

The Improvement Model/How to Improve

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Heartbeat Symposium

22 November 2010

Key Elements Required for Improvement

Will to do what it takes to change to a new system

Ideas on which to base the design of the new system

Execution of the ideas

The Improvement Model

- “This model is not magic, but it is probably the most single useful framework I have encountered in twenty years of my own work in quality improvement. It can guide teams, and provide an outline for oversight and review; it is thoroughly portable, applying usefully in myriad contexts”

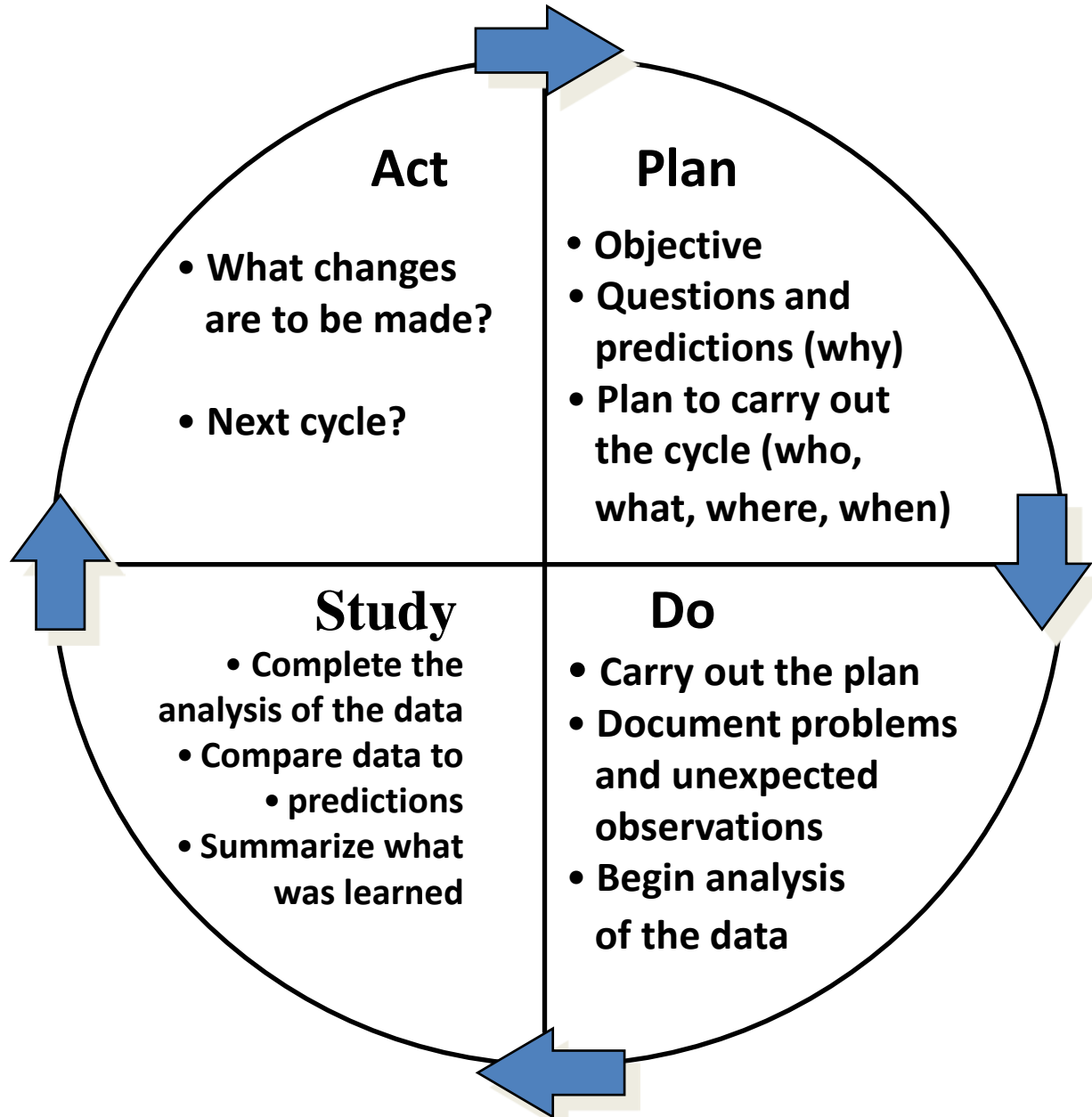
» Don Berwick , President IHI

Fundamental Improvement Questions

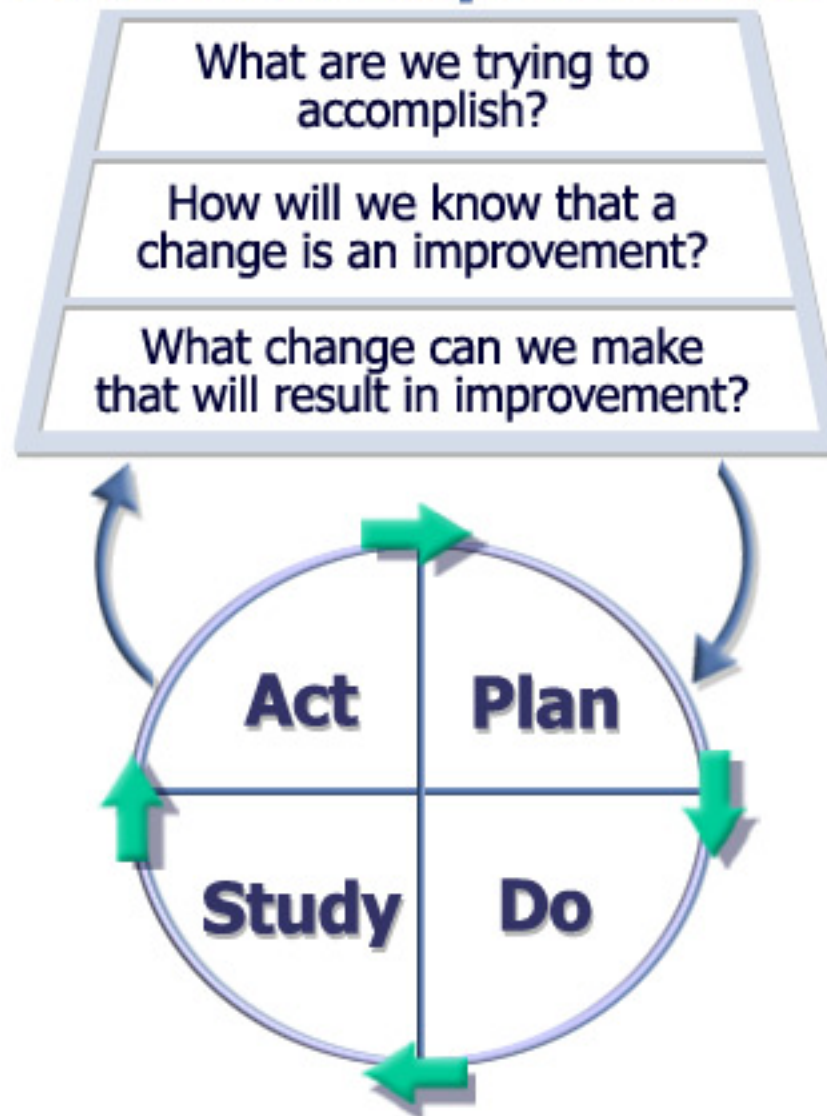
- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?



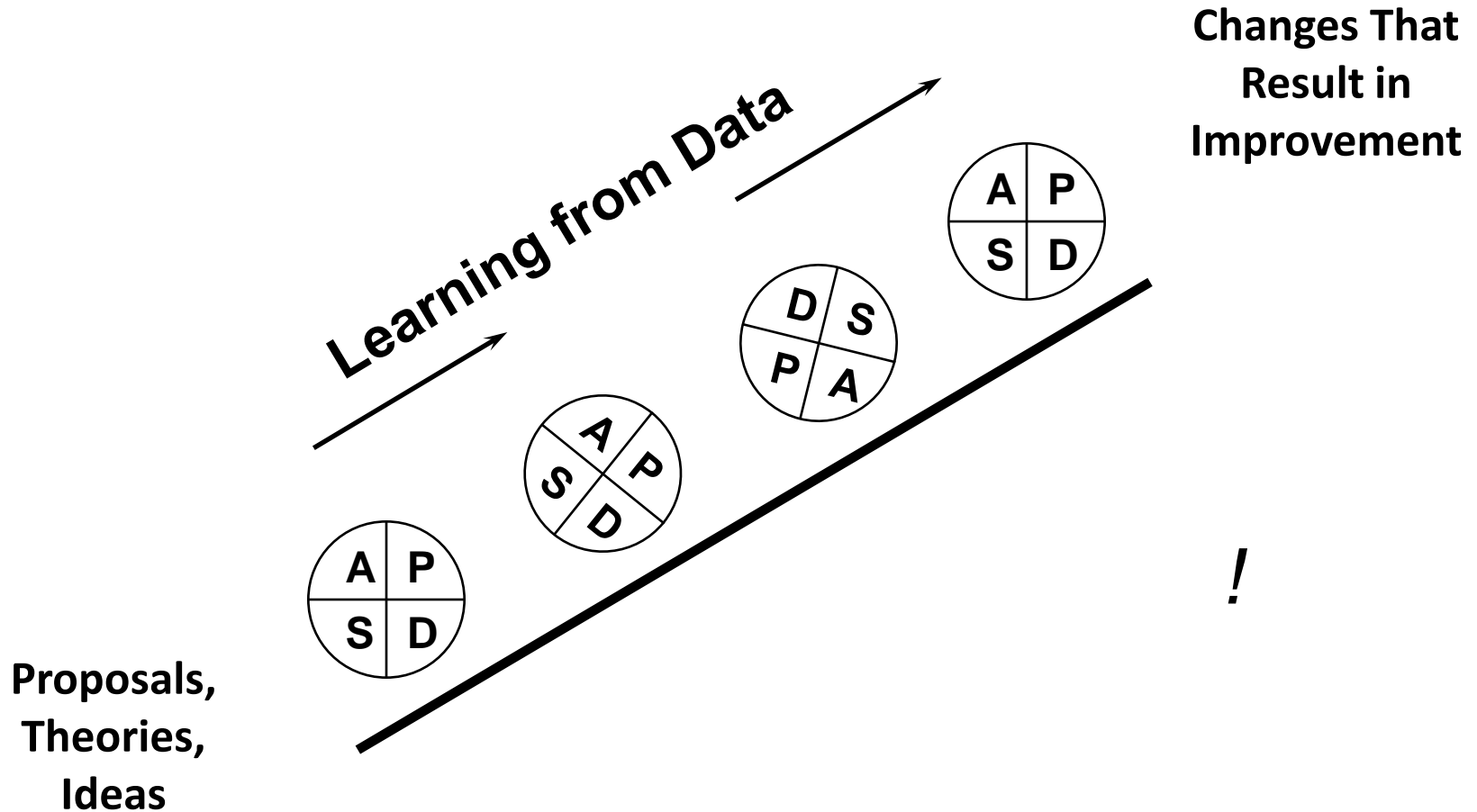
PDSA Cycle



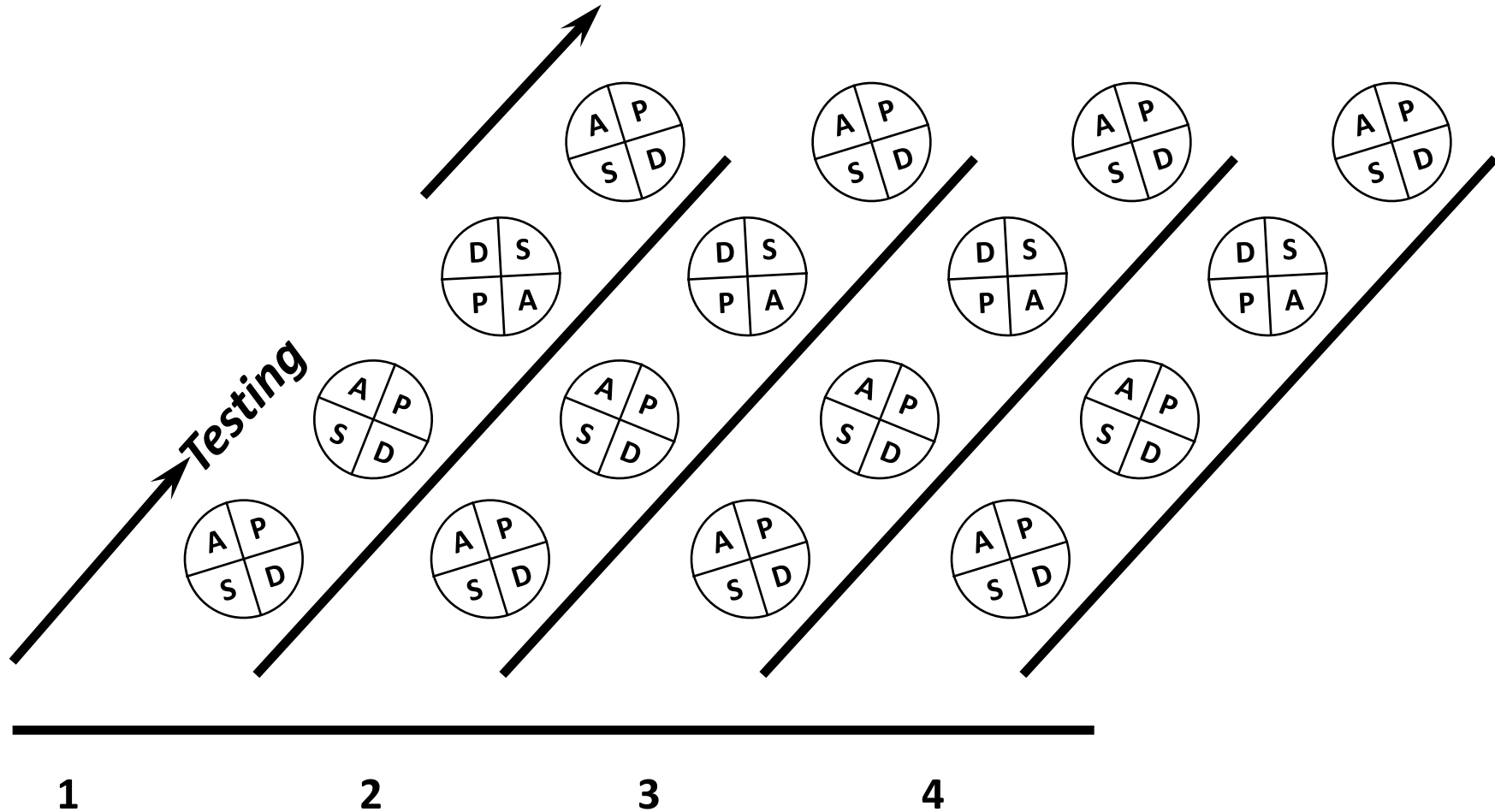
Model for Improvement



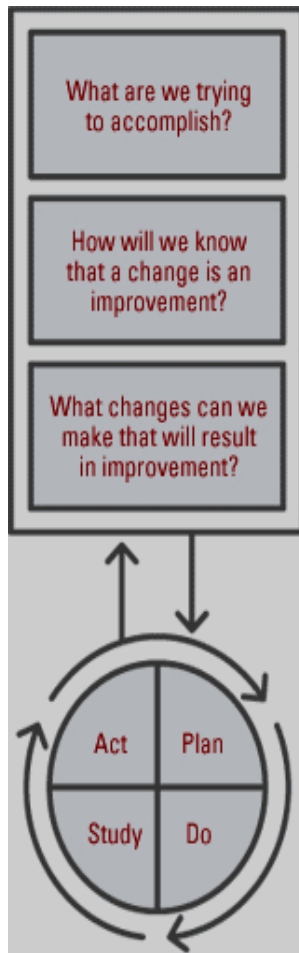
Repeated Use of the PDSA Cycle



Multiple PDSA Cycle Ramps



The Model for Improvement



- Set aims that are measurable, time-specific, and apply to a defined population
- Establish measures to determine if a specific change leads to improvement
- Select changes most likely to result in improvement
- Test the changes before implementing

T. Nolan et al. www.ihl.org

How to Improve

- Form the Team
- Set Aims
- Establish Measures
- Select Changes
- Test Changes
- Implement Changes
- Spread Changes

Forming the Team

- Including the right people is crucial
 - Review the aim
 - Consider the system that relates to that aim: what processes will be affected?
 - Be sure the team includes members familiar with all the different parts of the process
- Effective teams include members representing three different kinds of expertise:
 - System leadership
 - Clinical technical expertise
 - Day to day leadership

Set aims

- Improvement requires setting aims
- Aim should be time specific and measurable – how much by when
- Define specific group of patients affected
- Team must agree the aim
- Allocating people and resources necessary to accomplish the aim is crucial

Establish Measures...

- Critical for knowing whether or not changes introduced are leading to improvement
- Measurement for learning, not for judgement or comparison
- All measures have limitations, but the limitations do not negate their value
- Three types of measures:
 - Outcome measures
 - Process measures (want real time process measures)
 - Balancing measures
- Need baseline measures

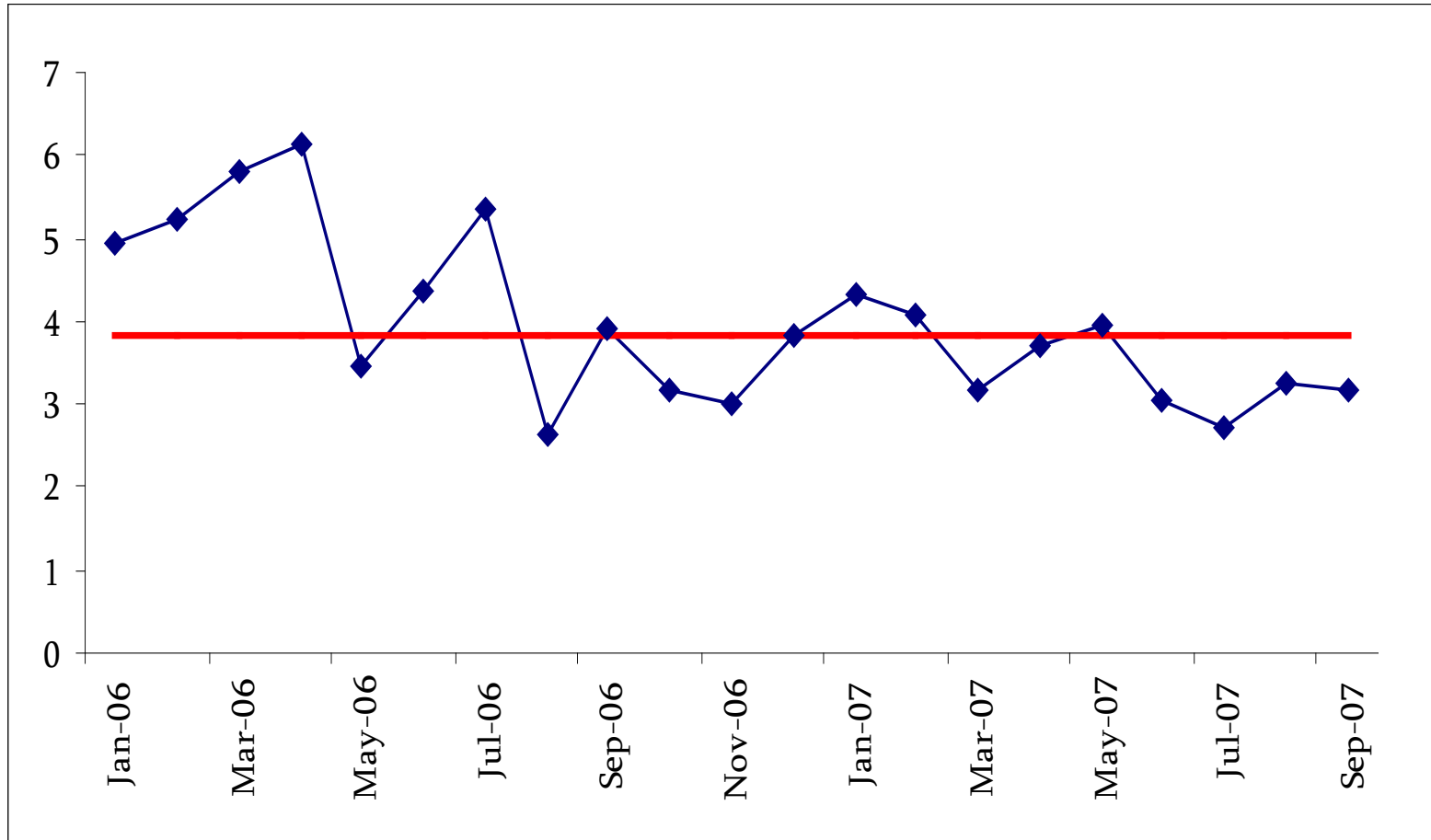
Three Types of Measures

- Outcome Measures: (Directly related to your aim) Voice of the patient. How is the system performing? What is the result?
- Process Measures: (Measuring the activities/processes you have introduced to achieve your aim) Voice of the workings of the system. Are the parts/steps in the system performing as planned?
- Balancing Measures: Looking at a system from different directions/dimensions. What happened to the system as we improved the outcome and process measures? (e.g. unanticipated consequences, other factors influencing outcome, robbing Peter to pay Paul)

Measurement Guidelines

- Need a balanced (outcome, process and balancing) set of 3 to 8 measures reported each month to assure that the system is improved
 - Focus on the vital few
- Very carefully define each of the measures (numerator and denominator)
 - *examples* of outcome measures : mortality rate following AMI; % of patients who received all elements of AMI care bundle; % of patients who had timely reperfusion
 - *examples* of process measures: % of AMI patients on B blocker at discharge; % of patients offered smoking cessation counseling; % of patients who had timely reperfusion
- Begin reporting your measures immediately
- Develop run charts (graphs) to display your measures each month
- Report an appropriate sample size (usually the denominator) with measures each month : a random sample of 20 or all (if less than 20) is usual
- Integrate measurement into daily routine
- Plot data for the measures over time and annotate graph (run chart) with changes
- Make run charts visible – provides important feedback

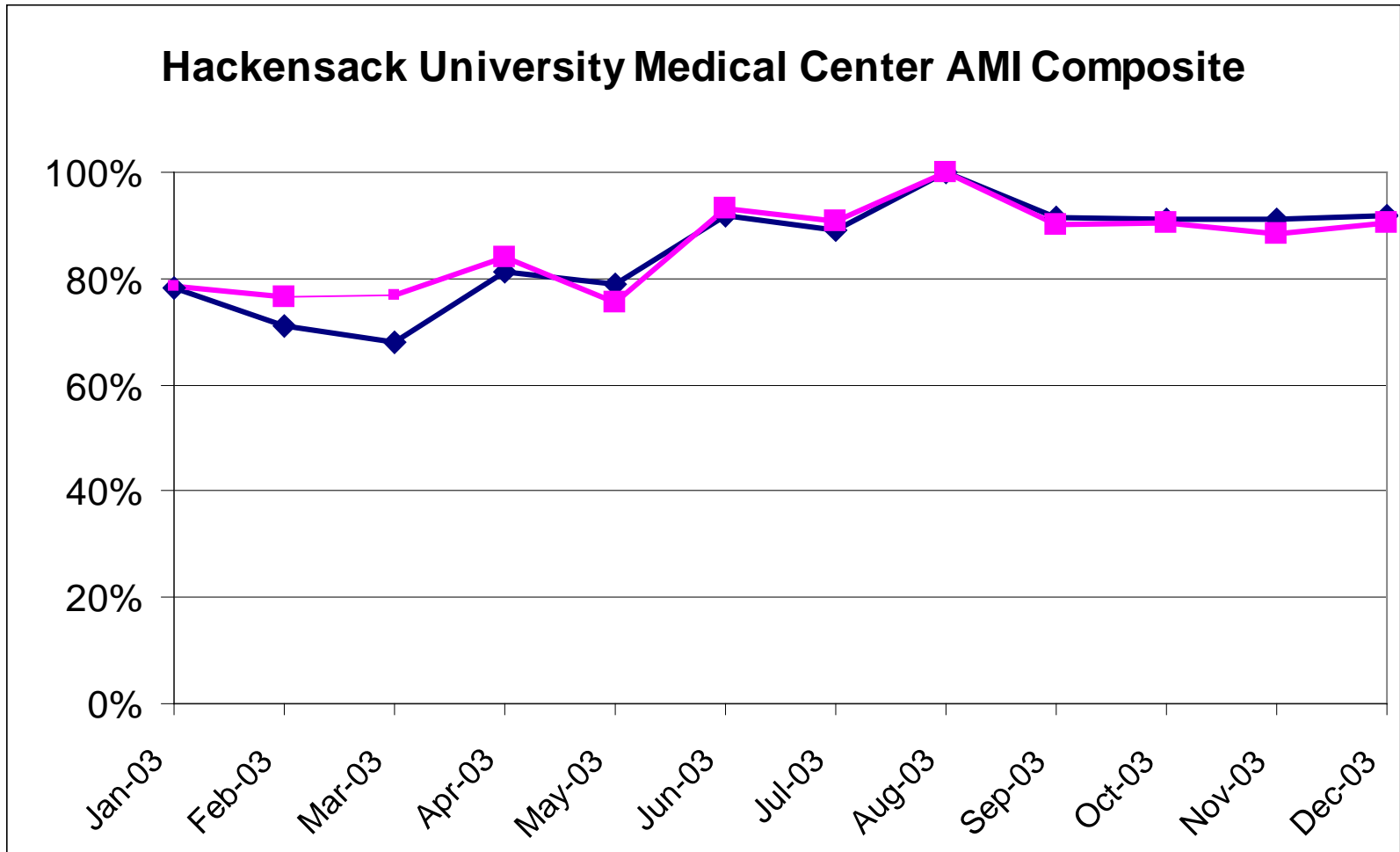
Run Chart



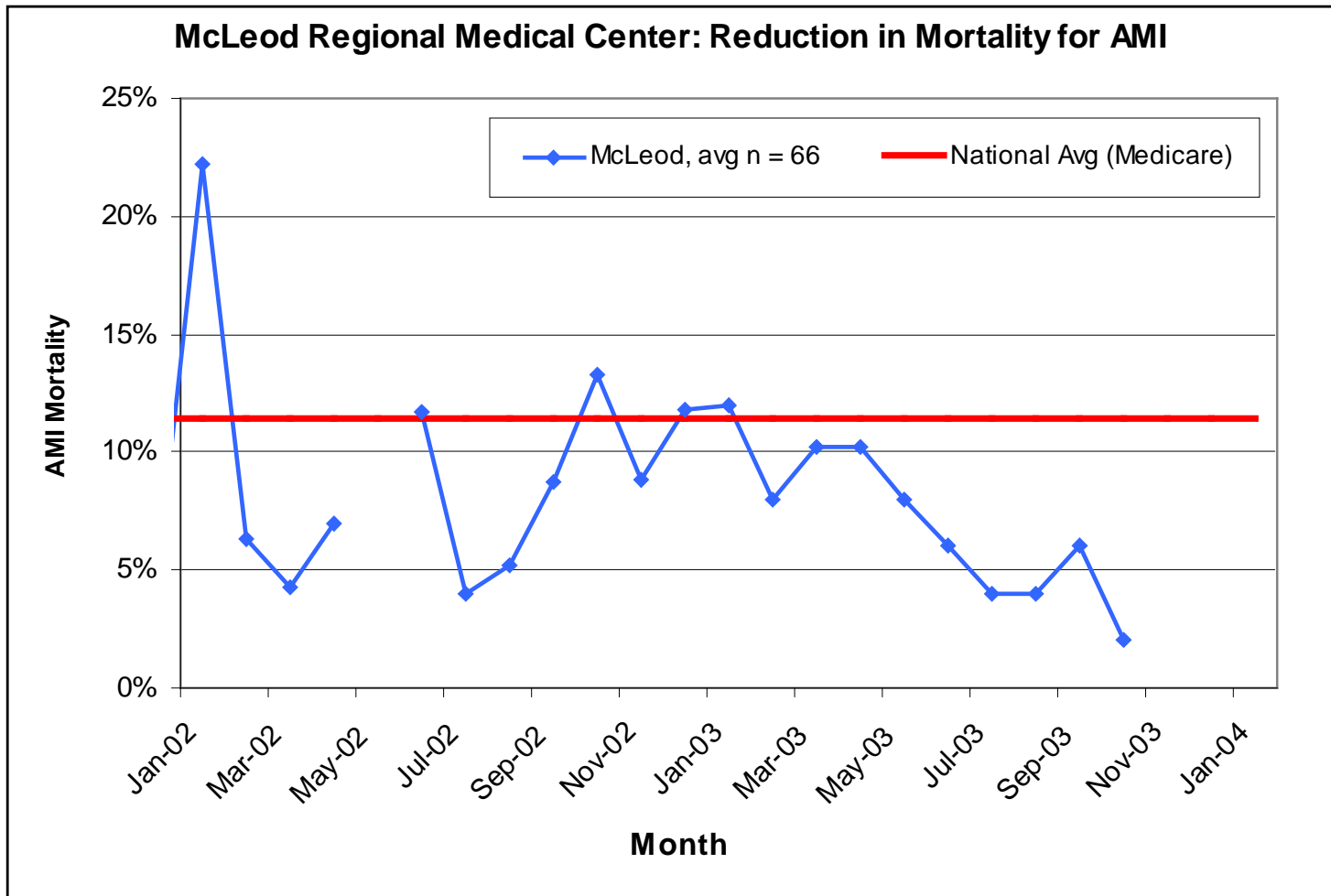
Run chart

- Displays data to make performance visible
- Determines if change resulted in improvement
- Should begin when first data point available
- Key changes made to care systems can be annotated on chart to facilitate learning
- Determines if improvements made are maintained

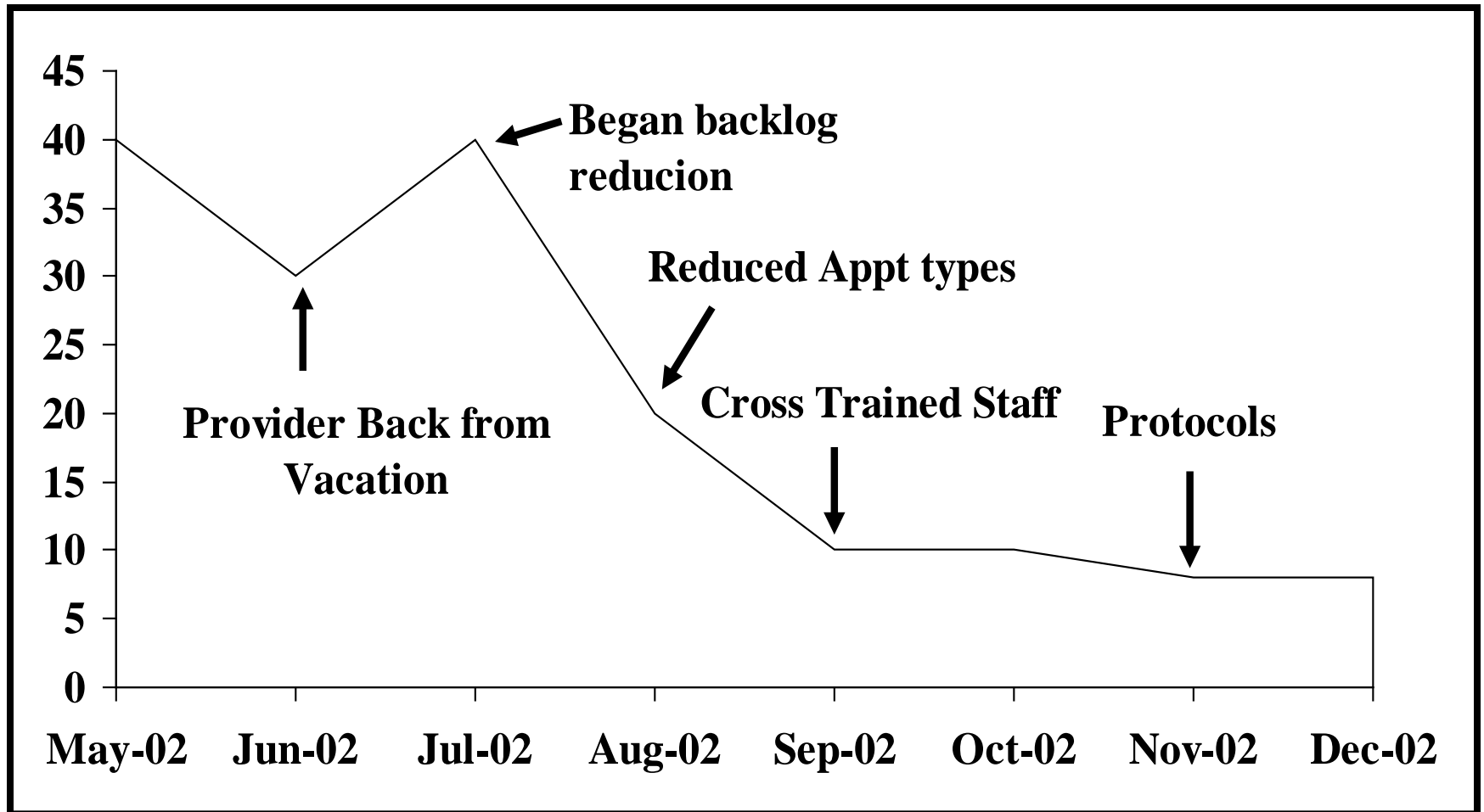
Successful Implementation

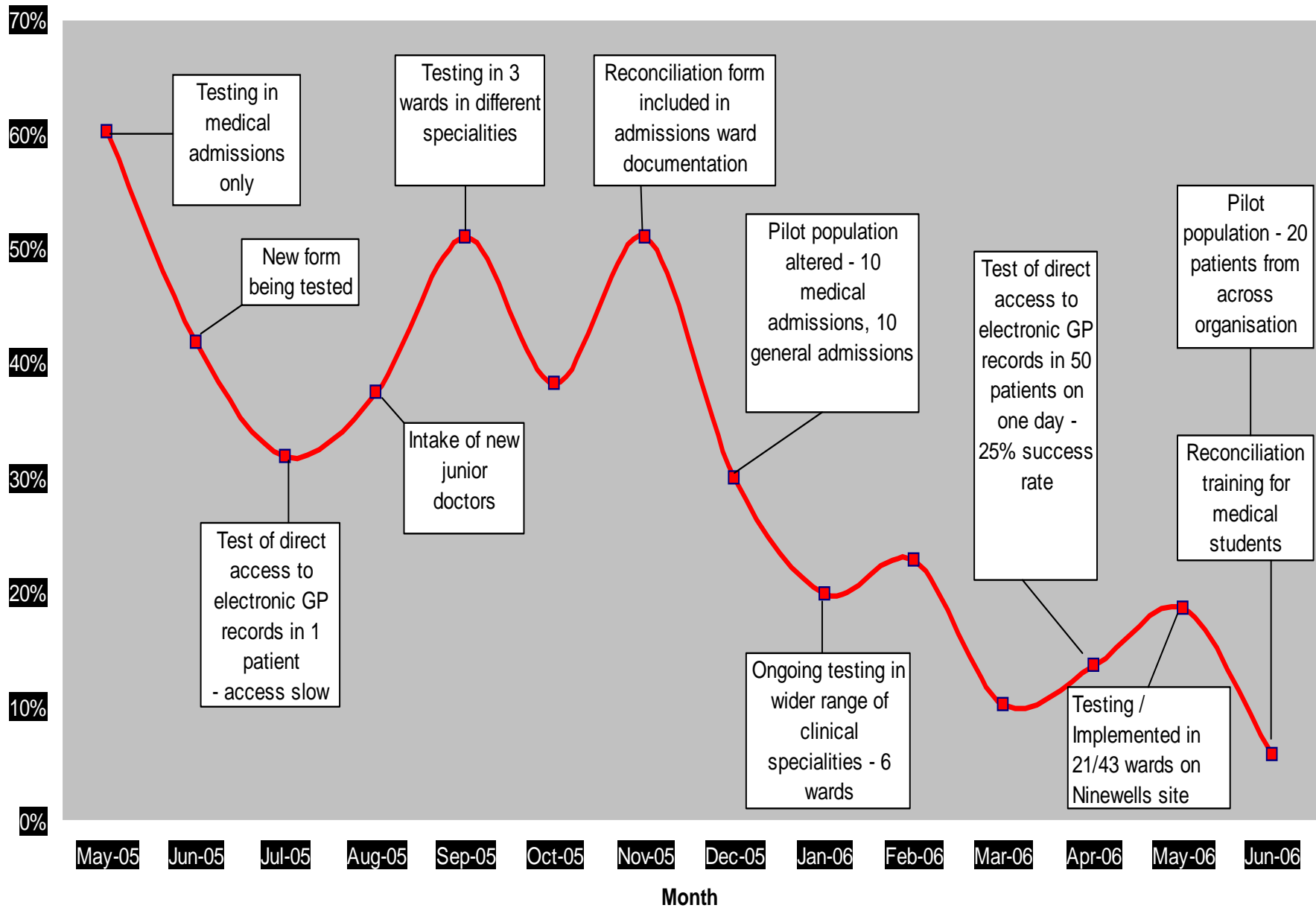


Successful Outcome Improvement: McLeod



Example of Annotated Run Chart: Improved Access





Select Changes

- All improvement requires change (although all change does not lead to improvement!!)
- Changes for providing perfect AMI care are “given”
- In circumstances where evidence based changes don't exist one can use hunches, theories, ideas and use small rapid cycle testing (eg *how* to ensure that patient receive timely reperfusion)

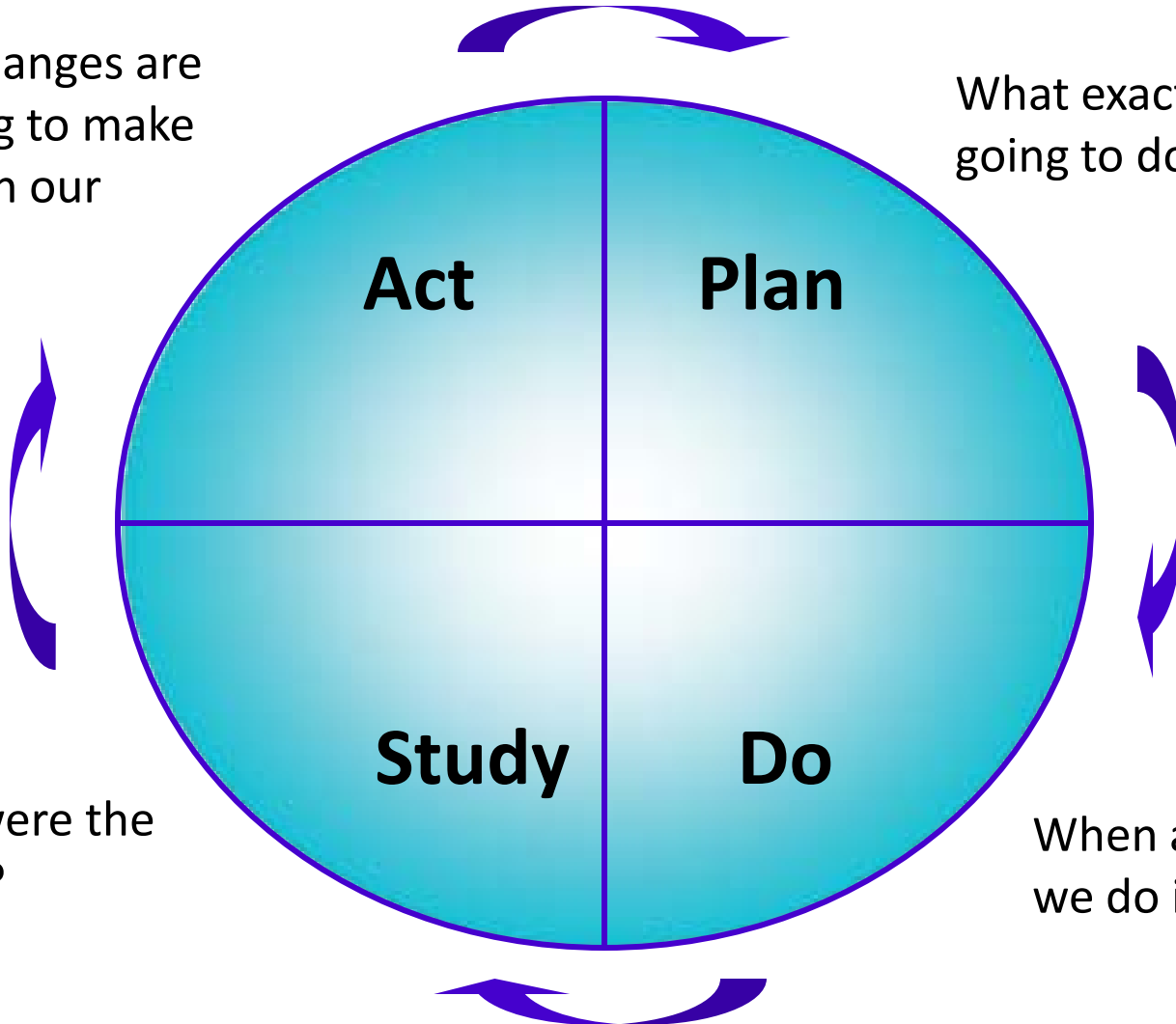
Test Changes

- PDSA (Plan,Do, Study,Act)–shorthand for testing a change
- Small *rapid scale* testing
 - Minimises resistance
 - Indicates whether proposed change will work in environment in question
 - Provides opportunity to refine change as necessary before implementing on a broader scale
 - Rapid cycle starts with e.g. One doctor, one nurse, one patient ,.....moving to
 - 1, 3, 5, all!
 - These changes happen in hours and days not weeks and months

Plan, Do, Study, Act

What changes are we going to make based on our findings

What exactly are we going to do?

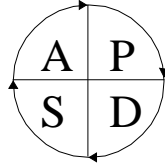


What were the results?

When and how did we do it?

**Use a PDSA form
to organize,
standardize and
document your
tests!**

MODEL FOR IMPROVEMENT CYCLE:____DATE:____



Objective for this PDSA Cycle

PLAN:

QUESTIONS:

PREDICTIONS:

PLAN FOR CHANGE OR TEST: WHO, WHAT, WHEN, WHERE

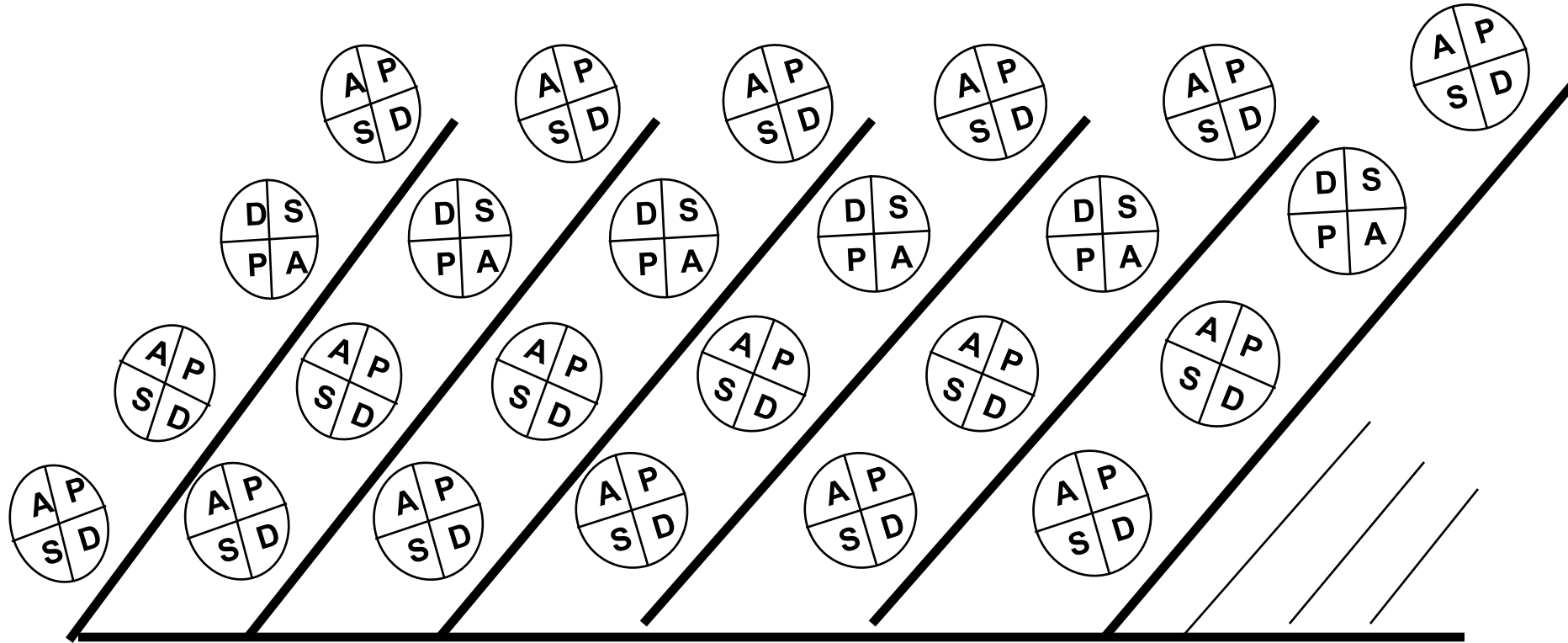
PLAN FOR COLLECTION OF DATA: WHO, WHAT, WHEN, WHERE

DO: CARRY OUT THE CHANGE OR TEST; COLLECT DATA AND BEGIN ANALYSIS.

STUDY: COMPLETE ANALYSIS OF DATA; SUMMARIZE WHAT WAS LEARNED.

ACT: ARE WE READY TO MAKE A CHANGE? PLAN FOR THE NEXT CYCLE.

Overall Aim:



Change
Idea 1

Change
Idea 2

Change
Idea 3

Change
Idea 4

Change
Idea 5

Change
Idea 6

Other change Ideas

Develop Changes based on the Change Ideas

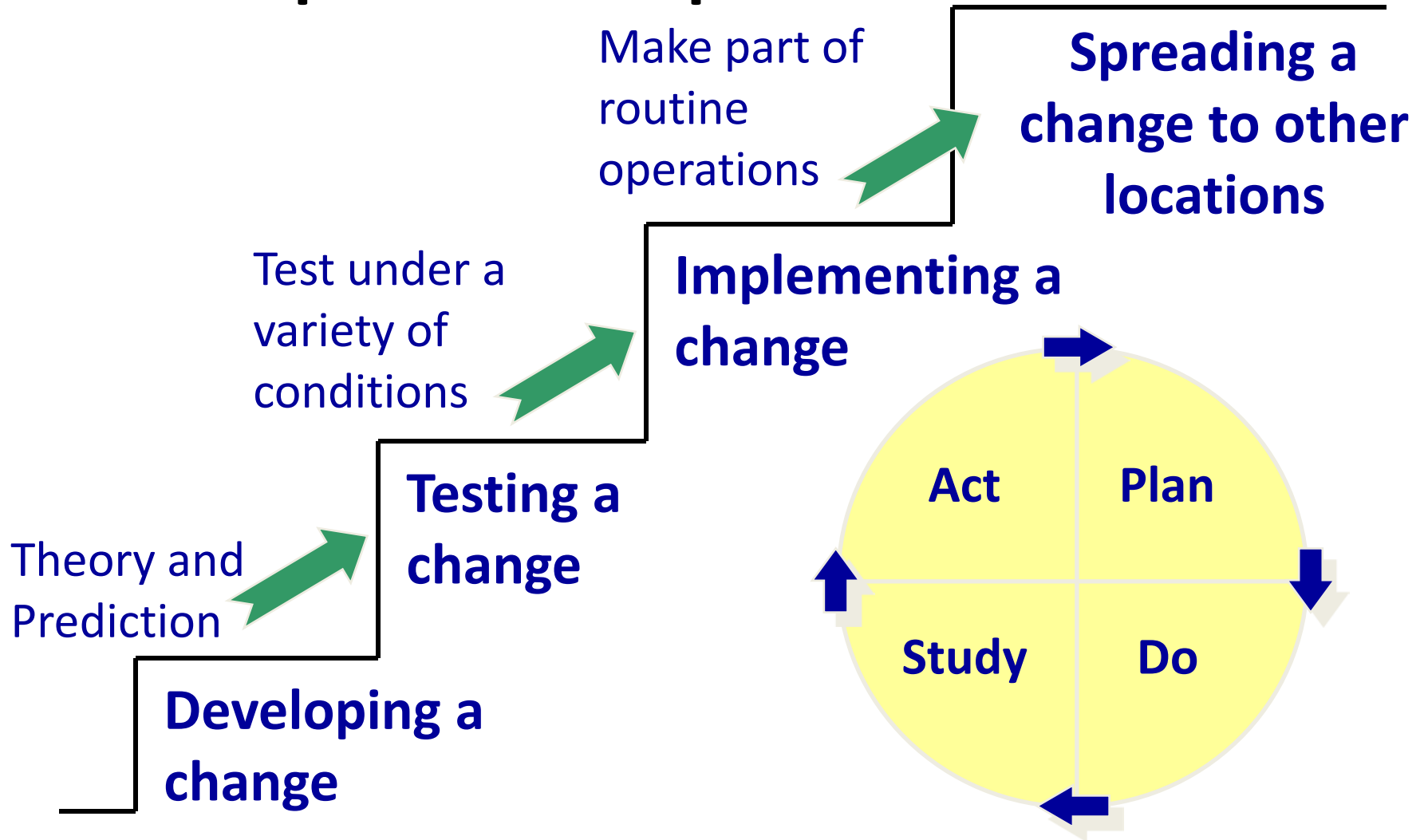
Implement Changes

- After small scale testing, learning and refining through several PDSA cycles a change is ready for implementation on a broader scale –eg entire pilot population or entire unit
- Implementation is a permanent change and involves building change into the organisation
- Support processes need to be developed
- Failures are not expected
- Increased resistance to the change can be expected as more people are involved
- Also requires use of PDSA cycle but takes longer than rapid test cycles

Spread Changes

- Taking a successful implementation from a pilot unit/population and replicating in other parts of the organisation or other organisations
- Benefits from use of PDSA cycle

The Sequence of Improvement



Real Time Audit

- Usefulness of real time auditing has been repeatedly demonstrated in industry
- Provides real time process measures where changes for improvement have been introduced (eg next 5 patients, 5 charts per day, 5 charts per week etc as appropriate)

Traditional v Real time Process Audit

- Traditional Audit
 - Long time scales reflect historical practice
 - Feedback often occurs after many relevant staff have moved on
 - Done for purposes of formal evaluation
- Real time Audit
 - Reflects current practice
 - Provides the quick timely feedback necessary for focused improvement
 - Done to engage staff directly in continuous improvement efforts

Ground Rules for Process Audit

- Should be part of the work routine
- Not to be used to compare one area to another
- A learning safety culture is necessary –information for learning not judgement
- Results openly shared and reviewed by all staff
- Findings used to drive improvement

Key References

- Langley, G. *et. al.* *The Improvement Guide*. Jossey-Bass Publishers, San Francisco, 2009 (2nd Edition).
- Solberg, L. *et. al.* "The Three Faces of Performance Improvement: Improvement, Accountability and Research." *Journal of Quality Improvement* 23, no.3 (1997): 135-147
- Institute for Healthcare Improvement : www.ihl.org
- <http://www.ihl.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove/>

Measurement Assessment

Content Area: _____

Measure	Is this measure logical? (Yes/No)	Are there alternatives to the current measure? If so, what are they?	Are the operational definitions clear?	Are the data collection procedures reasonable?	What challenges exist to collecting this measure?

The Three Faces of Performance Measurement

Aspect	Improvement	Accountability	Research
<u>Aim</u>	Improvement of care	Comparison, choice, reassurance, spur for change	New knowledge
<u>Methods:</u> • Test Observability	Test observable	No test, evaluate current performance	Test blinded or controlled
• Bias	Accept consistent bias	Measure and adjust to reduce bias	Design to eliminate bias
• Sample Size	“Just enough” data, small sequential samples	Obtain 100% of available, relevant data	“Just in case” data
• Flexibility of Hypothesis	Hypothesis flexible, changes as learning takes place	No hypothesis	Fixed hypothesis
• Testing Strategy	Sequential tests	No tests	One large test
• Determining if a Change is an Improvement	Run charts or Shewhart control charts	No change focus	Hypothesis, statistical tests (t-test, F-test, chi square), p-values
• Confidentiality of the Data	Data used only by those involved with improvement	Data available for public consumption and review	Research subjects' identities protected