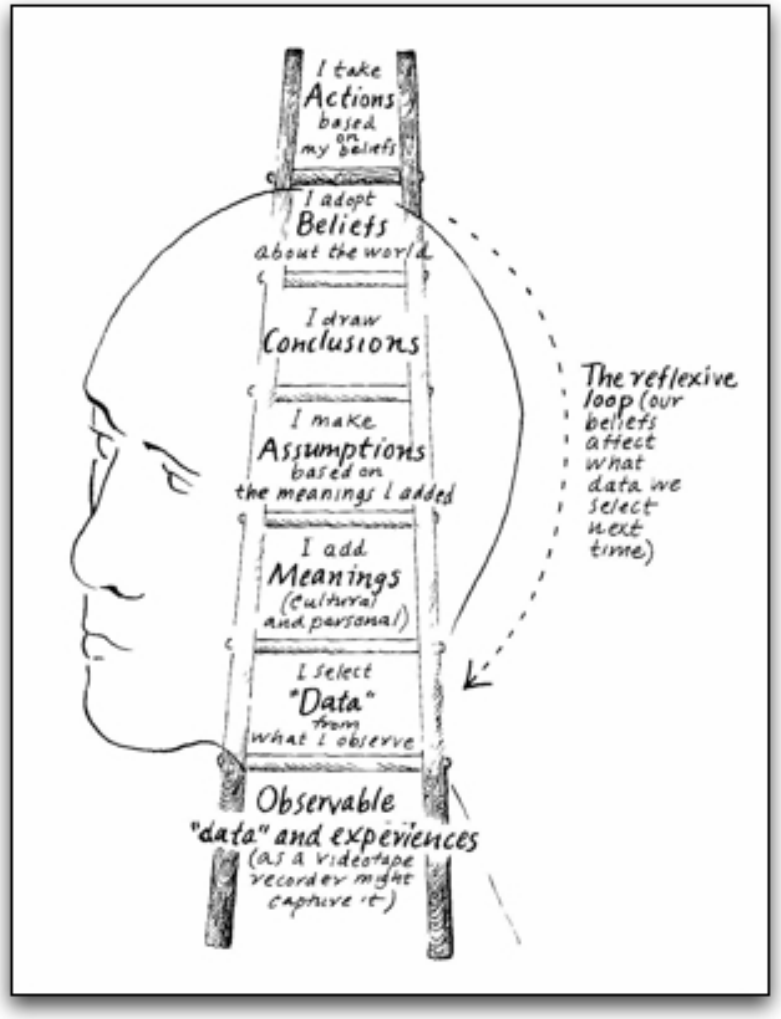
Forming

Mindset:	Why am I here? Do I want in? Will we be successful?
Relationship:	Guarded Basic information shared Low trust
Activities:	Introductions Orientation to purpose Hidden agendas

Storming

Mindset:	**Control** **What role should I play?** **Why is he/she taking charge?**
Relationship:	Conflict Emotional Argumentative
Activities:	Confrontation Control conflicts Attempting to set rules

Ladder of Inference



- During storming, teams generally engage in conflict.
- We can only "see" the beginning and end of the ladder. The rest happens in our heads.
- Go back to the original data and ask the person who has suggested an action to lead you through their "thought process".

Chris Argyris and Peter Senge

Norming

Mindset:	**Openness** **What do you think?** **How can I help you?** **How can I find out more?**
Relationship:	Trust Ideas/feelings Understanding Support
Activities:	Ground rules are established Improved Communication Gathering data Confronting issues Giving feedback

Performing

Mindset:	**Success** **Are we learning?** **How can we be most effective?** **What actions should we take?**
Relationship:	Open Communication Support Decision by Consensus
Activities:	Learning Making decisions Supporting others Taking actions

How can we make our teams more successful and engaged?

- Methods to provide structure for teams include:
  - Developing a common purpose
  - Establishing norms for the team
  - Develop relationships among team members
  - Defining roles for team members
  - Defining procedures for making decisions
  - Preparing for and running a team meeting
  - Following a common methodology for doing their work.

Tips for Building an Engaged Team

1. Establish direction and urgency (shared aim)
2. Select complimentary members (function/skill, not personality)
3. Pay particular attention to first meetings and actions
4. Set clear rules of behavior and group norms
5. Set and seize upon a few immediate performance-oriented tasks and goals (structure meetings to get things done)
6. Spend lots of time together (particularly in the beginning) and get to know each other.
7. Leverage the power of positive feedback & recognition
8. Use PDSA thinking to foster a culture of curiosity & learning

Source: Jon Katzenbach and Douglas K. Smith, *The Wisdom of Teams,* Harvard School Press, 1993.

The Perfect Team: Google's "Project Aristotle"

- 5 year long study at Google to discover the algorithm of the perfect team
- Looked at 180 teams around the company
- "At Google, we're good at finding patterns… There weren't strong patterns here."

Source: What Google Learned From Its Quest to Build the Perfect Team, New York Times Magazine February. 25, 2016

The Perfect Team: Google's "Project Aristotle"

- Success was NOT related to "personality type, skills, talent, or background, etc. The "who" did not matter...
- Instead they found understanding and influencing group norms were the keys to team success.
- Specifically, successful teams had **norms** that allowed members to **Be Heard / Be Understood / Be Known / Be Safe**

Source: What Google Learned From Its Quest to Build the Perfect Team , New York Times Magazine February. 25, 2016

The Perfect Team: Google's "Project Aristotle"

Members speak in roughly the same proportion ("equality in distribution of conversational turn-taking"); **connection**

Members skilled at intuiting how others felt based on tone of voice, expressions, and non-verbal cues ("high average social sensitivity"); **empathy**

Psychological safety and trust

Source: What Google Learned From Its Quest to Build the Perfect Team , New York Times Magazine February. 25, 2016,

Areas for Developing Ground Rules/Norms

- Attendance
- Promptness
- Participation
- Communication
- Assignments between meeting
- Interruptions and distractions
- Rotation of routine chores
- Agendas and record keeping
- Decision-making processes and tools
- Conflict management
- Confidentiality

Time for Interaction!

- What techniques have you used to keep your teams engaged?
- Have you established group norms? What is working well for you?
- Have you been able to move your team from storming to norming yet? What has helped in doing so?
- What other questions do you have?

Team Leader vs. Coach?

What is coaching?

The act (and art!) of activating people's agency

Helping others develop insight, skills, and capabilities to improve

What coaching is not?

The act (and art!) of activating people's agency

Helping others develop insight, skills, and capabilities to improve

Telling

Fixing

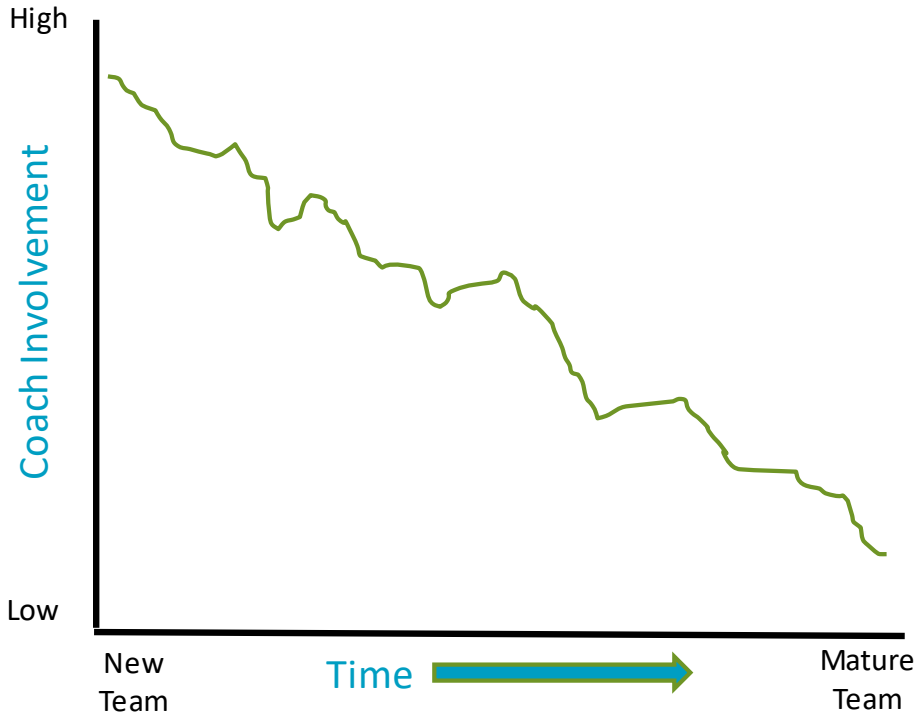
Monitoring

Imparting content expertise

Being solely accountable

Praising falsely

Coach Role



Early in the life of a team, the coach or facilitator may lead team meetings, conduct just-in-time training, and give the team feedback on group process issues.

As the team matures, however, the coach's involvement with the team decreases.

Source: Executive Learning Inc, Team Training

Coaching skills

- Excellent analytic skills
- Excellent group dynamic skills
- Excellent planning and project management skills
- A sense of urgency and a focus on results
- Protected time to serve as a coach
- Customer focus (it's not about the coach!)
- Excellent listening skills
- Ability to synthesize qualitative and quantitative information
- Ability to ask clarifying questions
- Ability to give constructive feedback
- Interviewing skills
- Facilitation skills
- Organizational skills
- Strong knowledge base
- System-level thinking and analysis

Three Major Roles on Teams

Team Leader	Team Coach	Team Member
Runs Meeting	Training	Subject Matter Expert
Coordinates Work	Facilitation	All relevant disciplines
Drive Results	Feedback	Participate
Updates Sponsor		Take assignments

Working agreements are a way to clearly establish what everyone's responsibilities are going to be.

Working Agreements

An explicit, yet typically informal, set of agreements between two parties (Coach/Leader, Coach/Team).

Working agreements specify:

1. Who the client is (remember we are all customers of each other)
2. The aim and objectives of the relationship
3. The roles and responsibilities of each
4. Any other ground rules for the relationship

If broken provides opportunity to reflect, learn and rework as needed.

Time for Interaction!

- Do you have a separate team leader and coach?
- Does everyone understand their role?
- Does anyone have a story about how they have used a formal or informal working agreement?
- What other questions do you have?

Working Across a System

Key Questions to Provide Clarity…

- How do we move from testing to making the change permanent? (Implementation)
- How do we hold the gains from improvement over time? (Sustainability)
- How do we improve more quickly across a system?
  - How do we engage individuals to adopt changes identified elsewhere? (Spread)
  - How do we build the infrastructure to allow adoption of changes in different contexts and larger scope? (Scale-up)

Improvement Sequence: Definitions

Test – Try and adapt ideas to learn what works in your system

Implement – Make a change a permanent part of the day to day operation of the system

Sustain – Hold the gains of improvement

Spread – Have individuals ***adopt*** the changes

Scale-up – Overcoming the ***structural issues*** that arise during spread

Which System are you working in?

Nursing Services

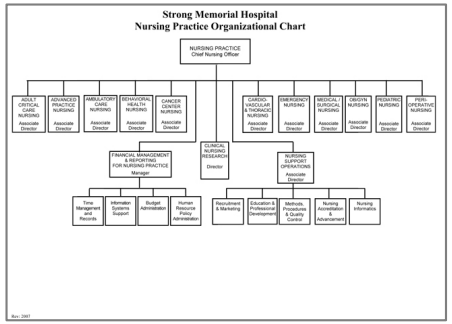
Macro-systems

(e.g. a hospital, multiple hospitals, a state, a region)

Nursing Divisions

Meso-systems

(e.g. a division, a clinical department, pathology, IT)



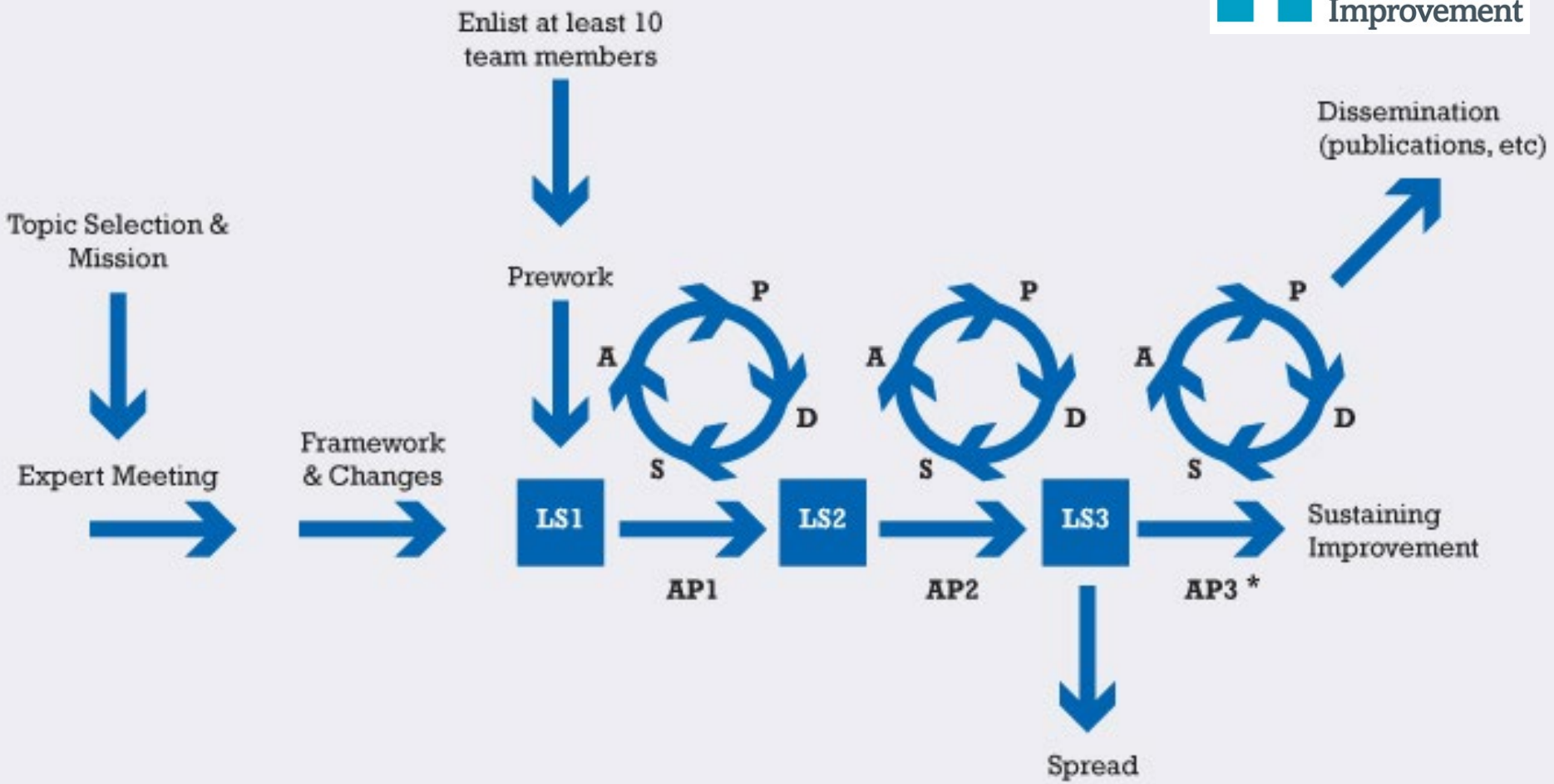
Frontline Nursing Units

Microsystems

(e.g. a ward or unit, a clinic, home care nurses)

Breakthrough Series Collaborative Model

Institute *for* Healthcare Improvement



Key

LS	Learning Session
AP	Action Period

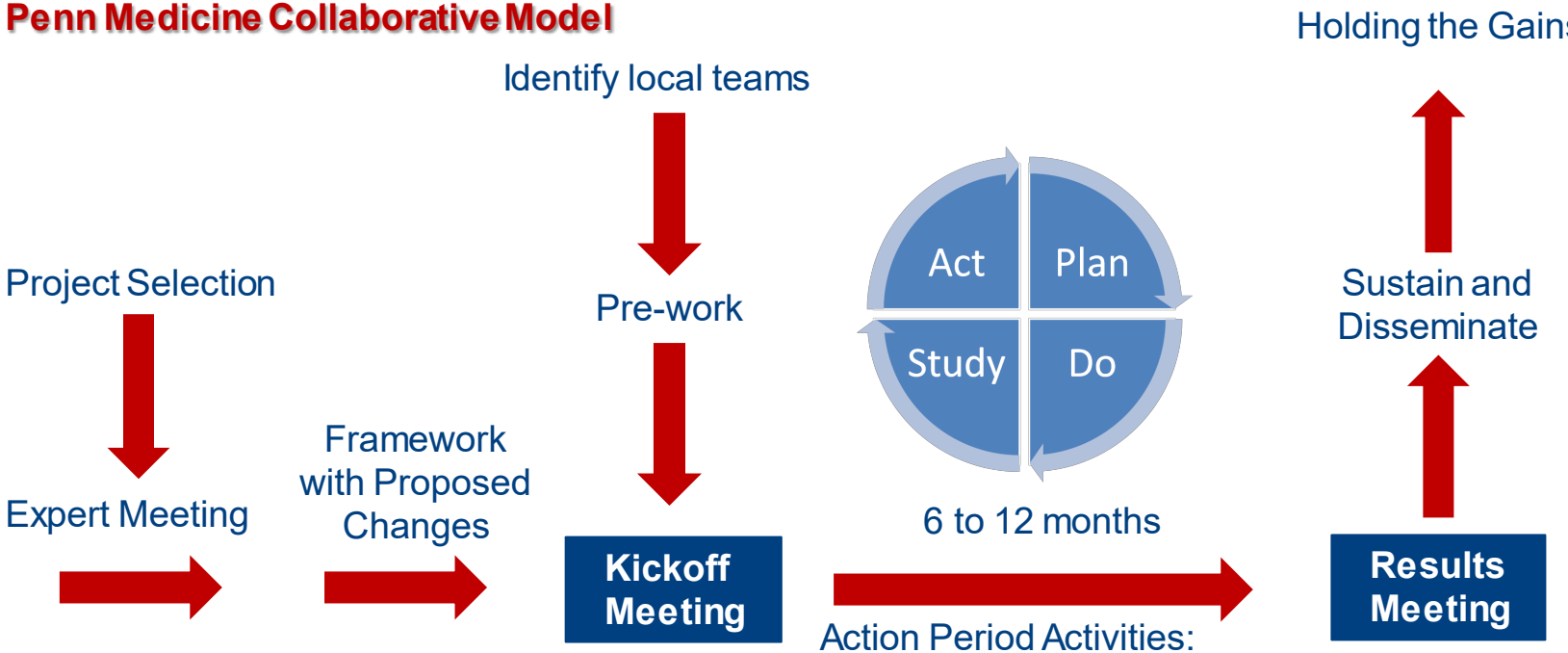
Ongoing Supports

Email listserv	**Calls & webinars**
Team reports	**Site visits**
Assessments	**Sponsor**

*AP: continue reporting data as needed to document success

Working Across our Healthcare System at Penn

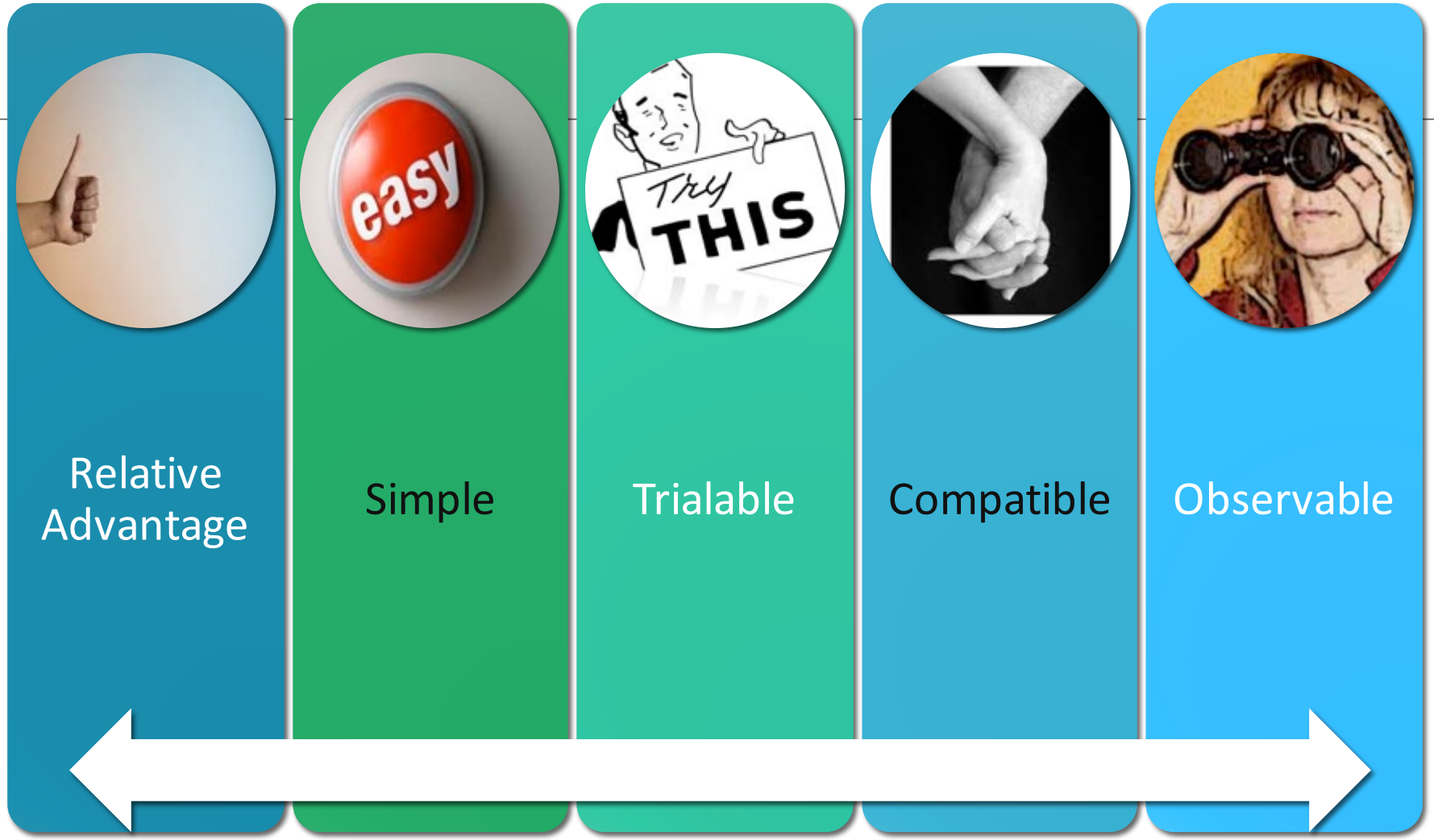
Penn Medicine Collaborative Model



Action Period Activities:

- Monthly Conference Calls
- Site visits/coaching
- Monthly Reporting
- Testing of changes (Lean, Six Sigma, MFI-PDSA)
- Enhance initial solutions
- Opportunities for presentation and learning (both project based and didactic).
- Email listserv/sharepoint site
- Tableau Dashboards

Attributes of an idea that facilitate adoption



Rogers, E. M. (2003). Diffusion of innovations. New York, Free Press.

Hard Core and the Soft Periphery

Hard Core – the element of the intervention that carries the key potential benefit.

Soft Periphery – complementary arrangements involved in delivering the benefit. May take a variety of forms depending on the local environment.

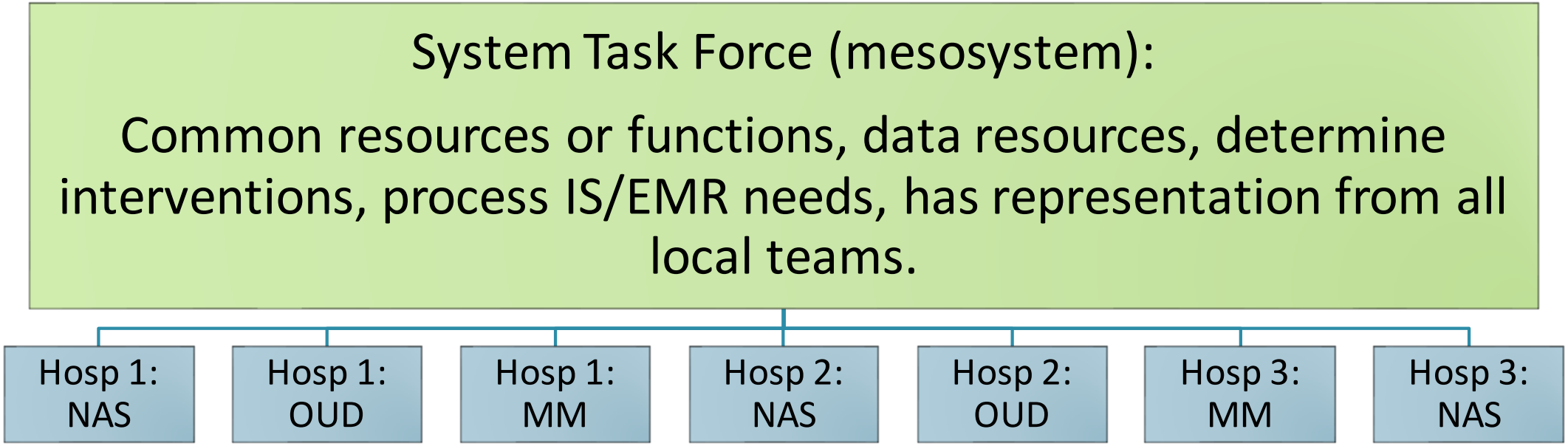
"If the soft part of the intervention is poorly organized, it may destroy the benefit of the hard core."

Langley, BMJ Qual Saf, 2011

Key Components/Considerations for your work

- Each location where patient care happens should have its own local team.
- Identify shared resources and create a support structure for those, like a task force (create the right mesosystem).
- Data, Data, Data – do it once for the system.
- Change ideas developed in one place likely need to be adapted to work in a different location.

A Proposed System Framework

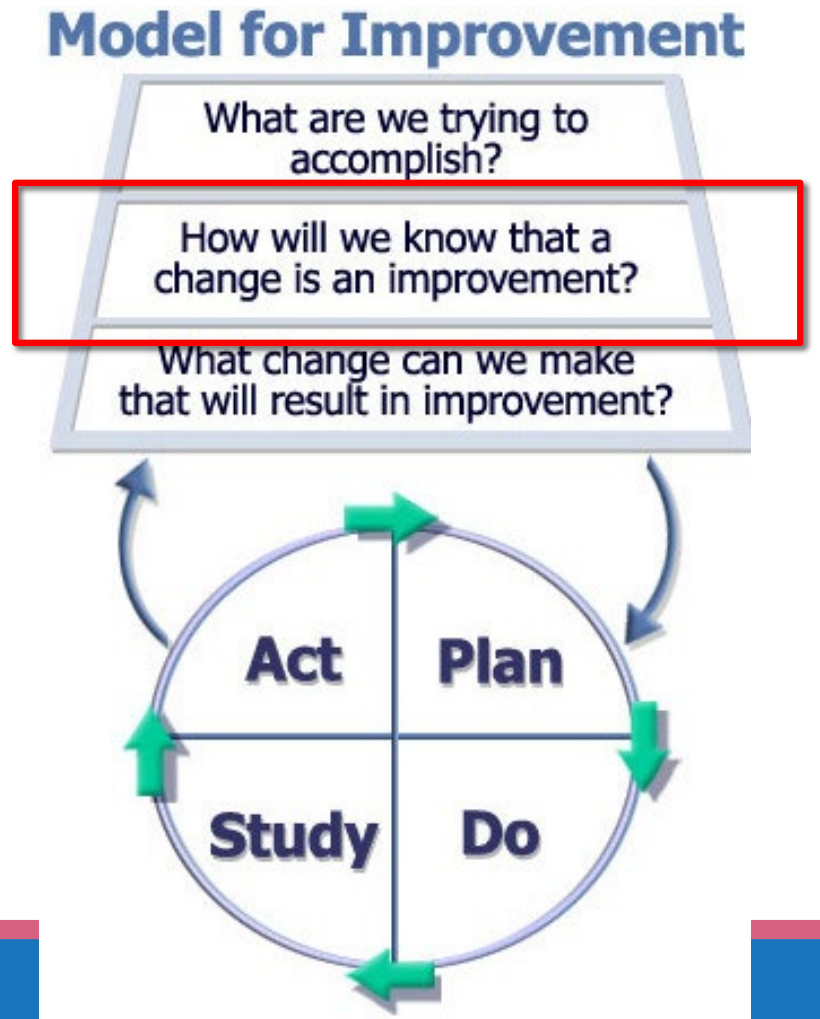


Time for Interaction!

- What are some examples of how you have consolidated resources to work across your system?
- Have you set up a system task force (mesosystem) for your health system PAPQC project work? What have been your challenges?
- What other questions do you have?

Data for Quality Improvement

IHI Model for Improvement



INSTITUTE FOR HEALTHCARE IMPROVEMENT

How will we know that change is an improvement?

Outcome Measures

- The voice of the customer or patient.
- Reflects the problem you are trying to solve.
- Describes how your overall system is performing.

Process Measures

- Steps logically linked to outcome of interest.
- Addresses how key parts of the system is performing.

Balancing Measures

- Describes what happens to the system as processes and outcomes have changed.
- What are the unintended consequences or alternate explanations?

Example NAS Family of Measures

Outcome Measure:	• Length of stay for all opioid exposed newborns (OEN) • Length of stay for all OEN who required pharmacologic treatment.
Process Measure:	• Compliance with ESC scoring system. • Percentage of all OEN receiving non-pharmacological interventions. • Percentage of the day OEN rooming in with mom. • Compliance with treatment algorithm
Balancing Measure:	• Readmissions within 30 days due to withdrawal symptoms. • Impact of ESC on nursing patient care tasks

The Importance of Operational Definitions

If data collected **differently by different people**, or **differently each time collected**, it makes it hard to know whether **changes in the data are due to the changes tested** or from **inconsistencies in data collection**.

What is a goal?

The whole ball or half the ball?

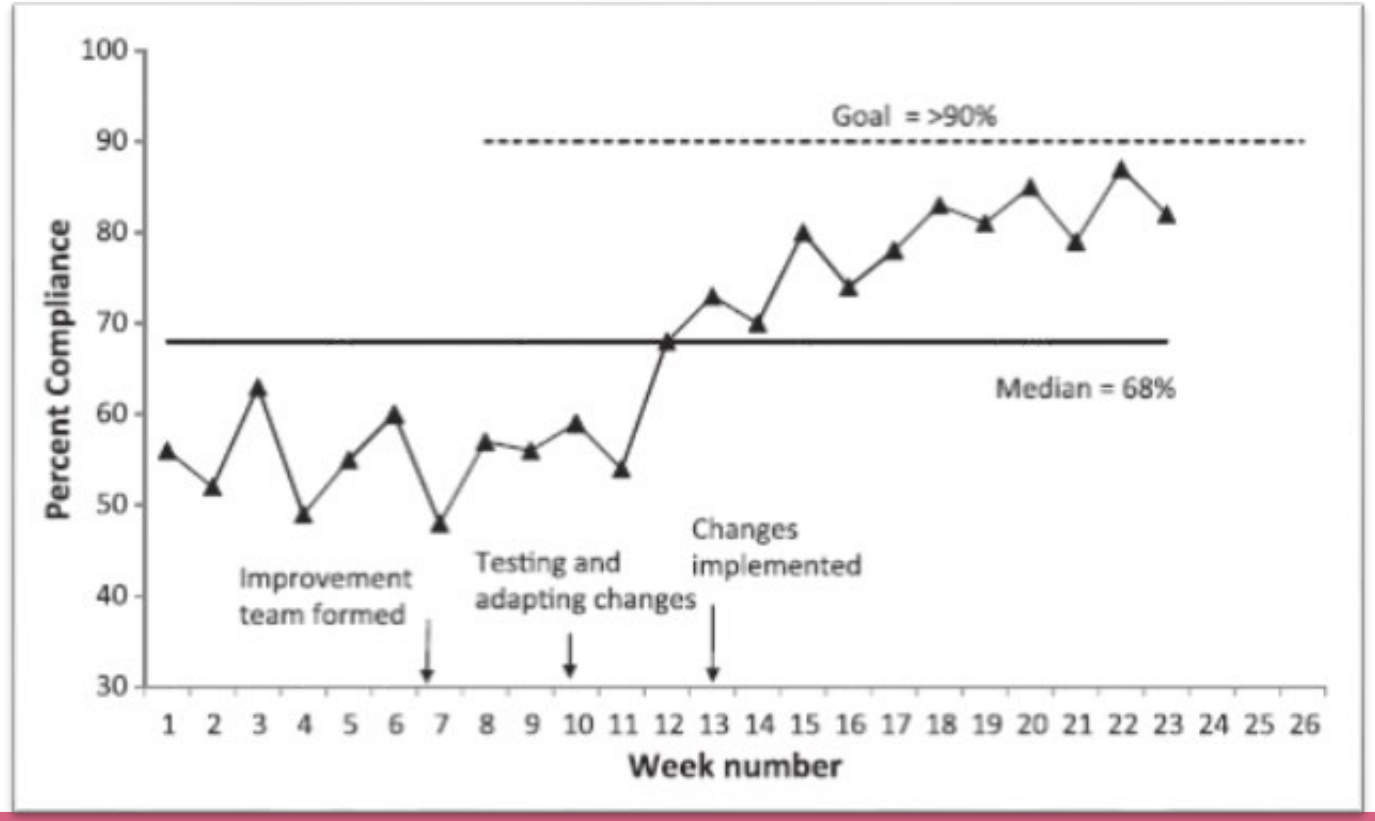
Courtesy of Bob Lloyd, IHI

Run Chart

Graphical display of data plotted in some type of order, usually over time. Also has been called a time series or a trend chart.

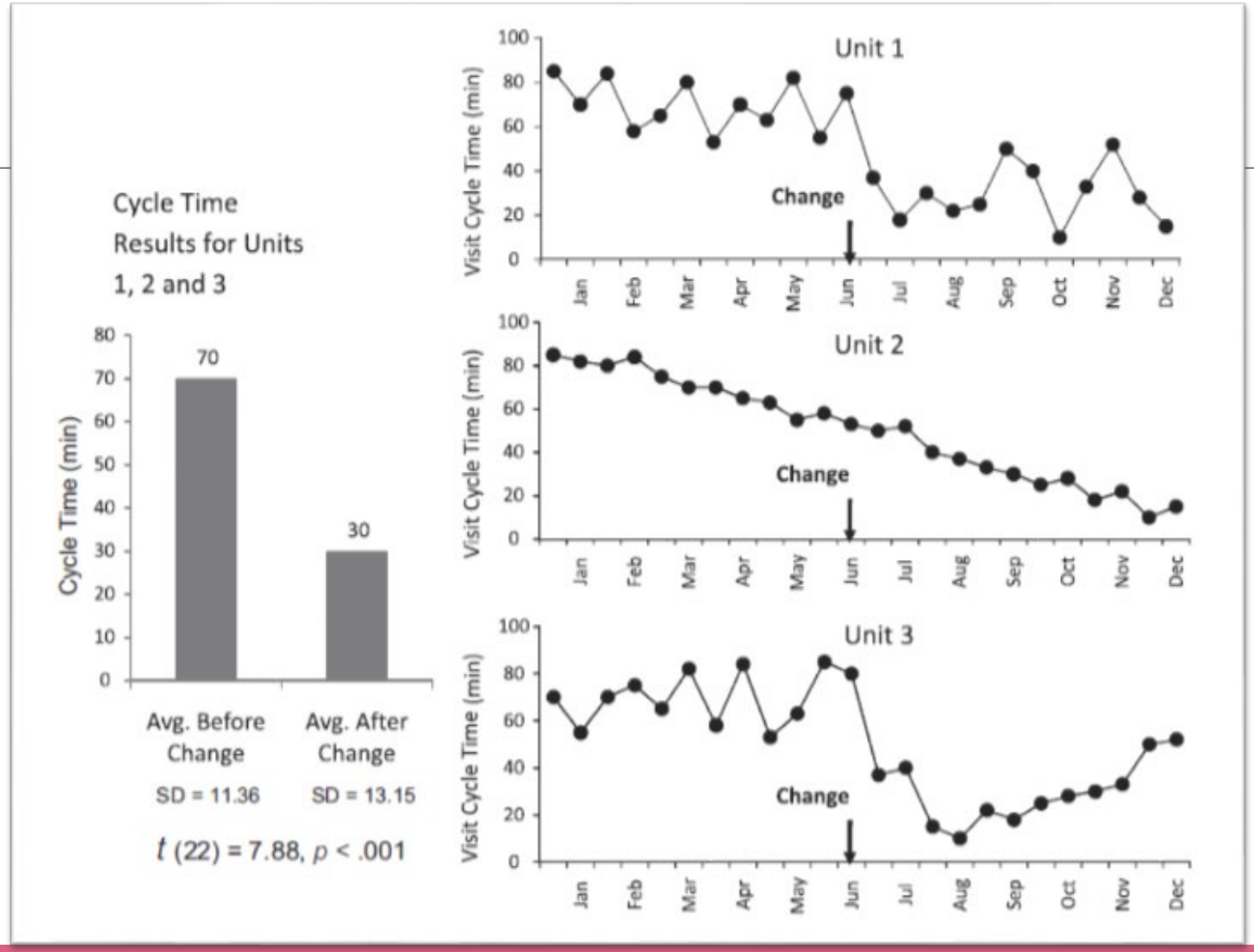
Minimum requirements:

- Line graph of data points
- Median line
- Indication of goal
- Annotations



Perla, BMJ Qual Saf, 2011

Why Use A Run Chart?



Perla, BMJ Qual Saf, 2011

Understanding Variation

- In QI, we are looking for changes in key data.
- But all things vary naturally – fact of life.
- Need tools to identify true changes in data versus natural background variation.
- And, we want to identify true changes fast.
- Run and Control charts: tools to help interpret variation – identify **signal** and **noise**.

Noise vs. Signal

Common Cause Variation (Noise)	Special Cause Variation (Signal)
Is due to regular, natural or ordinary causes that are inherent in the design of the process	Is due to irregular or unnatural causes that are not inherent in the design of the process
Statistically similar to other data points.	Statistically different from other data points.
Results in a “stable” process that is predictable	Results in an “unstable” process that is not predictable
Also known as random or unassignable variation	Also known as non-random or assignable variation

How many data points do I need to start a run chart?

- Start to plot your data on a run chart **as soon as you have some!**

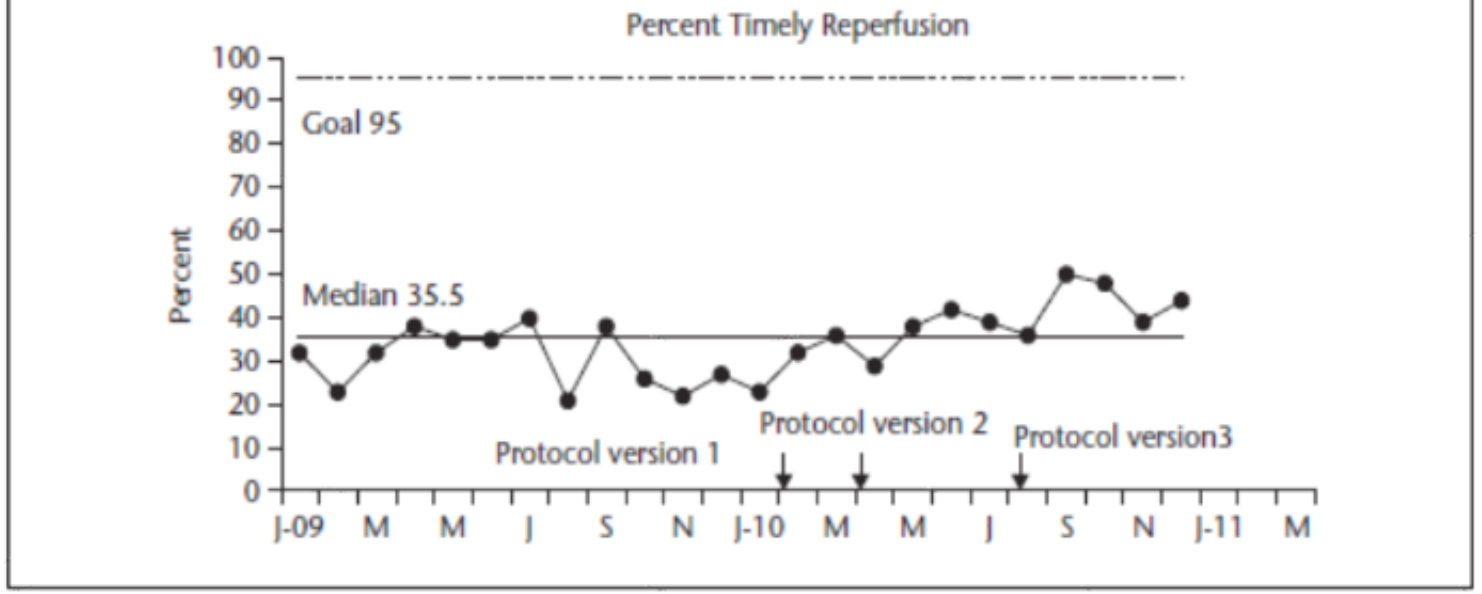
- The median will be calculated and continued to be adjusted until you have established a **baseline of 10 data points**.
  - 10 patients, 10 days, 10 weeks, 10 months, 10 quarters…

- Why 10?
  - **At least 10 data points are required to apply the probability based run chart rules.**

Probability Based Rules for Run Chart Analysis

If visual analysis leaves us uncertain that change(s) yielded improvement, we may use probability based rules to analyze the run chart

FIGURE 3.12 Run Chart with ED Team Uncertain About Improvement



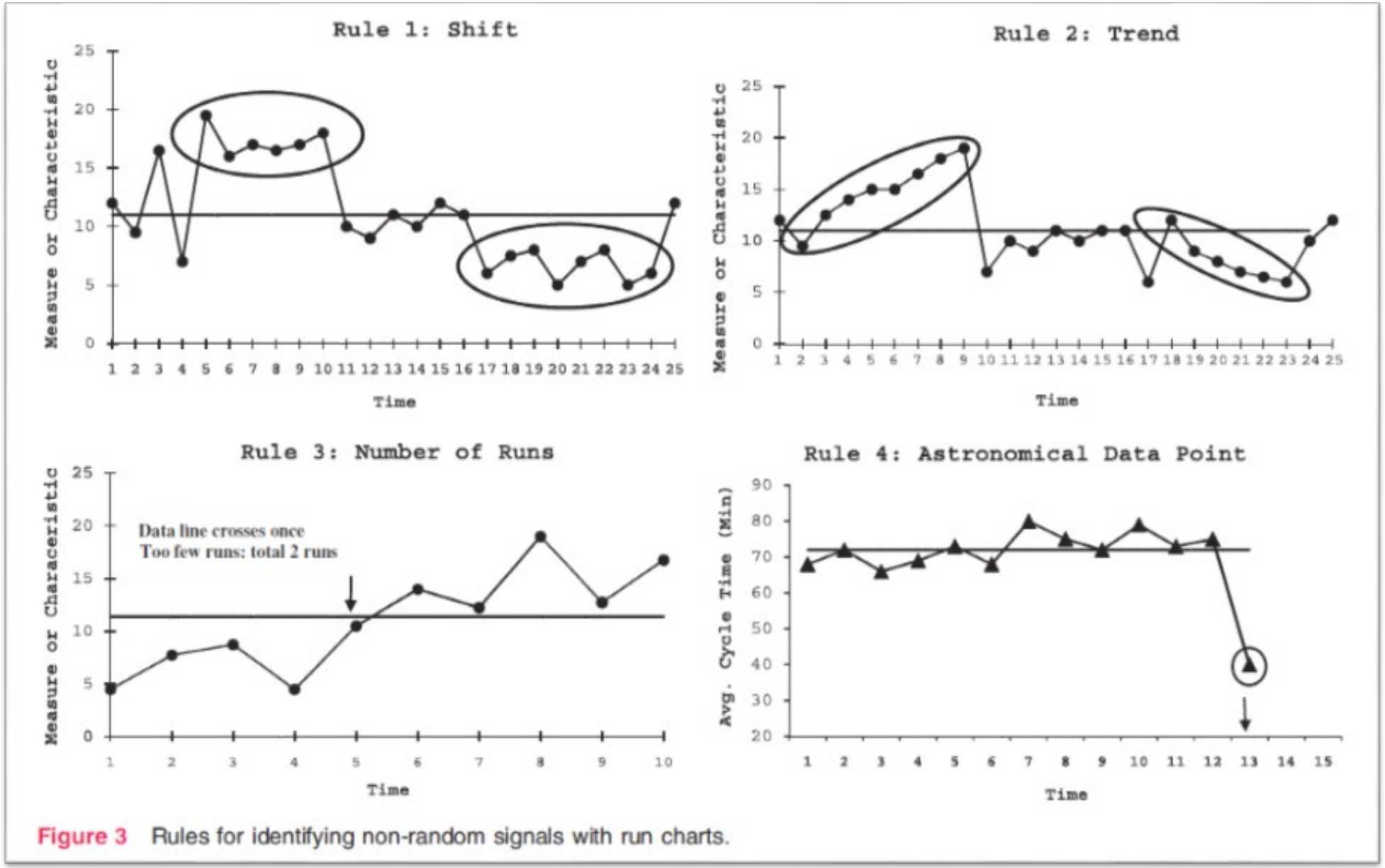


Figure 3 Rules for identifying non-random signals with run charts.

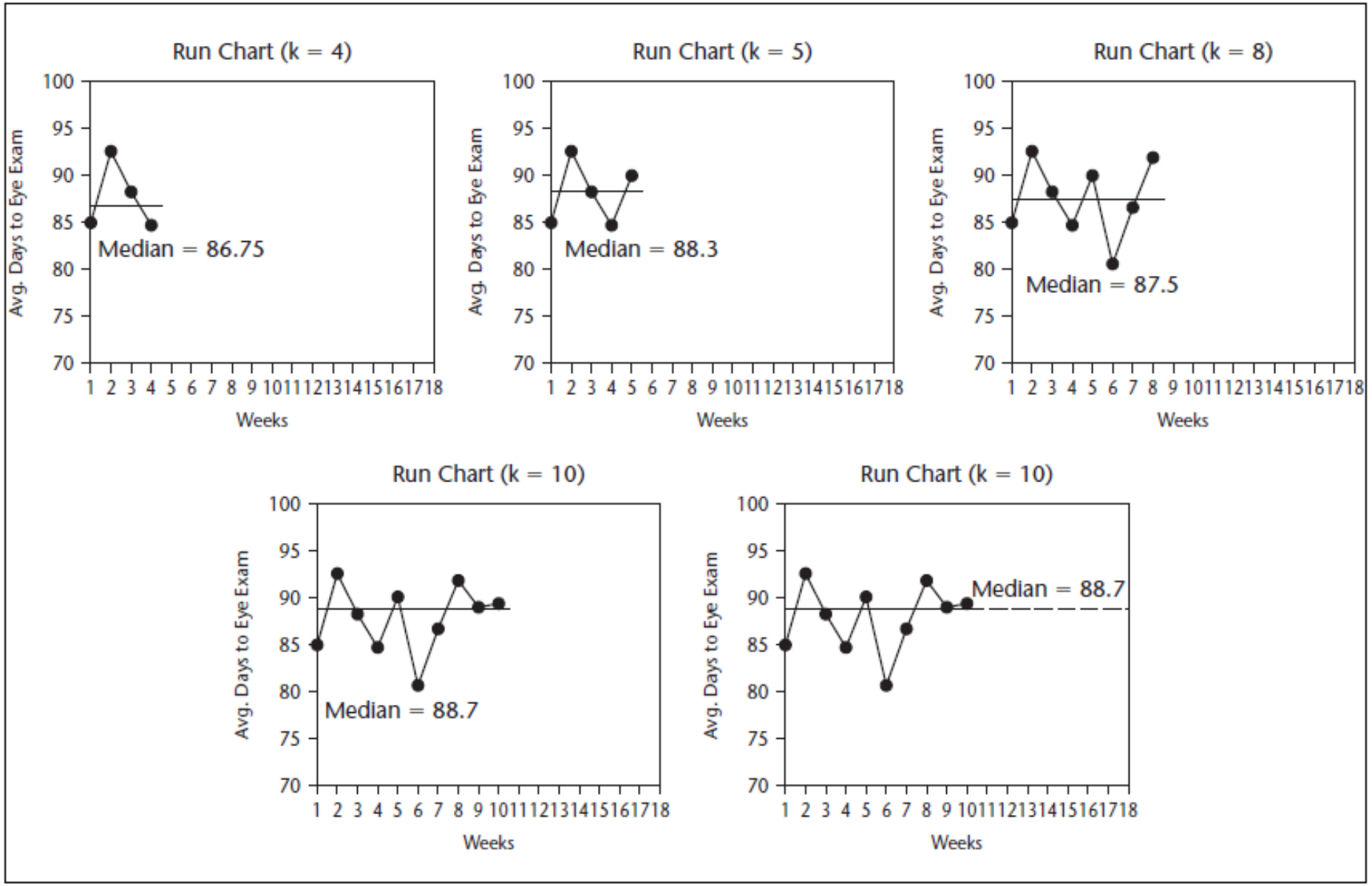
Why Bother…
What Do we Do With A Signal?

- Signals can be evidence of ***improvement***
  - That changes are adding up to improvement
- Signals can be evidence that ***things got worse***
  - Changes caused unexpected degradation of process or outcome
  - Something else entered the process resulting in a signal
- Action when seeing a signal?
  - ***Go learn*** from signal and take appropriate action

Proper Use of the Median

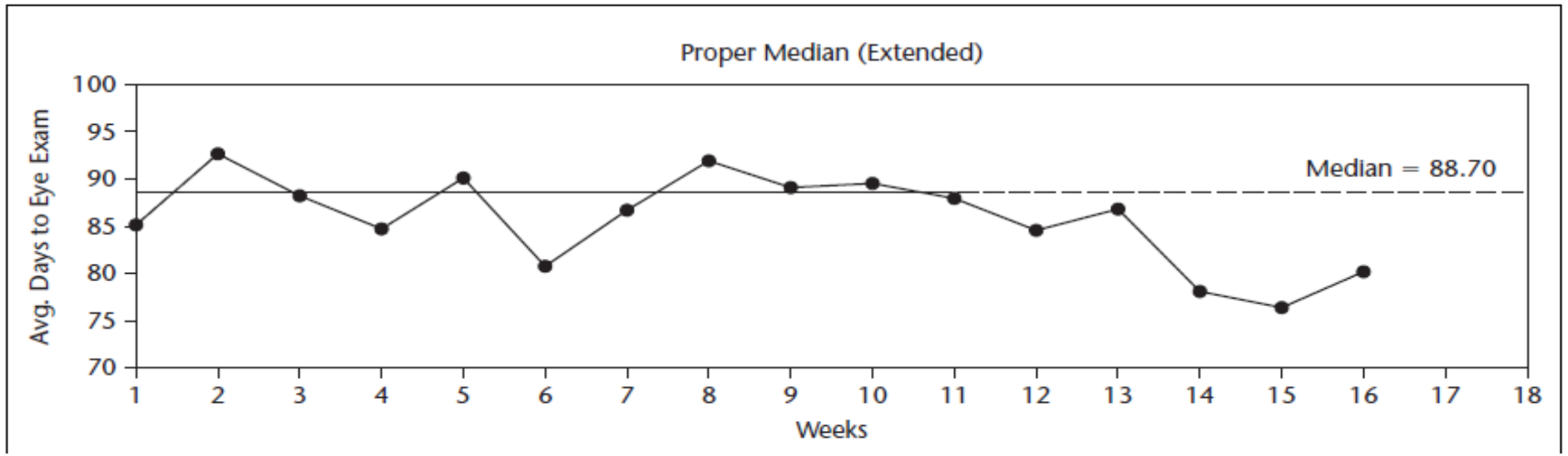
- When should we apply a median?
  - Will depend on your situation
  - If very little data baseline median may be only a few data points
  - If want to apply probability-based rules for analysis of run chart need 10 data points for median
- If graph shows no signals (shift, trend, runs astronomical) and median made from 10 or more data points **freeze and extend median** into the future.
  - This will result in earliest possible detection of signals

FIGURE 3.23 Run Charts for Waiting Time Data



If median not frozen / extended will be a delayed detection of signals

FIGURE 3.24 Delay Detecting Signal with Improper Median Technique



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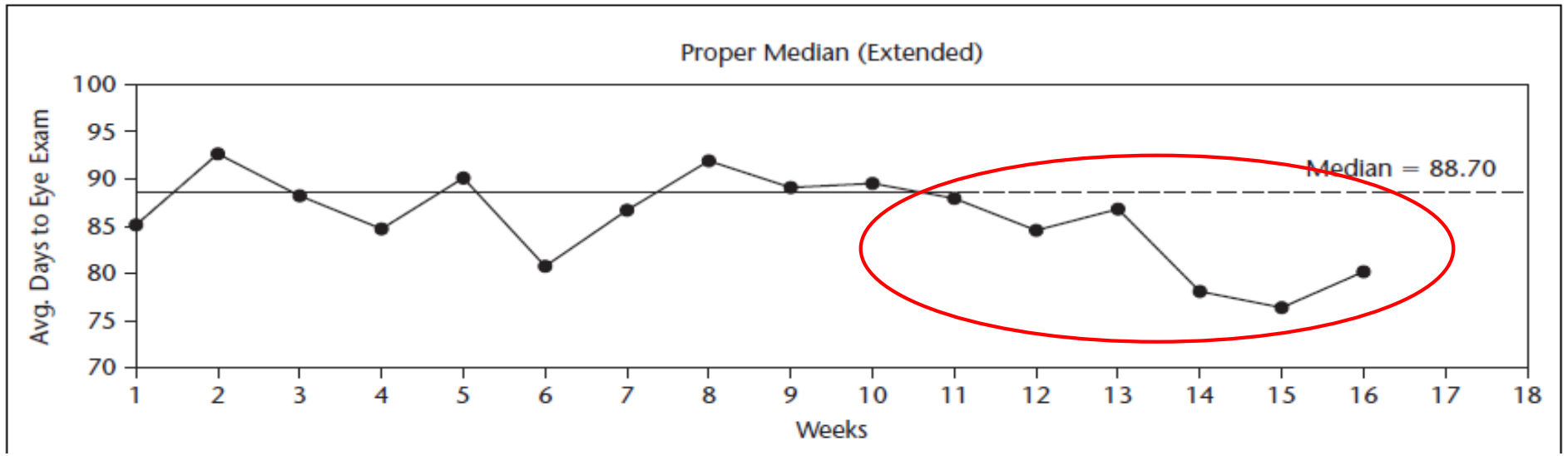

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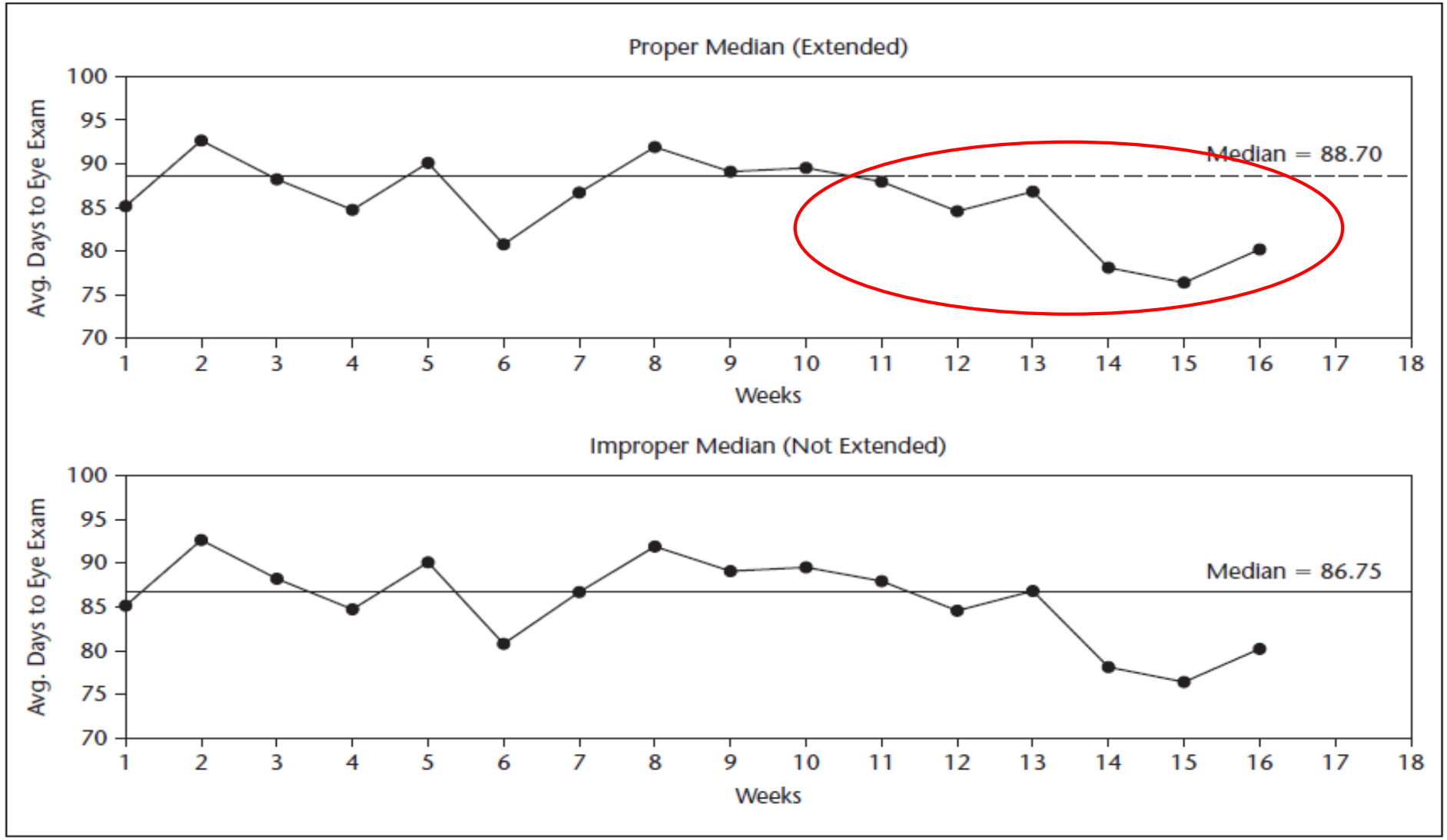
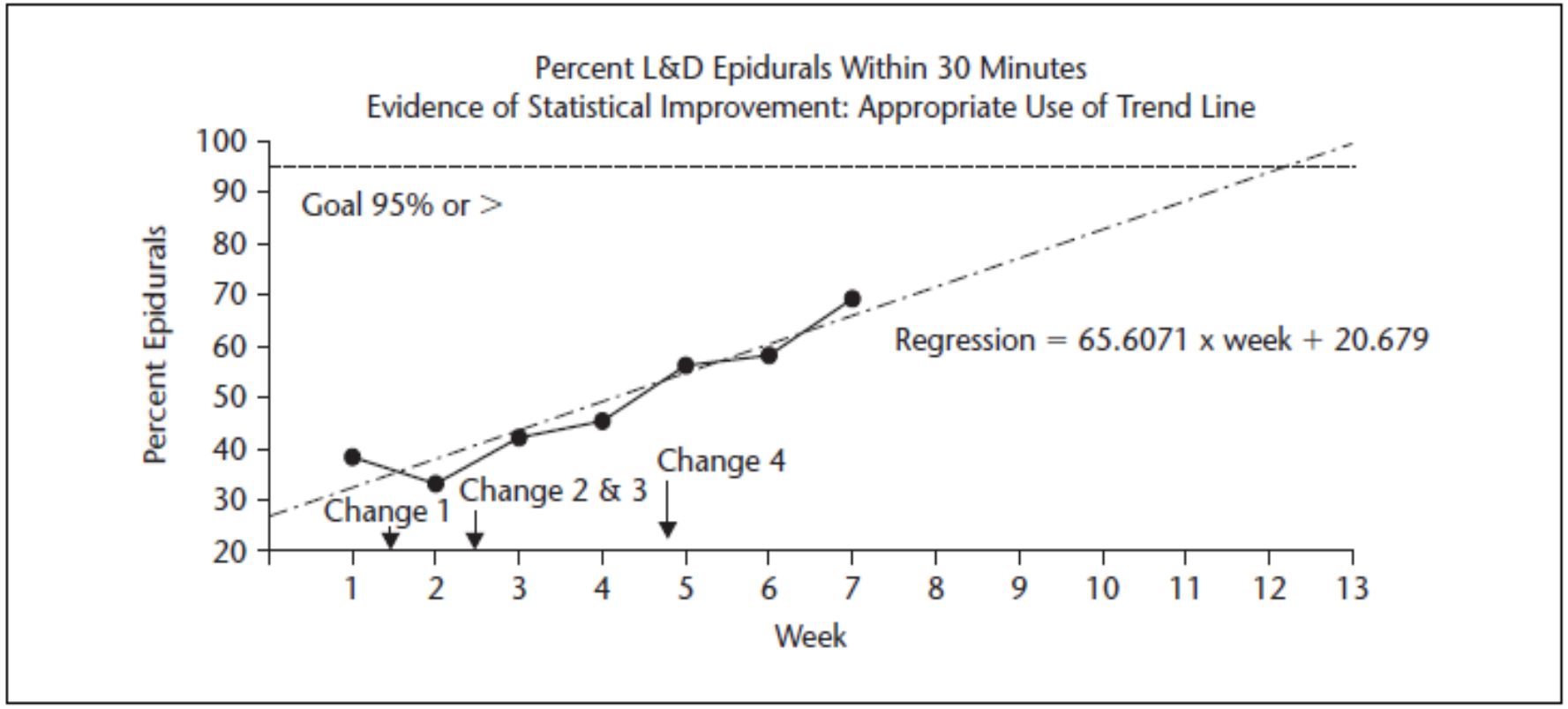


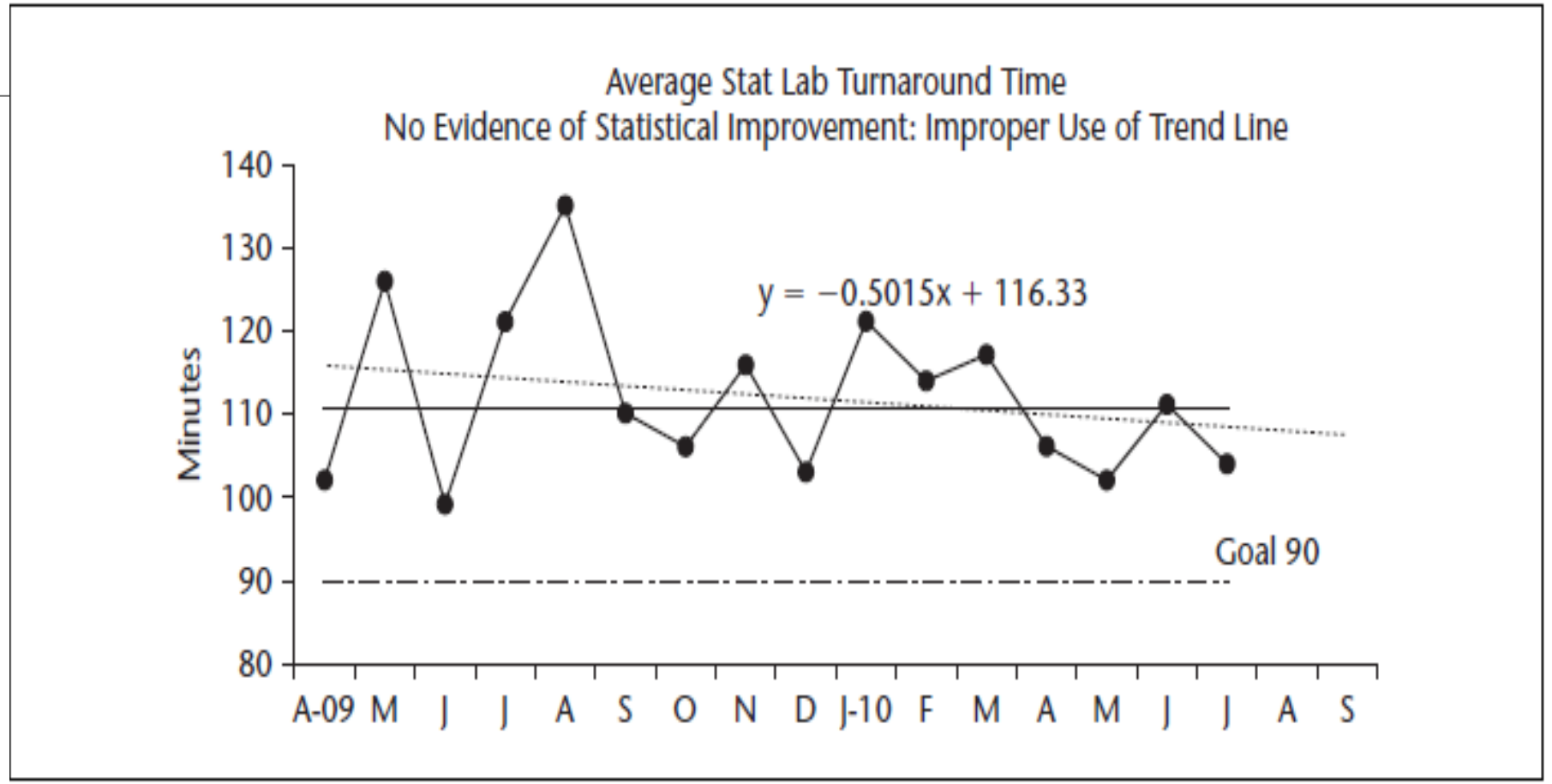
Trend Lines on Run Charts

FIGURE 3.38 Run Chart from Figure 3.22 with Seventh Week Added



Place only if detect signal on run chart

FIGURE 3.39 Run Chart with Inappropriate Use of Trend Line



No signal of improvement on chart, therefore improper to use trend line

Time for Interaction!

- Are you using run charts to analyze your data? How are you creating them?
- How often do your teams or leaders react to the last data point as opposed to understanding data points in the context of others?
- How often are you using “Red, yellow, green” tables or charts to evaluate project performance in QI? What do you think is the problem with that approach?
- What other questions do you have?

Control Charts

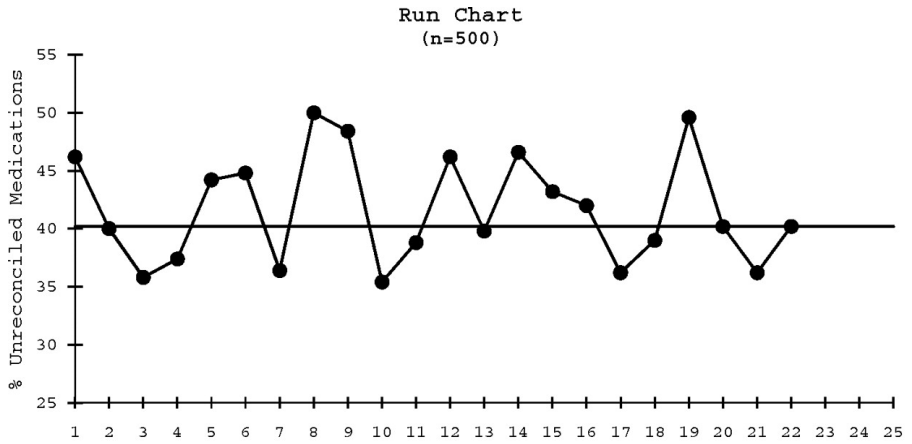
Why are Shewhart Charts preferred over Run Charts?

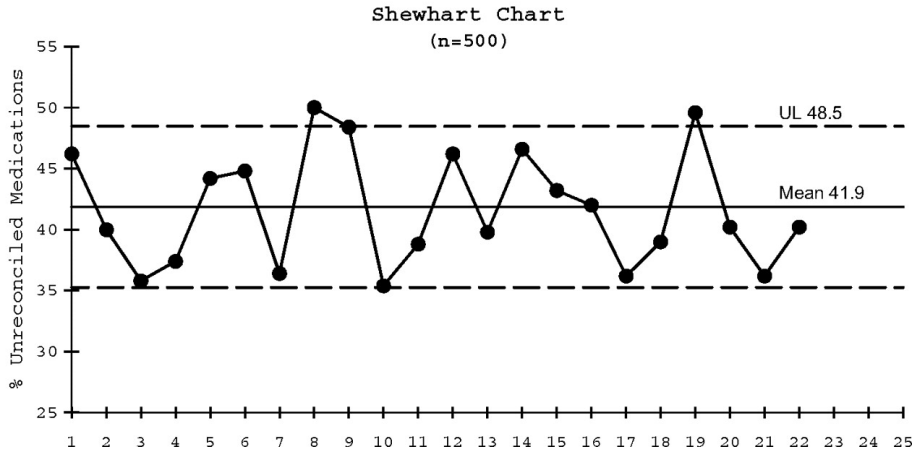
Because Control Charts…

1. Are more sensitive than run charts:
   - A run chart cannot detect special causes that are due to point-to-point variation (median versus the mean)
   - Tests for detecting special causes can be used with control charts
2. Have the added feature of control limits, which allow us to determine if the process is stable (common cause variation) or not stable (special cause variation).
3. Can be used to define process capability.
4. Allow us to more accurately predict process behavior and future performance.

Shewhart or Control Charts

- Used when you have at least 12 data points, but ideally 20 (converting from a run chart to a control chart).
- Also called a control chart, the Shewhart Chart is a statistical tool used to understand variation in a measure due to common and special causes.
- A Shewhart Chart has 3 lines: a center (mean) line, an upper limit line and a lower limit line (control limits).
- A mathematical equation is used to calculate the upper and lower limits of changes to be expected within the existing system (+/- 3 standard deviations)





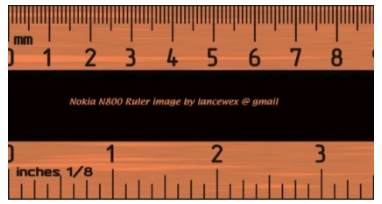
http://qualitysafety.bmj.com/content/20/1/46/F4.large.jpg

The choice of a Control Chart depends on the type of data you have collected

Continuous (Variables) Data

Time, money, scaled data (temperature, length, volume), workload or productivity (throughput, counts)





Attributes Data

Nonconforming Units

Defectives (classification)

percent that meet a particular criteria (OK vs not OK)
% of staff who receive QI training)
% of new inpatients with a skin assessment completed within 12 hours)

Nonconformities

Defects (count)

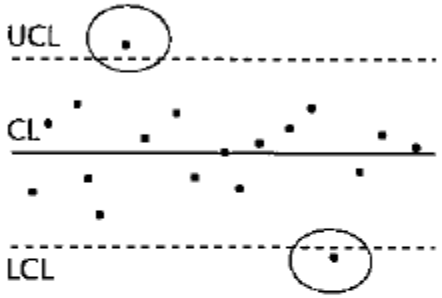
data are counted, not measured. Must be whole numbers.
(e.g., number of errors, falls or incidents)

5 Rules for Determining a Special Cause in Control Charts

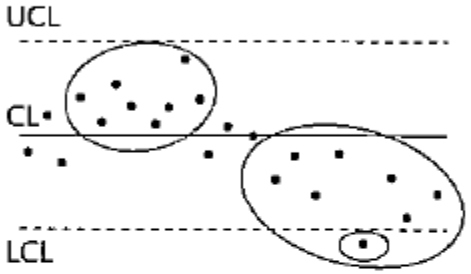
1. A **single point** outside the control limits
2. A run of **eight** or more points in a row above or below the center line
3. **Six** consecutive points in a row increasing (trend up) or decreasing (trend down)
4. **Two out of three consecutive points** near a control limit (outer one third of chart)
5. **Fifteen consecutive points** in a row near the center line (inner one third of the chart

FIGURE 4.5 Rules for Determining a Special Cause

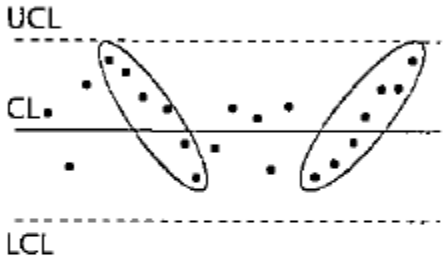
1. A single point outside the control limits.



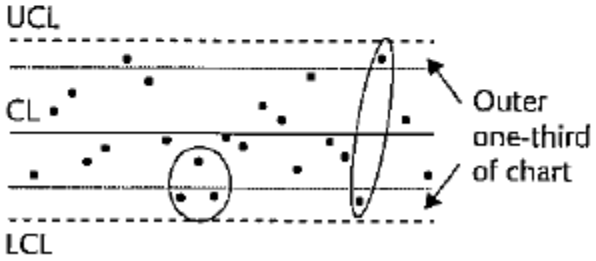
2. A run of eight or more points in a row above (or below) the centerline.



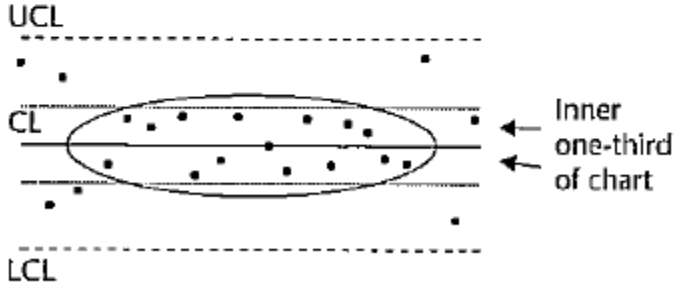
3. Six consecutive points increasing (trend up) or decreasing (trend down).



4. Two out of three consecutive points near (outer one-third) a control limit.



5. Fifteen consecutive points close (inner one-third of the chart) to the centerline.



“Special Cause” in Run vs. Control Charts

Rule	Run Charts	Control Charts
Consecutive increasing or decreasing points	5 (6, if more than 20 points)	6 (8, if more than 20 points)
Number of points on the same side of the center line.	6	8
Astronomical point	One “unusual” point	One outside the UCL or LCL
Points around the center line	Too few or too many crossings of center line	15 around the inner third
2 out of 3 in the outer third	N/A	Yes
Center line	Median	Mean
Control Limits	No	Yes (+/- 3 SD)

Shewhart Charts and Improvement

- Most common use in improvement activities is to learn about variation and the impact of changes
- These five rules can be used to provide evidence of an improvement (or unintended loss) to a process or system.
- These rules can also be used to point to losing ground in an improved area.

Any final questions?