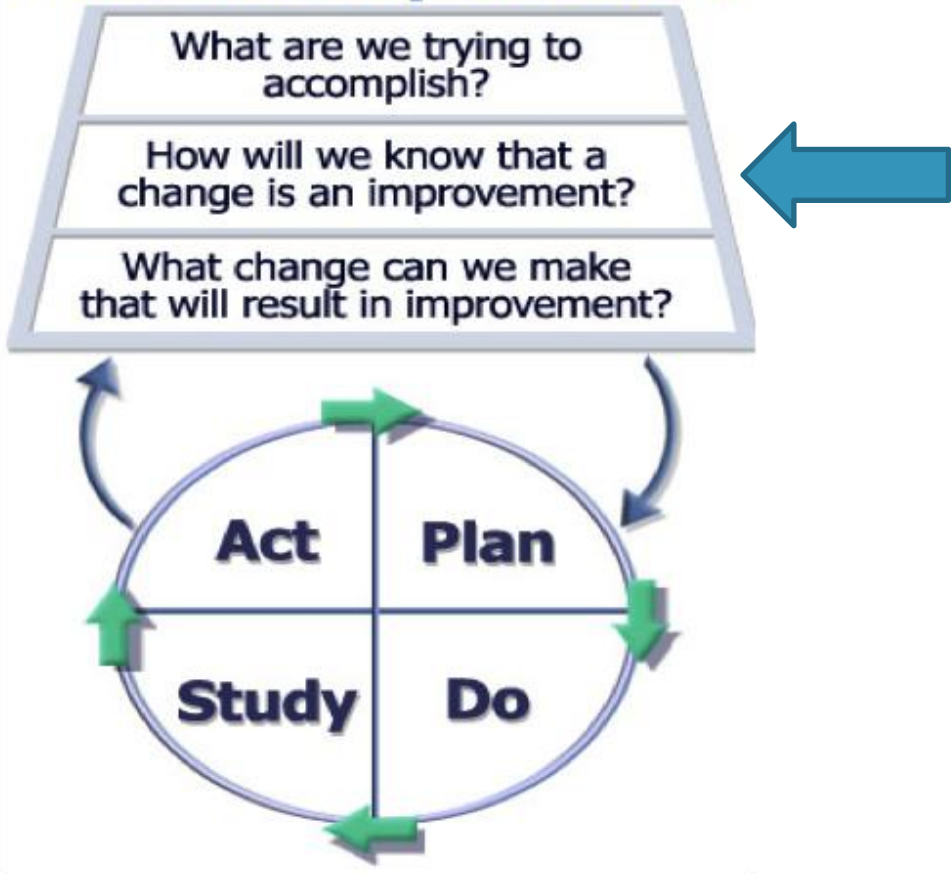# The Three Faces of Measurement

Frank Federico

Objective

- Describe the difference between measurement for learning and measurement for reporting
- List three types of measurement in quality improvement

Model for Improvement

Discuss at Your Tables

There have been a number of delayed discharges from you hospital. After a gap analysis, it was determined that the delays resulted form delays in communication between the laboratory and the clinicians. You have been asked to improve communication between the laboratory and clinicians.

What data do you need?

How much data do you need?

Where will you find these data?

Discussion at Your Tables

- How many collect Key Process Indicators (KPI)?
- How much data are collected in order to prepare the report?
- Who collects that data?
- How old are the data before they are reviewed?
- What happens next?

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The Three Faces of Performance Measurement

Aspect	Improvement	Accountability	Research
Aim	Improvement of care (efficiency & effectiveness)	Comparison, choice, reassurance, motivation for change	New knowledge (efficacy)
Methods: • 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	Flexible hypotheses, changes as learning takes place	No hypothesis	Fixed hypothesis (null hypothesis)
• Testing Strategy	Sequential tests	No tests	One large test
• Determining if a change is an improvement	Run charts or Shewhart control charts (statistical process control)	No change focus (maybe compute a percent change or rank order the results)	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

Lief Solberg, Gordon Mosser and Sharon McDonald. **The Three Faces of Performance Measurement: Improvement, Accountability and Research**. *Journal on Quality Improvement* vol. 23, no. 3, (March 1997), 135-147.

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Ideas for System Improvement:
The Crucial Role of Data
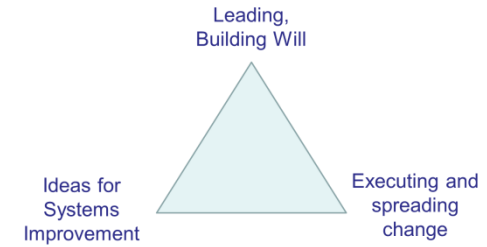
You can't fatten a cow by measuring it…..but you can't reach your goal without measurement

Commitment to data that is
- Simple (set of core measures) that everyone uses, has high value
- Easy to collect and report
- Tracks intermediate and outcome metrics
- "real time", accurate, complete
- Transparent/observable
- accountable

Every Measure Must Have An Operational Definition...

 … a description, in quantifiable terms, of what to measure and the steps to follow to measure it consistently.

- **It gives communicable meaning to a concept**

- **Is clear and unambiguous**

- **Specifies measurement methods and equipment**

- **Identifies criteria**

8

Please Share…

- Examples of process measures
- Examples of outcome measures
- Examples of balancing measures

Types of Measures	Description	The Surgical Sight Infection FOM
Outcome	The voice of the customer or patient. How is the system performing? What is the result? Is our improvement work making a meaningful impact?	Surgical Sight Infection Rate 1 0
Process	The voice of the workings of the process. Are the parts or steps in the system performing as planned. Are we on track to improve?	Percentage of appropriate prophylactic antibiotic selection. Percentage of on time administration of prophylactic antibiotics. Percentage of a safety climate score great than 4.
Balancing	Looking at a system from different directions or dimensions. What happened to the system as we improved the outcome and improvement measures? Are we producing perverse unintended consequences in our efforts to improve? What other factors may be affecting results?	Patient satisfaction Cost per case

Provost, L. P. & Murray, S.K. (2011). *The health care data guide: Learning from data for improvement*. San Francisco: Jossey-Bass. P. 63.

PDSA Measures
Guide Learning about our testing.

Process Measures
Guide Learning about how our testing is improving reliability of the process.

Outcome Measures
Guide Learning about how the reliability of the process is achieving our aim.

OUTCOME MEASURES

AIM	OUTCOME MEASURES	OPERATIONAL DEFINITION	DETAILS
a) Decrease **stillbirths by 40%** **(b) decrease birth asphyxia by 30 %** **(c) decrease newborn mortality due to birth asphyxia by 30 %** **over 18 months in all participating hospitals**	**Fresh Stillbirth rate**	No. of fresh still birth in facility during month/ Total No. of births (live birth + still birth) in facility	**Need to identify fresh still birth**
	Incidence of birth asphyxia	No. of babies born with birth asphyxia in facility during month/ Total No. of live births in facility	**Need to define birth asphyxia**
	Proportion of newborn deaths due to birth asphyxia	No. of newborn deaths due to birth asphyxia in babies born in the facility during month/ Total No. of newborn deaths in facility	**Need to define birth asphyxia**
	Caesarean section as a proportion of total deliveries	No. of caesarean section in the facility during month/ Total No. of deliveries (vaginal + caesarean) in facility	

Run Charts

- Power of data graphed over time
  - Allows you to "see" variation
  - Useful tool for identifying whether special causes are present
    - Is the process "in control" i.e. predictable
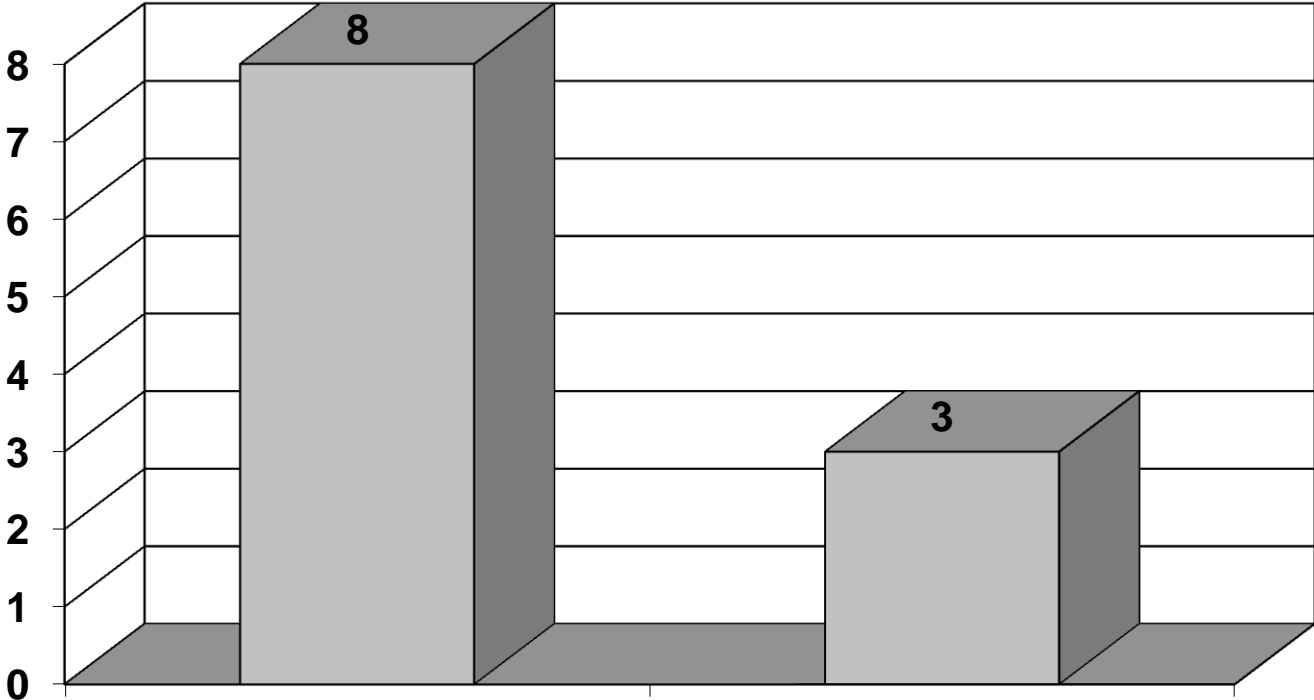- Easy to interpret
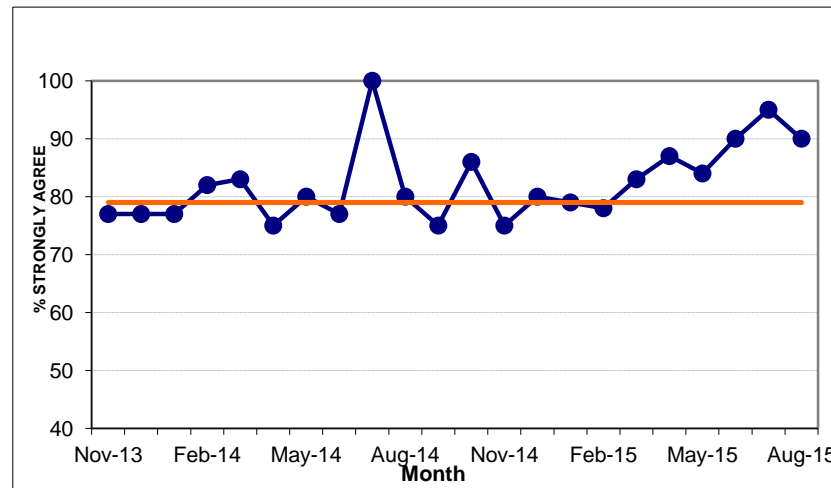
Display of Data
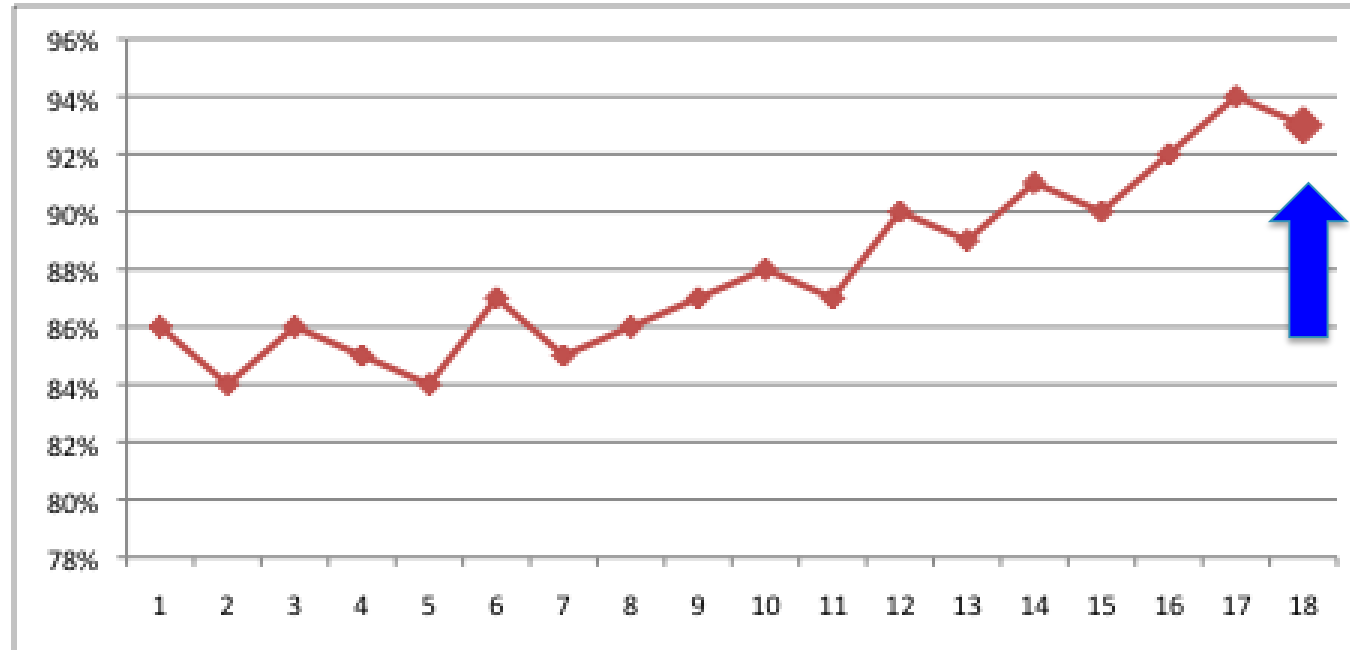
Pepper ...
And Salt

THE WALL STREET JOURNAL

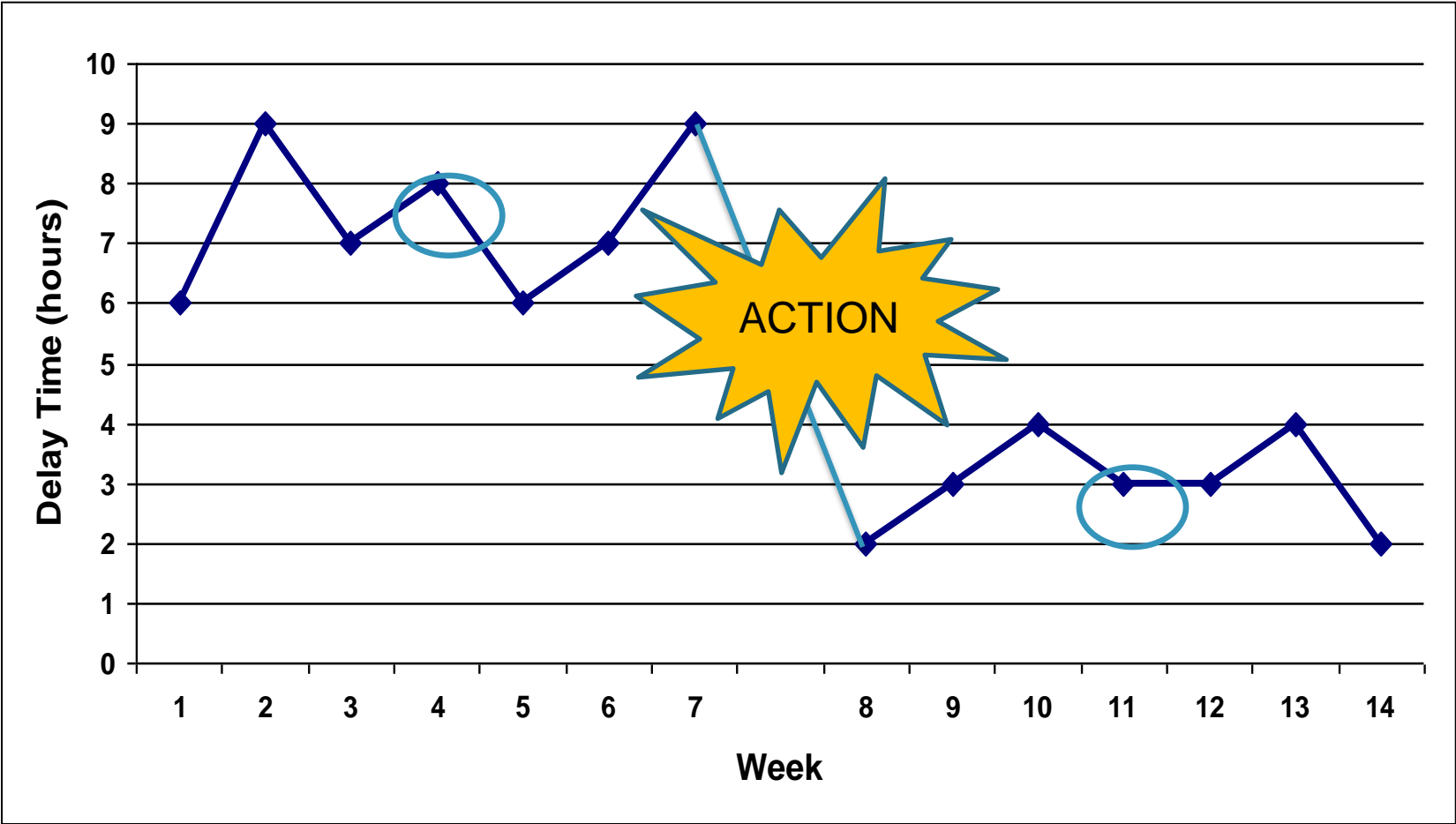"I wouldn't celebrate quite yet, the graph is sideways."
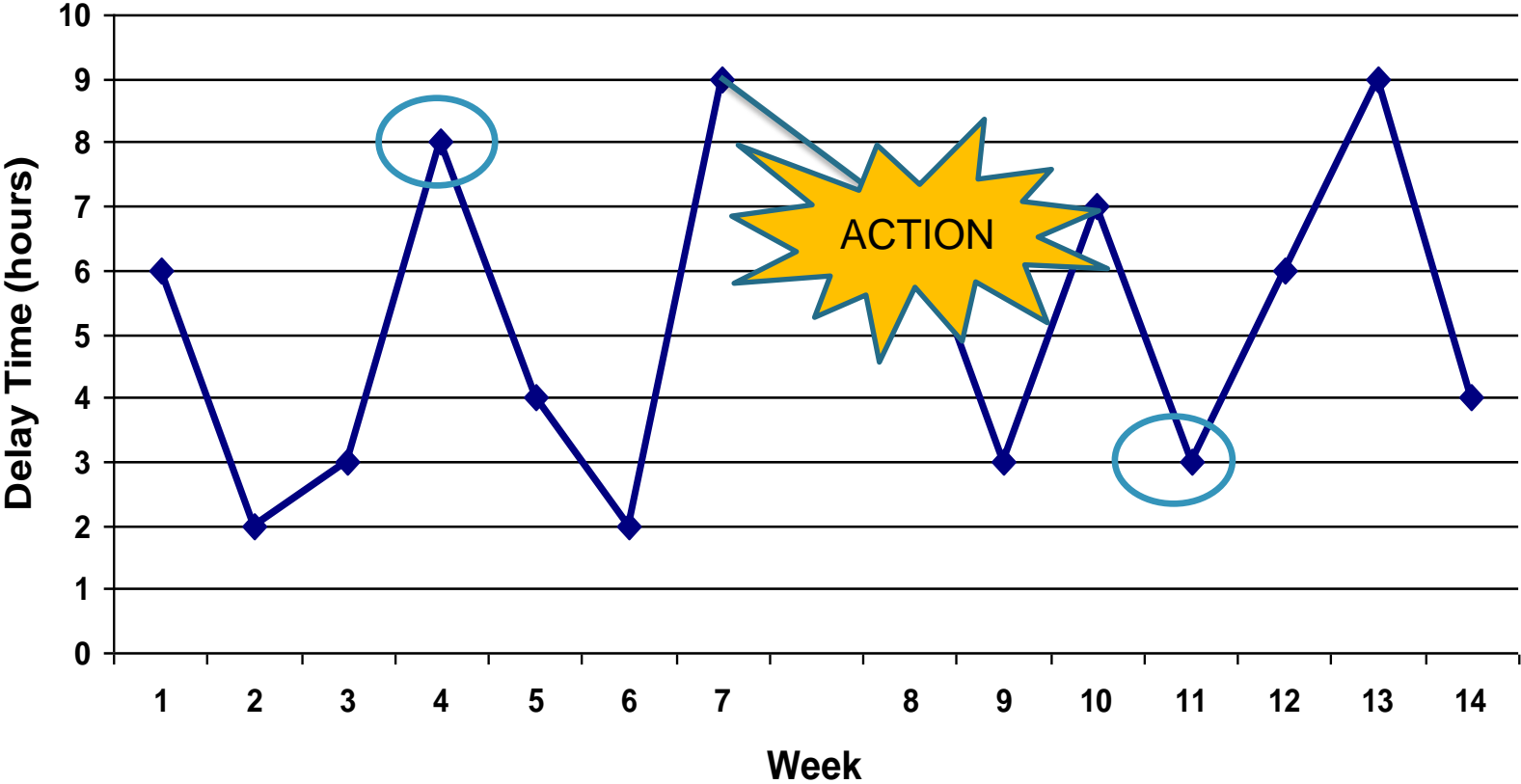
Decrease in Delay Time (Hours)

How confident are you that the change, implemented in week 7, has led to an improvement?

Scenario One

Scenario Two

Scenario Three

Scenario Four

Questions?
Comments