PDCA/Process Improvement

Objectives

- Discuss how processes are used in healthcare
- List the three types of outcomes any process can have
- List the implications of process improvement that relate to infection prevention.

Definition: A Process

... a series of linked steps, often but not necessarily sequential, designed to ...cause some set of outcomes to occur

- cause some set of outcomes to occur
- transform inputs into outputs
- generate useful information
- add value

You Get What You Design

Every system is perfectly designed to produce the results that it achieves.

Dr. Don Berwick, quoting Dr. Paul Batalben

Institute for Healthcare Improvement, Boston

Perfectly Designed….

The American health care system is perfectly designed to produce dazzling technologies, well-trained professionals, high costs, serious safety risks, many needless deaths, underuse, overuse, and misuse of resources, mind-boggling administrative waste, lack of access for a significant number of Americans, and distrust and dissatisfaction for virtually everyone.

Jim Reinertsen, MD

Process Management

- Start with knowledge of
  - Processes
  - Systems (processes interacting together)
  - Human psychology
  - Variation
  - A system for ongoing learning

- Build a rational system to *manage processes*

- What you get is *quality improvement theory*.

Three Classes of Outcomes

- **Physical outcomes**
  - medical outcomes: complications and therapeutic goals
  - includes functional status measures (patient perceptions of medical outcomes)
- **Service outcomes**
  - satisfaction: patients and families, communities, professionals, purchasers, and employees
  - includes access issues (e.g., waiting times)
- **Cost outcomes**
  - just another outcome of a clinical process
  - includes the cost of the burden of disease

Physical Outcomes

- Four types:
  1. Appropriateness (referral and procedure indications)
  2. Complications (process failures / defects)
  3. Therapeutic goals / biologic function (when stated in the negative, merges with defects)
  4. The patient's ability to function (functional status, as reported by the patient)

Service Outcomes

- Two types:
  1. *The physician-patient relationship* (bedside manner: a "caring and concerned" clinician)
  2. *Access issues:* convenience vs. hassle (scheduling, travel times, registration, physical comfort, wait times, etc.)
- Operate by a separate process independent of medical outcomes
- Service outcomes directly affect market share, community perceptions, customer relations, and rates of malpractice lawsuits

Cost Outcomes

- Quality controls cost.
- More accurately, quality and cost are two sides of the same coin ...
- (Similarly, cost controls access.)

Managing a Process Means

the right *data*

…in the right *format*

…at the right *time* (and place)

…in the right *hands* (the clinicians who operate the process)

Types of quality problem

1. **Conformance problems** - People
2. **Unstructured/ non-standardized processes**
3. **Efficiency problems**
4. **Process failure/ error issues** – People & processes

Identifying a problem

- **“Problem”:**
- any deviation between what “should be” and what “is” that is important enough to need correcting

- **Problem Solving:**
- the activity associated with changing the state of what “is” to what “should be”
- **The reality is there are *always* problems/ *“opportunities for improvement”***

Benchmarking against best-practices

- *Look at performance ‘outliers’ against defined standards*
- *Wide variation in performance – Chaos?*
- *Walk arounds – awareness as supervisors/ managers of what happens by directly observing how things are done*
- *Solicit feedback from customers*
- *against best-practices*
- *Look at performance ‘outliers’ against defined standards*
- *Wide variation in performance – Chaos?*
- *Walk arounds – awareness as supervisors/ managers of what happens by directly observing how things are done*

Problem definition/ validation

- The more focused the problem definition, the fewer resources necessary to generate a solution:
  - *who does it affect / does not affect.*
  - *what does it effect / does not affect.*
  - *how does it effect / does not affect.*
  - *when is it a problem / is not a problem.*
  - *where is it a problem / is not a problem*
  - *What are the various impacts of the problem?*
  - ***Where do we stand against benchmarks/ agreed standards?***
  - ***Why do we care?***

PDCA

Act

- Determine if change(s) should be made
- Plan for next test
- Act to hold gains, continue to improve

Plan

- Plan 1 small change to test
- Predict what will happen
- Decide on data to evaluate test

Check

- Analyze the data
- Compare results to predictions
- Summarize what was learned

Do

- Run the test

i.e. put the change temporarily into the daily process

- Collect data

Reflecting on the PDCA Cycle

Identification of the issue

Define the problem

Theorize what is going on, understand/ diagnose problems

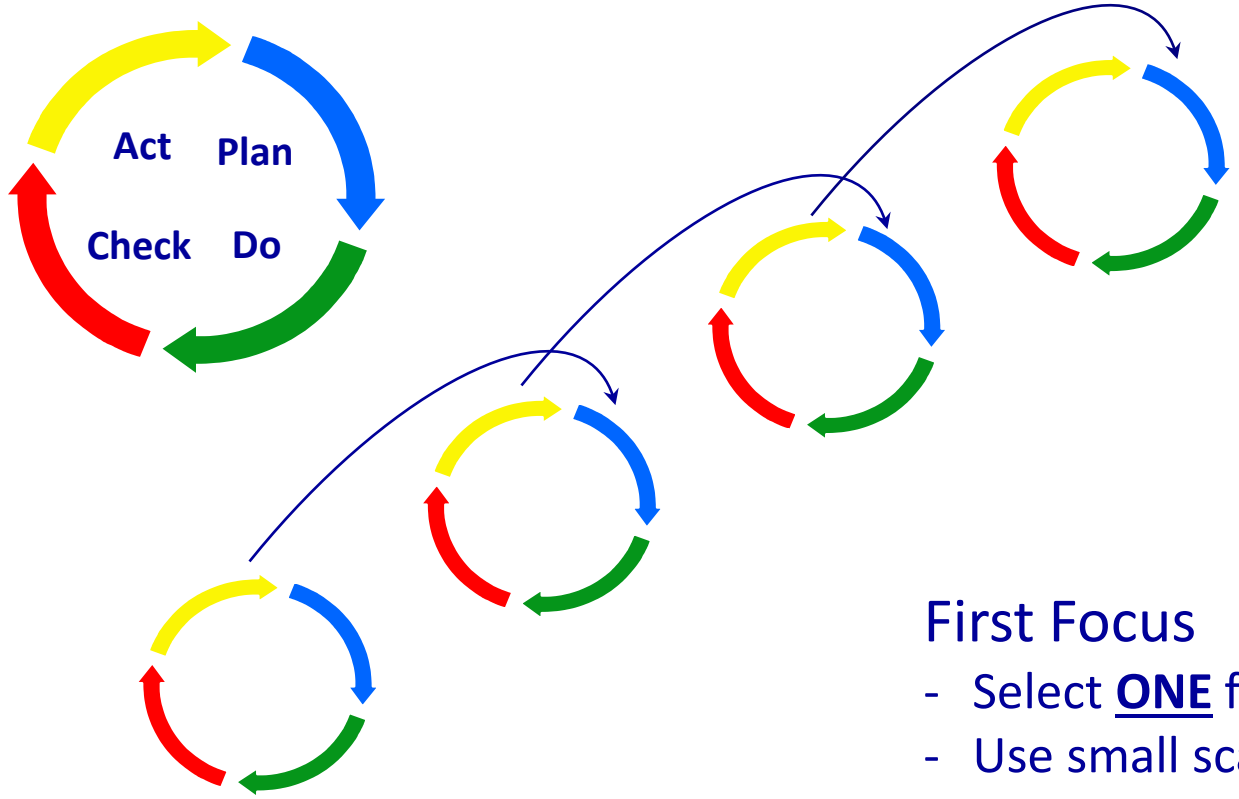
Identify potential alternatives

Try it

Did it work?

Adapt, adopt or Abandon….

Test in One Process



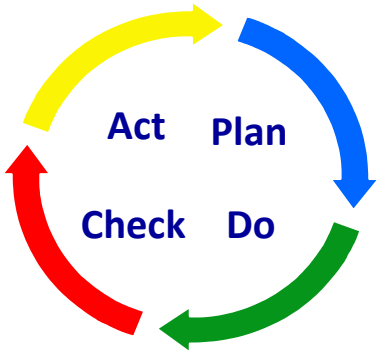
Improvement

First Focus

- Select **ONE** focus area
- Use small scale tests

Ideas and Hunches

Testing and Implementing Changes



changes that result in improvement

data for learning

Cycle 8

Cycle 7

Cycle 6

Cycle 5

Cycle 4

Cycle 3

Cycle 2

Cycle 1

hunches, theories & ideas

Little by little we get better and better

Setting SMART Aims

S pecific boundaries – outcomes focused, specific target populations, short, succinct, clear

M easurable goal – define measures to quantify achievement AND indicate frequency of monitoring

A greed upon/actionable – identify how/ general change strategy. Focus on an agreed important area/ high priority.

R ealistic but a stretch

T ime bound – set clear guidelines for achievement

Setting SMART Aims

Bad Aim Statement= To decrease number of total joint surgical site infections.

- Good Aim Statement= **By December 31st 2018, decrease the number of total joint surgical site infections by 99% through implementation of double gloving and 3x antibiotic dosing.**

Plan, Do, Check, Act

Plan–Intervention Design

- Develop measures
- Develop a plan for collecting data
- Plan a test of changes (intervention)
- Predict the outcome of the change

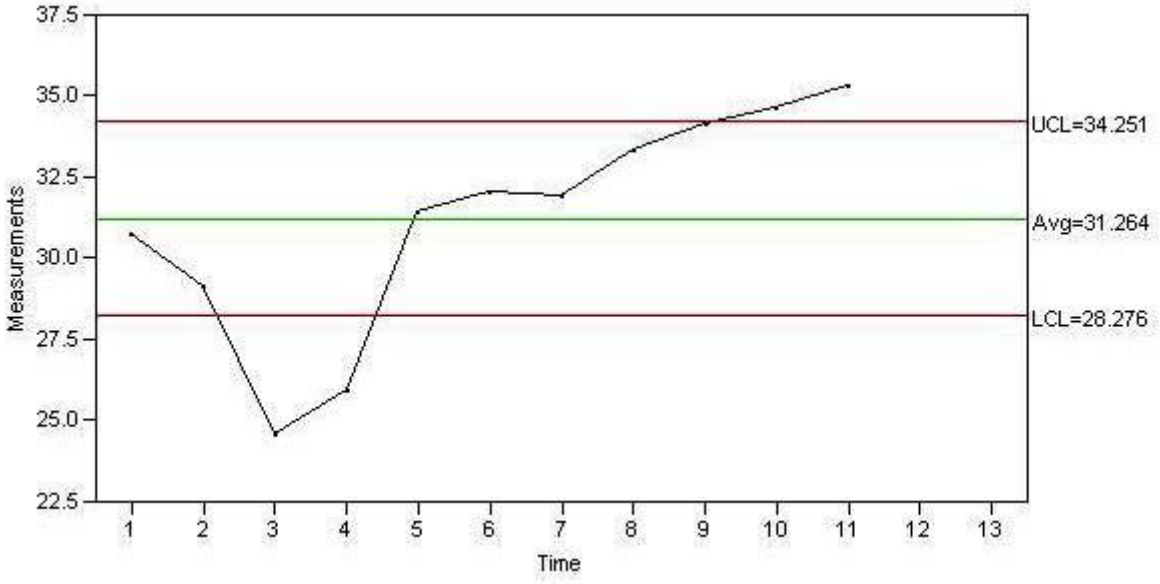
Remember the definition of a 'Process'?

... a series of linked steps, often but not necessarily sequential, designed to ...cause some set of outcomes to occur.. *(inputs => outputs)*

All work occurs in a system of interconnected processes

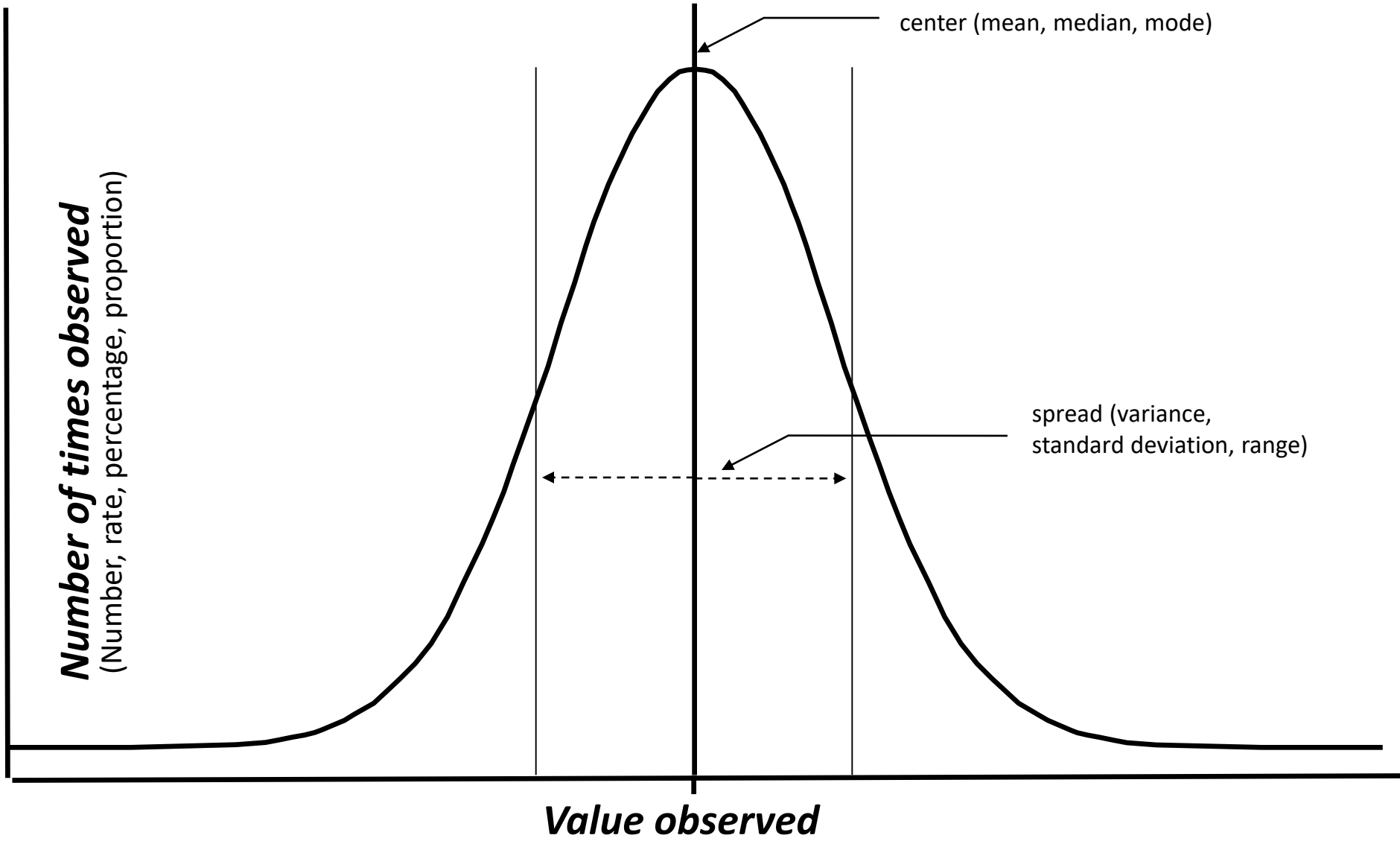
Remember - Processes cause Outcomes

Successive Measurements
Time Series aka Run Chart



Dynamic display of information

Frequency distribution



Two Types of Variation

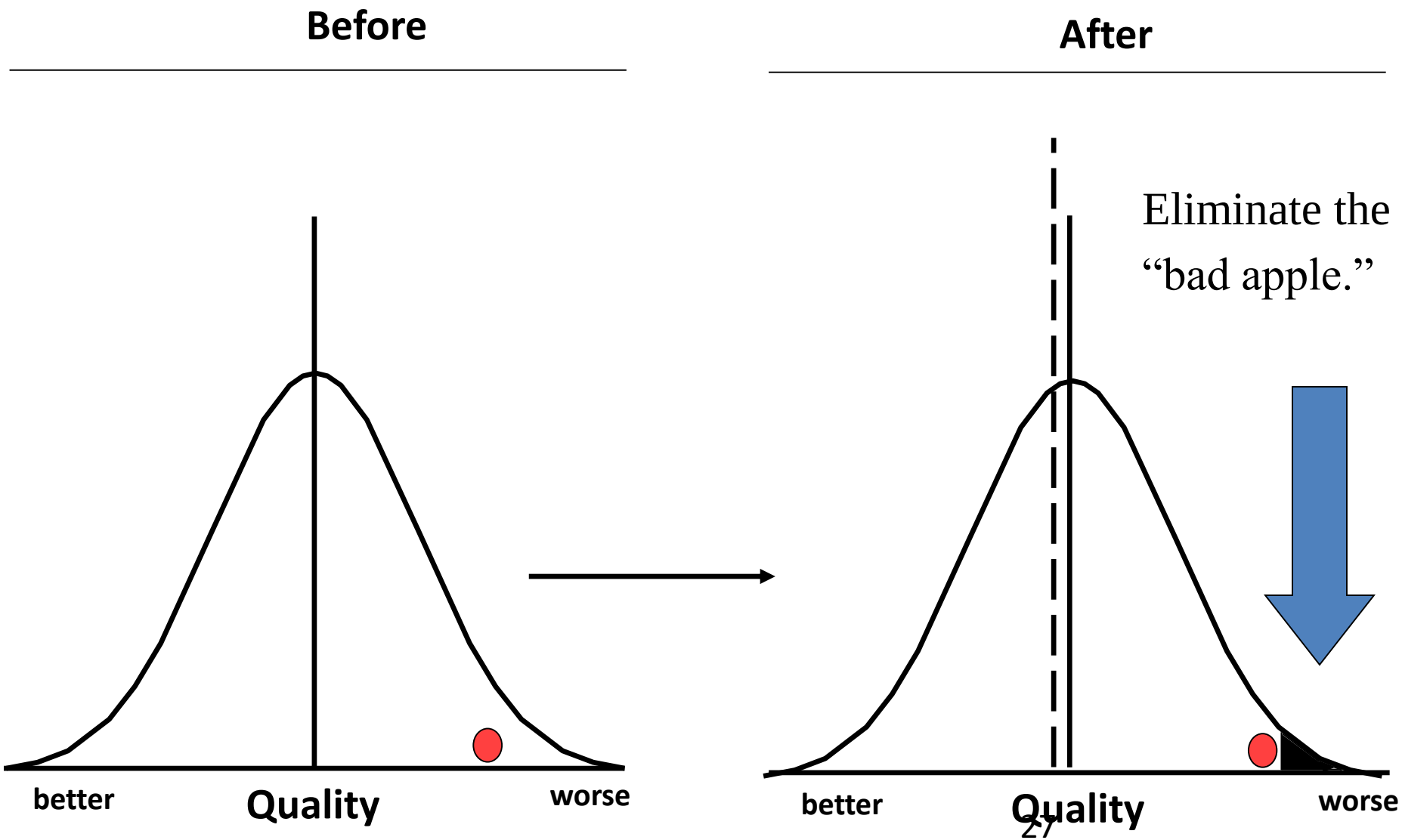
- Common cause (random)
  - Inherent to the regular rhythm of a process
  - Predictable within limits (bell-shaped curve)
  - “In control” if only type of variation present
- Special Cause (assignable)
  - Irregular causes not inherent to a process
  - Unpredictable within limits
  - Process “out of control” when present

Variability guides QI decision making

	Stable process	Unstable process
Type of variation	**Common**	**Special + Common**
Right Choice	**Process change**	**Investigate origin of special cause variation**
Wrong choice	**Treat normal variation as a special cause**	**Change the process without investigation**
Consequences of Wrong choice	**Increased variation**	**Wasted resources**

Carey, *Measuring Quality Improvement in Health Care*, p. 153

Quality Assurance

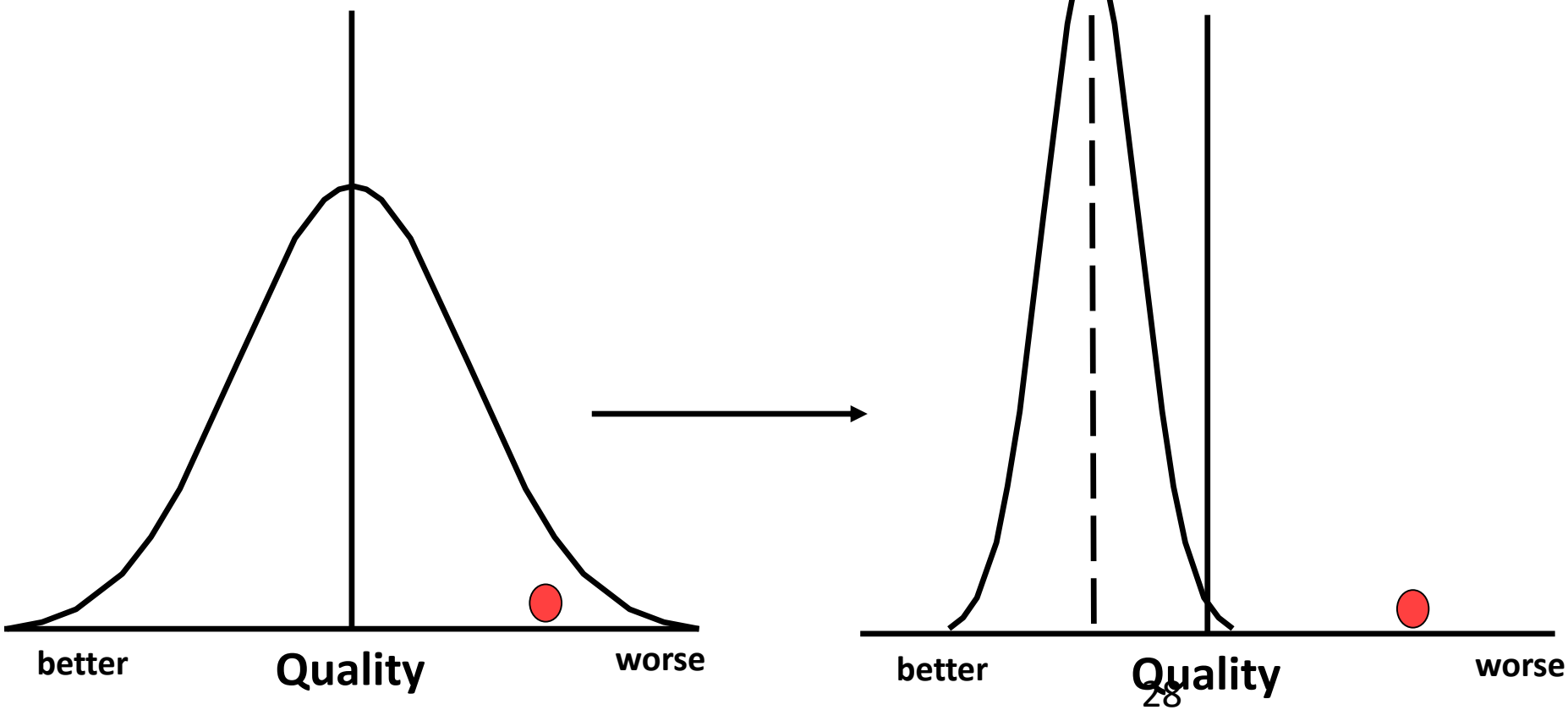


Quality Improvement

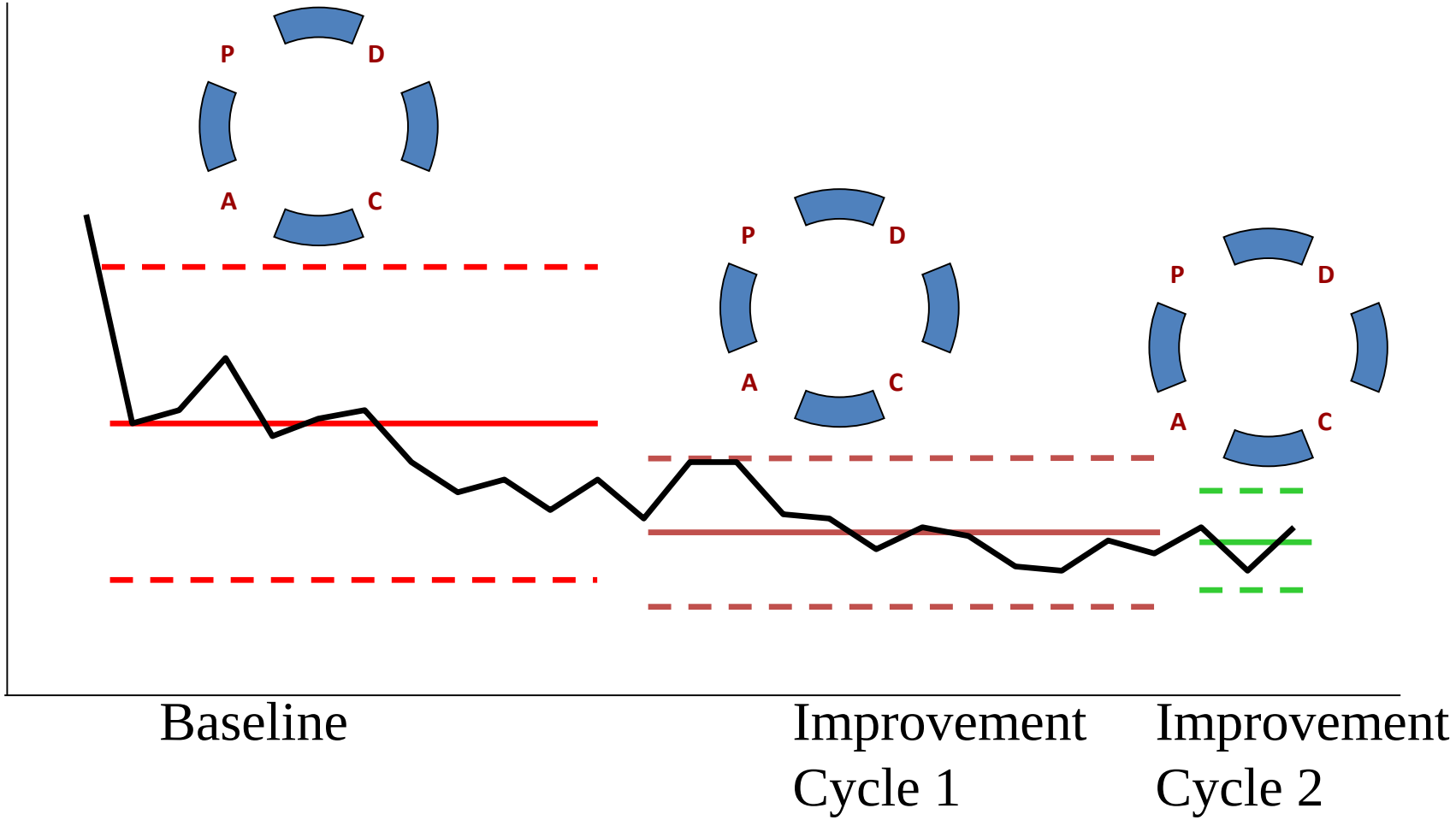
Before

After

Entire process considered



Quality Improvement Cycles
Changes in Variation and Mean



Significance in QI

- Practical definition:

  The likelihood that a difference is more than random chance.

CMS Standards

- **Q-0080**
- ***(Rev.56, Issued: 12-30-09, Effective/Implementation: 12-30-09)***
- **§416.43 Condition for Coverage: *Quality Assessment and Performance Improvement***
- **The ASC *must develop, implement and maintain an ongoing, data-driven quality assessment and performance improvement (QAPI) program.***

- *CMS does not prescribe a particular QAPI program; it provides each ASC with the flexibility to develop its own program. Each program must, however, satisfy the regulatory criteria:*

- *Ongoing – i.e., the program is a continuing one, not just a one-time effort. Evidence of this would include, but is not limited to, things like collection by the ASC of quality data at regular intervals*

- *Data-driven – i.e., the program must identify in a systematic manner what data it will collect to measure various aspects of quality of care; the frequency of data collection; how the data will be collected and analyzed; and evidence that the program uses the data collected to assess quality and stimulate performance improvement.*

Choosing Quality Indicators

- Look at National Patient Safety Goals
- Look at CMS requirements
- Administrative requirements
- Trends in infection rates
- Compliance with hand hygiene

Statement of Purpose

- Describe the problem or suspected problem.
- What are the metrics?
- What is the baseline data?
- What does analysis of the data show?

include frequency and severity of the problem.

Implementation of Corrective Action

- What changes were made?
  - What education was provided?
  - What product changes were made?
  - What personnel changes were made?

Re-Measurement

- After implementation of changes:
  - What changes in data were noted
  - What did these changes mean
  - Are the changes working
  - Are more changes necessary
  - Is more education necessary

Process Improvement

- Is not a one time fix all solution
- Is an ongoing process
- Finds problems with processes not people
- Is not a blame game
- Is the key to providing safe, quality patient care

How does all this relate to infection control?

- We report monthly on infection rates and compliance rates.
- We monitor for trends that show an increase in infection rates and decreases in compliance rates.
- We need to understand process improvement in order to be able to address problems that are identified.
- Process improvement gives IC the means to impact patient care and patient safety.

References

- Carey GR, Lloyd RC. *Measuring Quality Improvement in Healthcare: A Guide to Statistical Process Control Applications.* Milwaukee, WI: Quality Press; 2001.

- Juran JM, Godfrey AB. *Juran's Quality Handbook.* 5th ed. New York, NY: Mc-Grew Hill; 1999.

Any Questions