CMS Quality Improvement Workshop Series
QI 101

Webinar 3: Measuring and Monitoring Improvement

Karen LLanos, Center for Medicaid and CHIP Services

Kamala D. Allen, MHS, Center for Health Care Strategies

Jane Taylor, MBA, MHA, Ed.D., National Initiative for Children's Healthcare Quality

Medicaid/CHIP
Health Care Quality Measures

Agenda

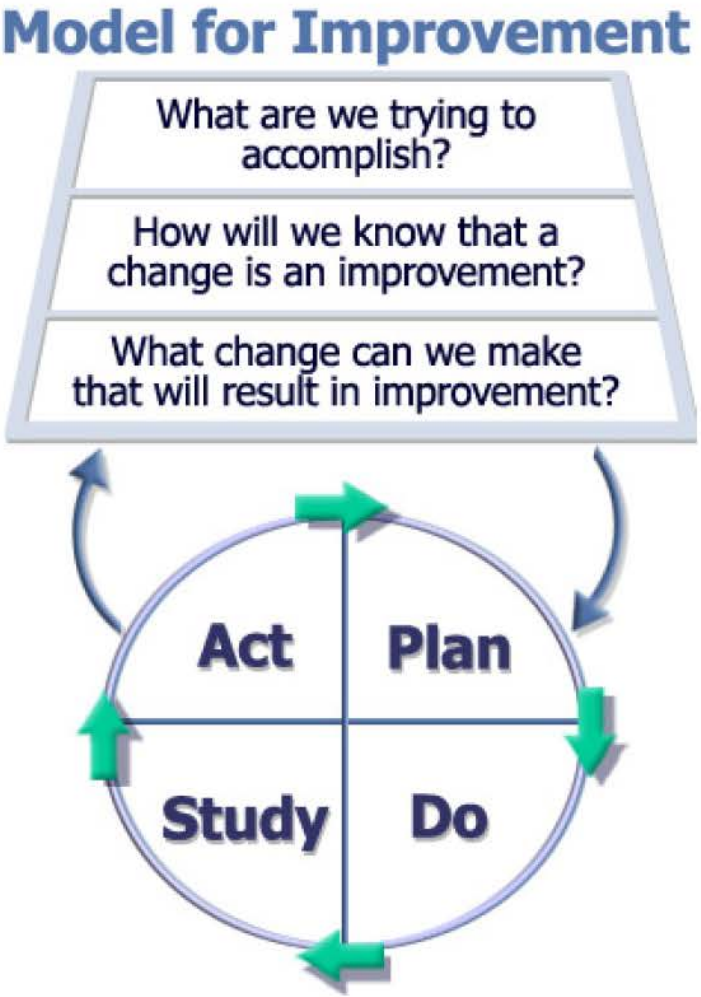
- Welcome and Introductions
- Purpose and Learning Objectives
- Recap of Webinar 2: Developing Aims and Selecting Change Strategies
- Linking Driver Diagrams to the Plan-Do-Study-Act (PDSA) Cycle
- Using Data and Measuring Improvement
- Question and Answer

Learning Objectives for Webinar 3

- Purpose: Enable state Medicaid and CHIP staff to improve child and adult health care outcomes using the Model for Improvement
- Participants will learn how to:
  - Link driver diagrams to the Plan-Do-Study-Act cycle
  - Incorporate measures for improvement into a QI project to address the final question of the Model for Improvement
    - How will we know a change is an improvement?

Recap from Webinar 2:
Developing Aims and Selecting Change Strategies

The Model for Improvement



The Improvement Guide, API, 2009

From Aim… to Changes… to Results

Linking together the components of the Model for Improvement

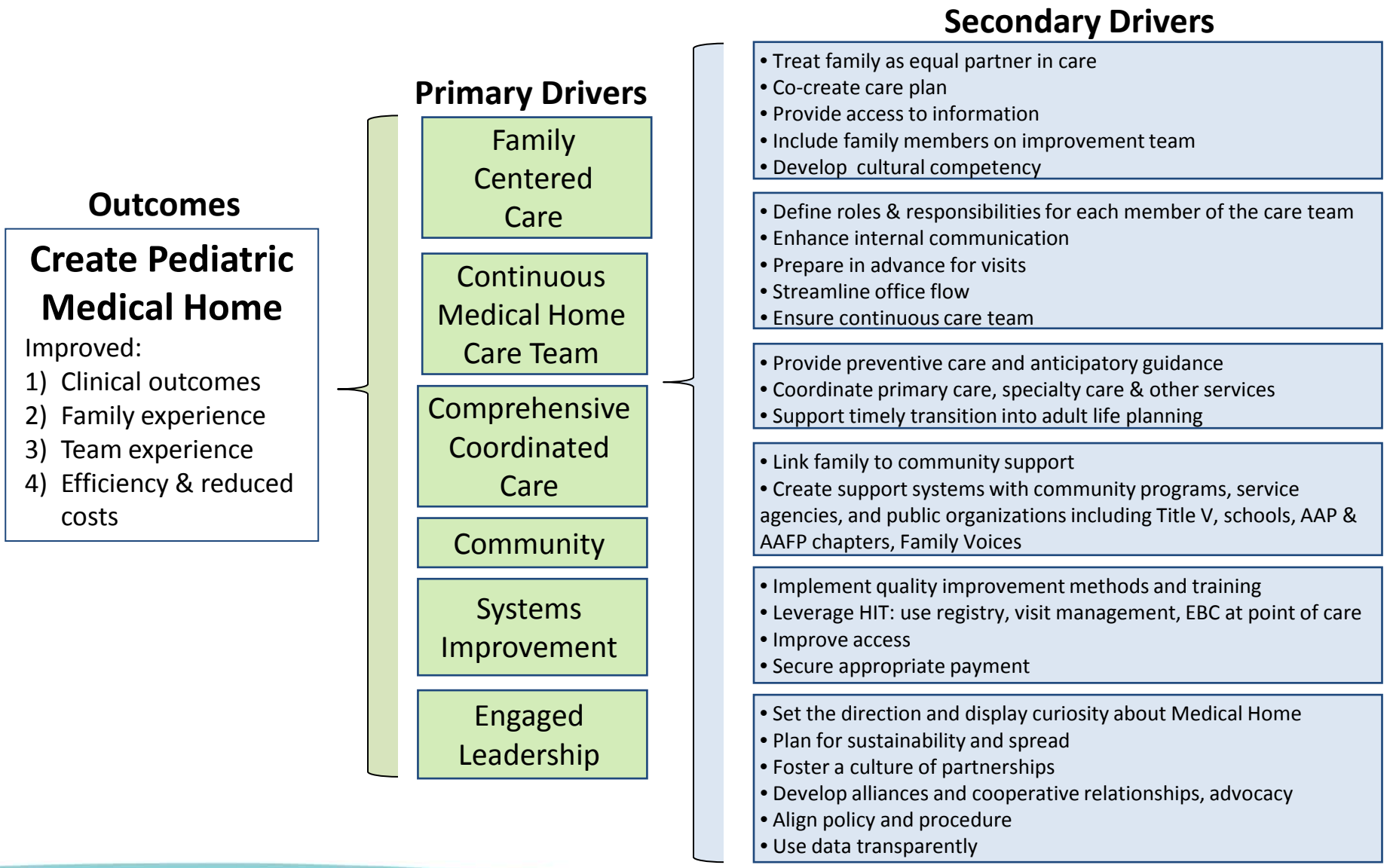
- Aim: For whom, how much, by when?
- Changes: Driver diagrams and testing changes
- Results: Using data related to the driver diagram to measure results

Aim Statement Example

By May 1, 2015, we will create medical homes in at least half the pediatric primary care clinics in the state so that:

- At least 95 percent of children have well child visits that are up to date
- At least 95 percent of children have a medication allergy check upon receiving a new prescription
- At least 95 percent of visits have a medication reconciliation if the child is on medication(s)

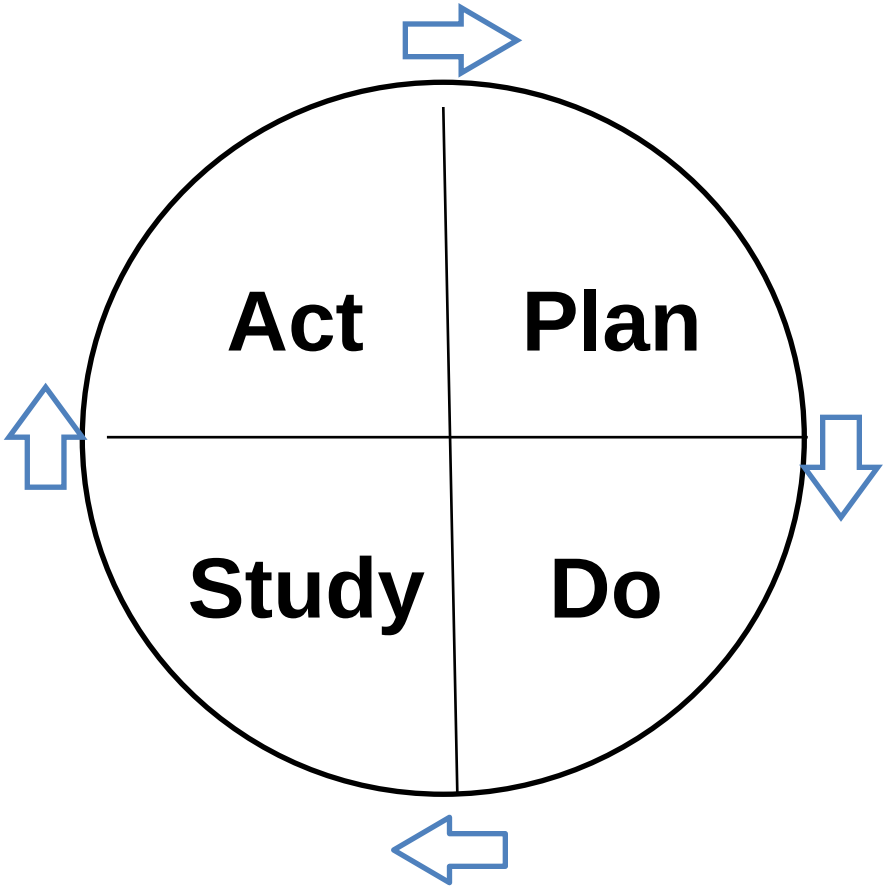
Medical Home Learning Collaborative Driver Diagram



Linking Driver Diagrams to The Plan-Do-Study-Act Cycle

Four Steps of the PDSA Cycle

- Tradition of the scientific method
- Made pragmatic
- Assumes that improvement is continual, never ending



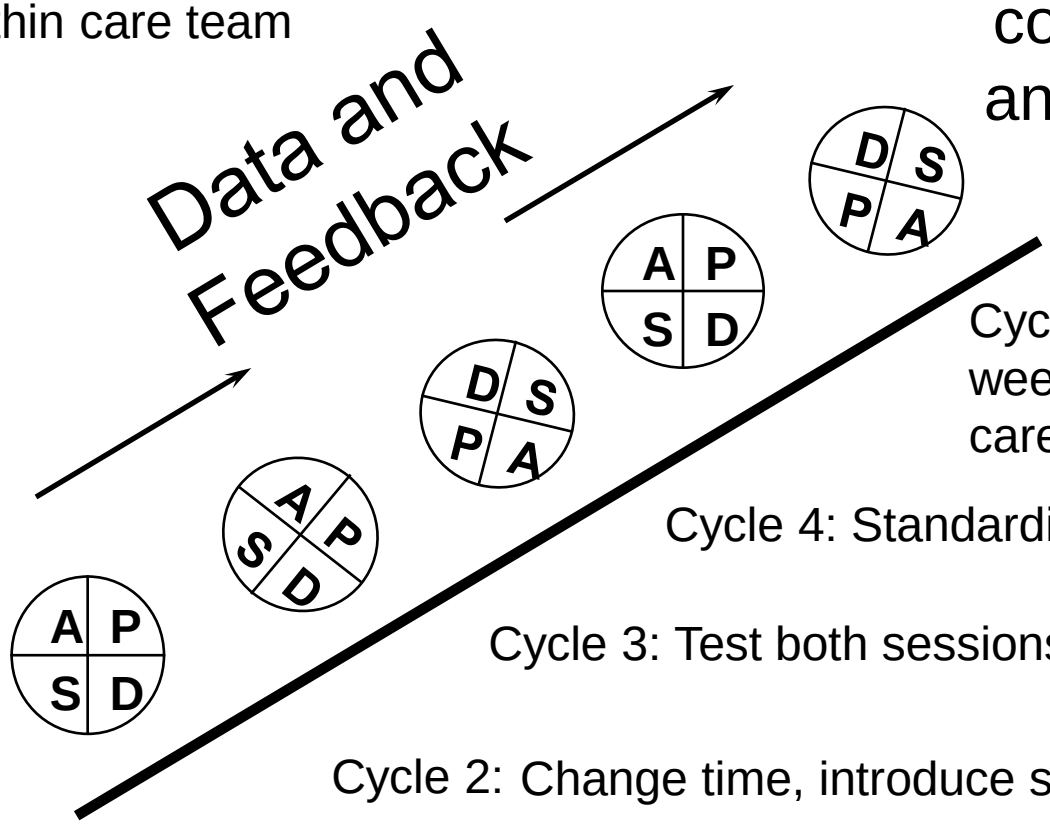
Please Complete the Poll on the Right Side of Your Screen

- Question: Have you ever used PDSA cycles for improvement?
- Responses (choose one):
  a. Yes, I have used PDSA cycles for improvement
  b. No, I have not used PDSA cycles but I am planning to
  c. No, I have not used PDSA cycles

Example of PDSA Cycles

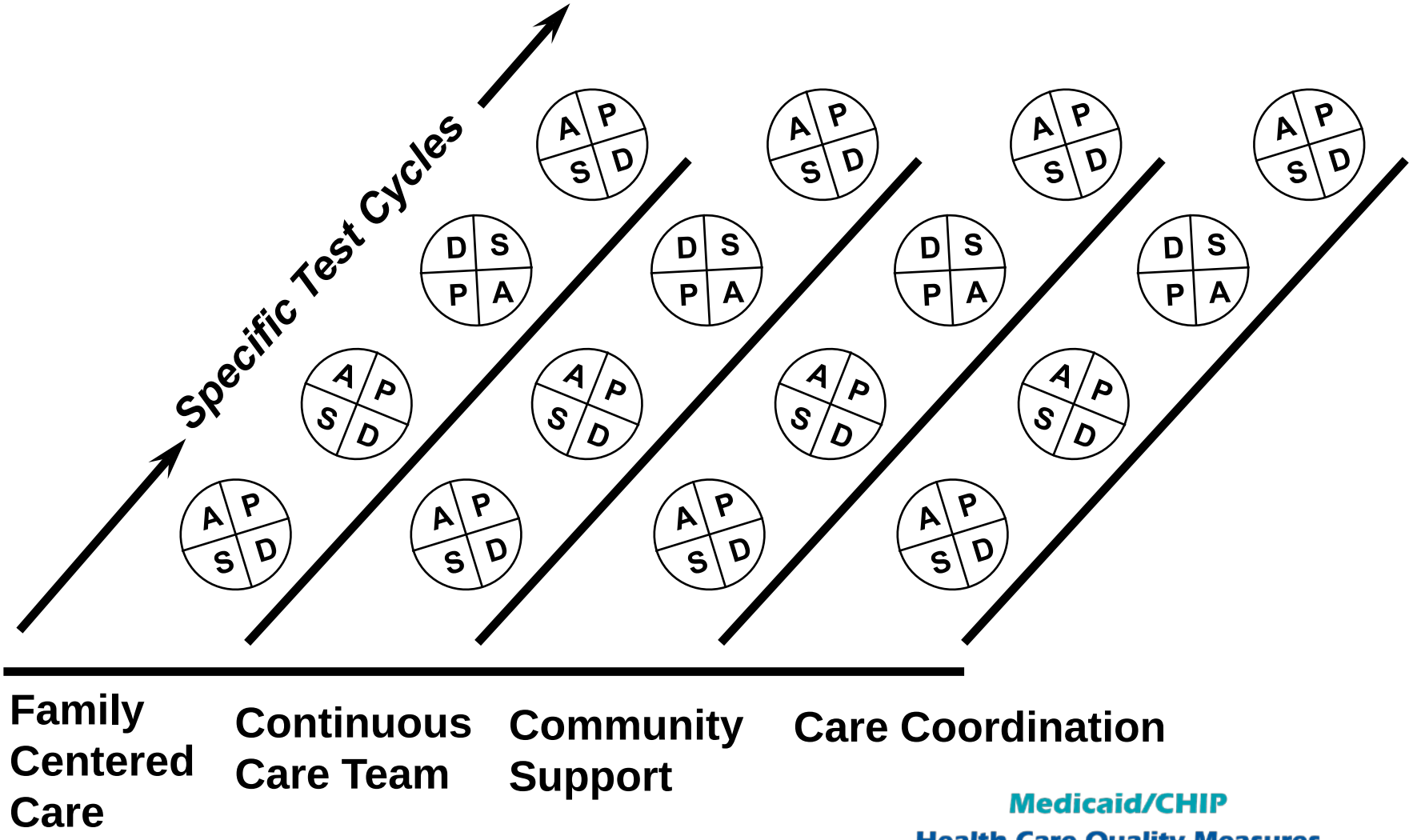
Aim: Create continuous care team

Purpose of test: Improve communication within care team



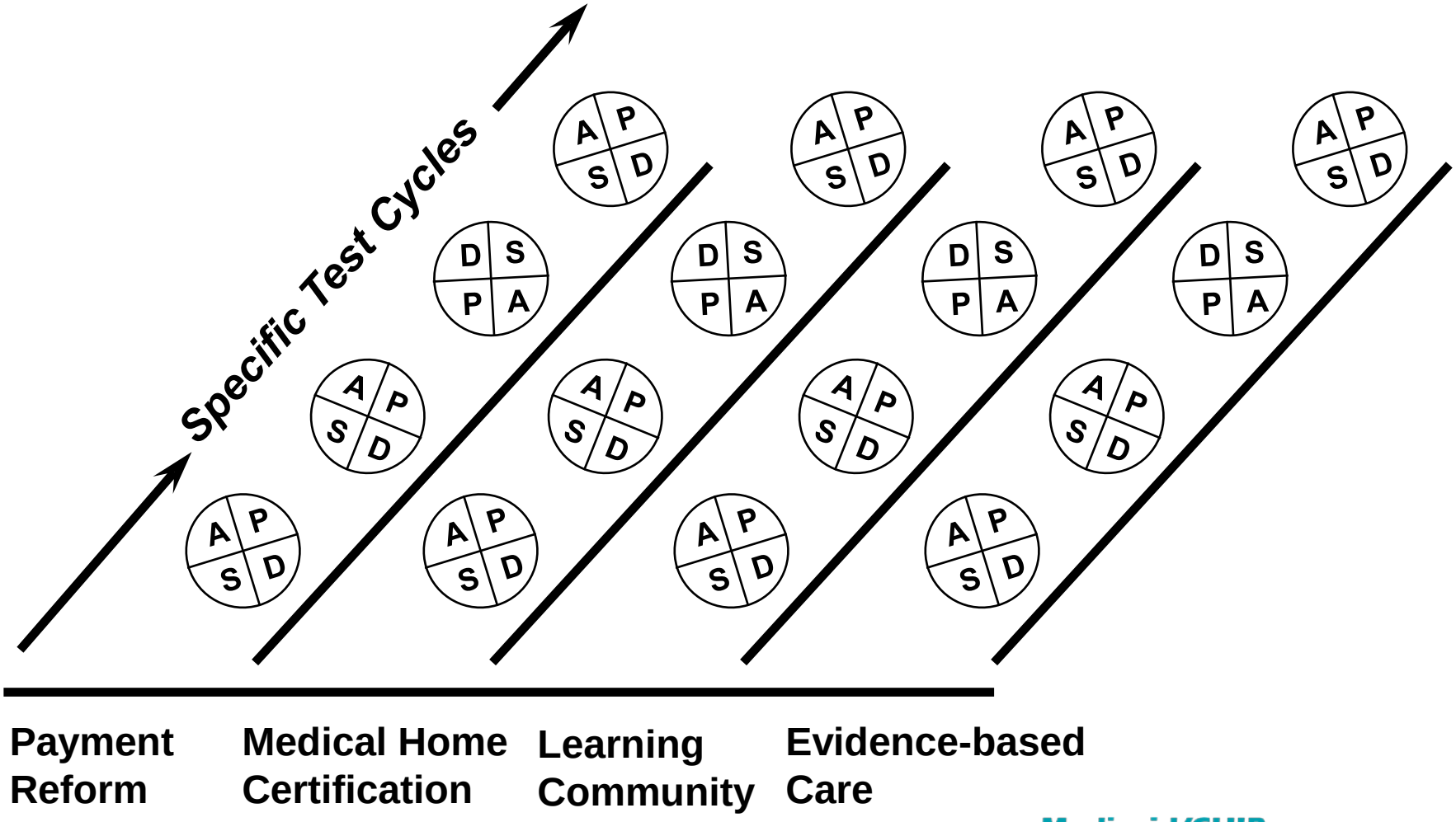
Will huddles improve communication?

Testing in Parallel Speeds Up Improvement: Practice Level



Medicaid/CHIP
Health Care Quality Measures

Testing in Parallel Speeds Up Improvement: State Level



Data Collection During PDSA Cycles

- Collect useful data, not perfect data
- The purpose of the data is learning, not evaluation
- Qualitative data counts
  - What are providers, health plans, families, and patients saying?
  - What are staff and other stakeholders saying?
- Qualitative data is a leading indicator; it is available before quantitative data and serves as an early herald
- Keep all data collection simple: measurement is important but in service of improvement
- Paper and pencil still work
- For improvement, a simple sample works
- Collect and make use of baseline data before starting improvement work

PDSA Worksheet:
What Changes Are We Testing and Why?

PLAN:

What questions does this test seek to answer? (If I do x, will y happen?)

What is your plan for this test or change? Who? What? When? Where?

What is your plan for data collection? Who? What? When? Where?

What do you predict the result will be?

DO: Carry out the change or test, collect data, and begin analysis.

STUDY: Compare what happened to the prediction. Complete analysis of data, summarize what was learned.

ACT: Are we ready to make a change? Plan for the next cycle.

Questions?

Using Data and Measuring Improvement

How Do We Know that a Change is an Improvement?

- Improvement is about making changes to systems, not measurement
- Measurement plays an important role
  - Key measures are required to assess progress toward the aim
  - Specific measures can be used for learning during PDSA cycles
- Map your measures to your driver diagram

Quality Improvement Uses Three Types of Measures

- Outcome measures
  - Results or aim of the project
  - Usually relate to an overall system improvement or a clinical outcome
- Process measures
  - Reflect how the improvements are done
  - They are more sensitive to change than the outcome measures
- Balancing measures
  - May reflect volume
  - May include staff and constituent experience
  - Reflect unintended consequences of change to other parts of the system or other systems

Family of Measures: Medical Home

- Outcome
  - Percentage of patients with well child visits up to date
  - Percentage of patients with appropriate asthma care
  - Percentage of patients with ADHD care elements in place
- Process
  - Percentage of patients with medication reconciled every visit
  - Percentage of patients with medication allergies checked each visit
  - Percentage of patients assigned to a care team
- Balancing
  - Family experience data (CAHPS survey)

Measurement is Central to Understanding Improvement

- The purpose of measurement is for learning, not judgment
- Measures should be linked directly to the improvement aim statement
- Process measures should also be used to guide improvement and show if testing is working
- Stratification can help understand and assess improvement
  - By physician or practice
  - By location (e.g., county)
  - By patient population (e.g., specific problem, demographics, health plan)

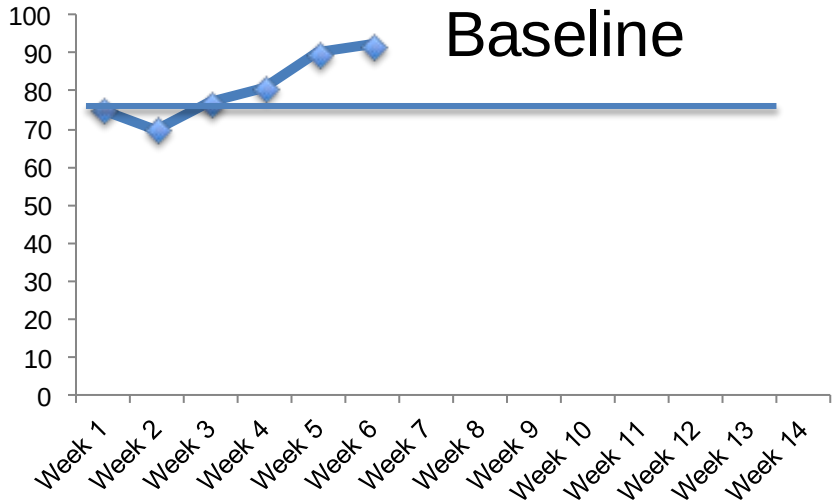
Using Data to Drive Improvement

- Establish baselines
- Monitor changes
- Analyze data to determine if there is improvement
- Identify which changes contributed to improvement and which changes may be ineffective
  - Are we ‘holding the gain’ (i.e., keeping improvement going)?
- Compare performance across providers, practices, plans, communities

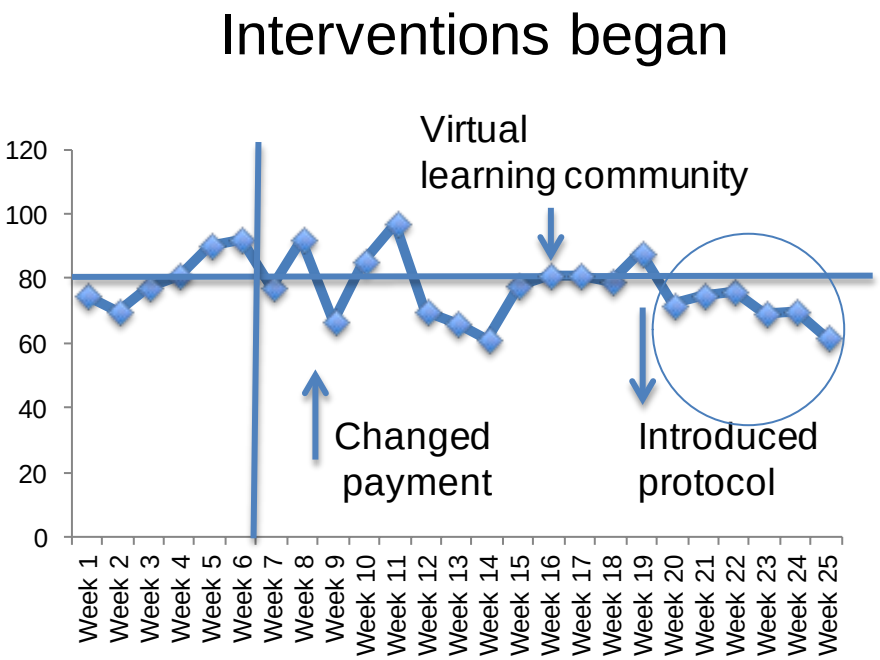
Gathering and Using Baseline Data

- Use whatever baseline data you can find
- If you can't find the exact measure you want, use a surrogate measure that reveals information about the system
- Use as much data as you can find before the interventions or changes
- If you don't have data before the interventions or changes, use the first data points that are available; they will be close to the baseline

How to Create a Baseline and Monitor Changes



Extend the median into the future - this makes improvement visible



Please Complete the Poll on the Right Side of Your Screen

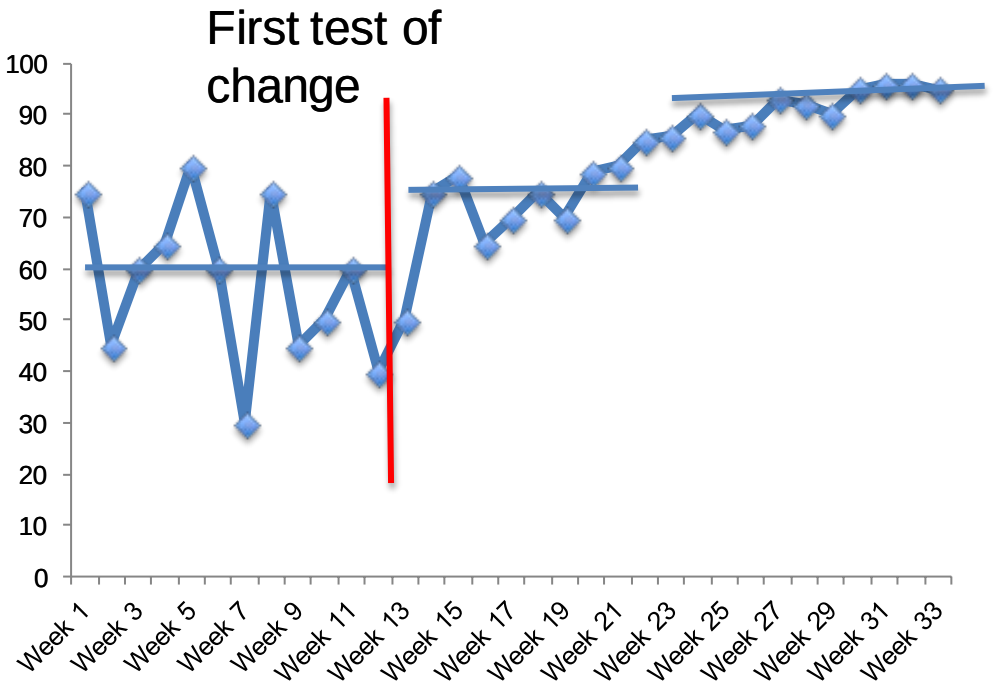
Question: Your state has identified a high-priority improvement project and you don't have baseline data. What would you recommend?

Responses (choose one):

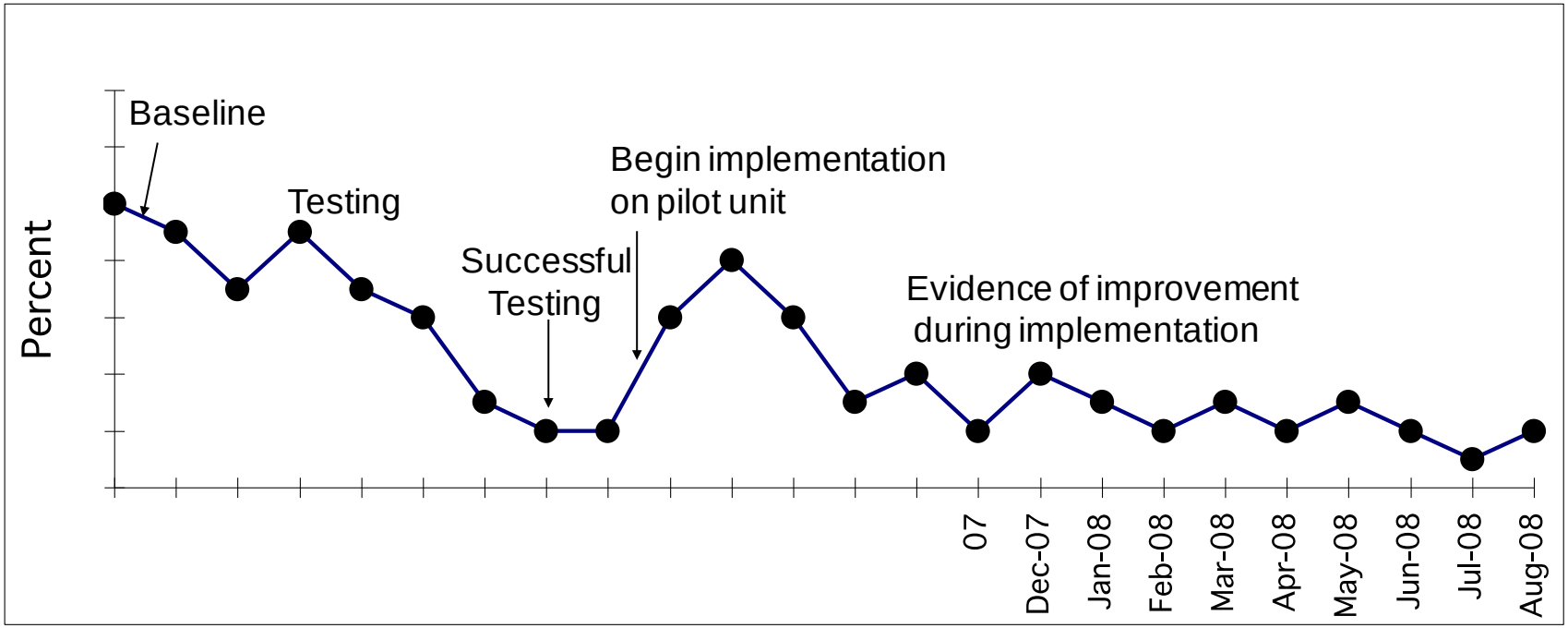
a. Select another project
b. Wait until we can collect some data and then start the project
c. Trust that the early data points are a surrogate baseline and begin the project without historic data
d. Use data from a similar population (such as a sample of medical records) to help benchmark current performance
e. Both c and d

Using Run Charts to Measure Improvement

- How is the process performing?
- Are we improving?
- Are we holding the gains?

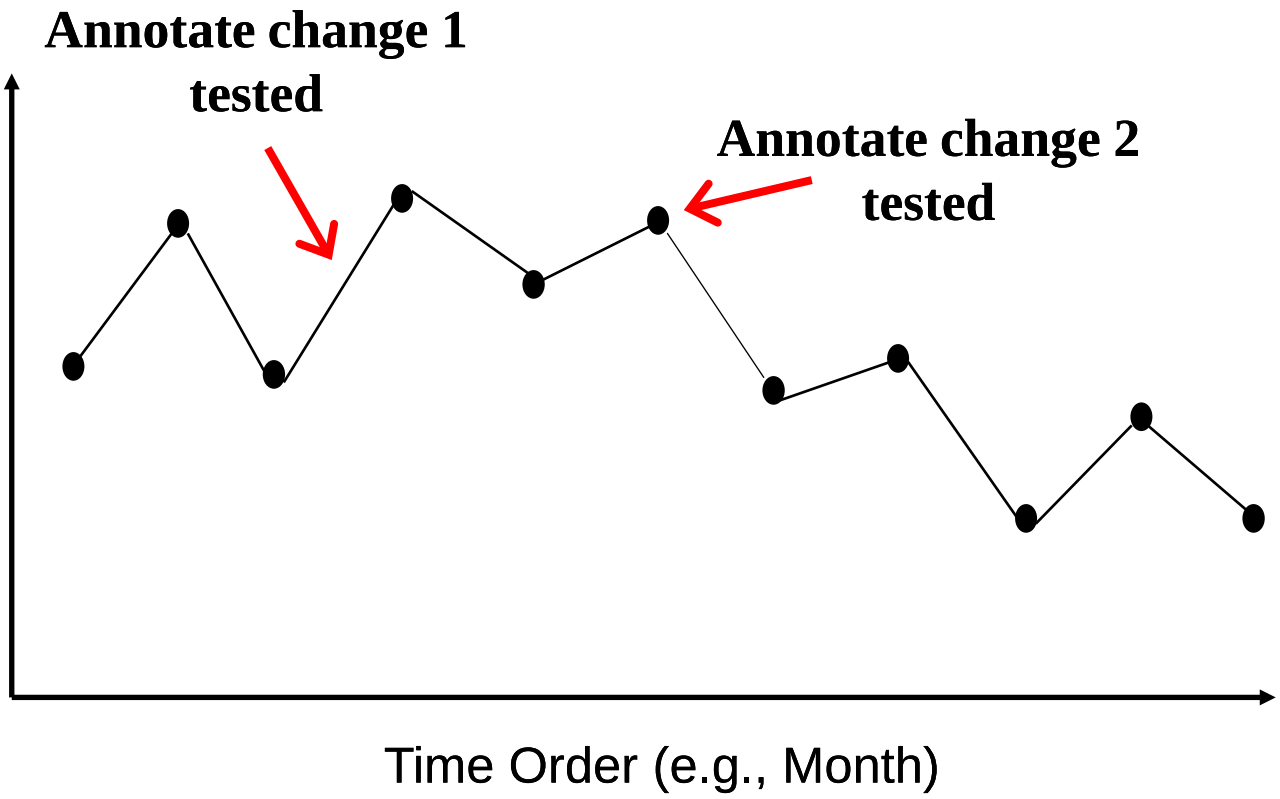


Example of How to Annotate Changes on a Run Chart

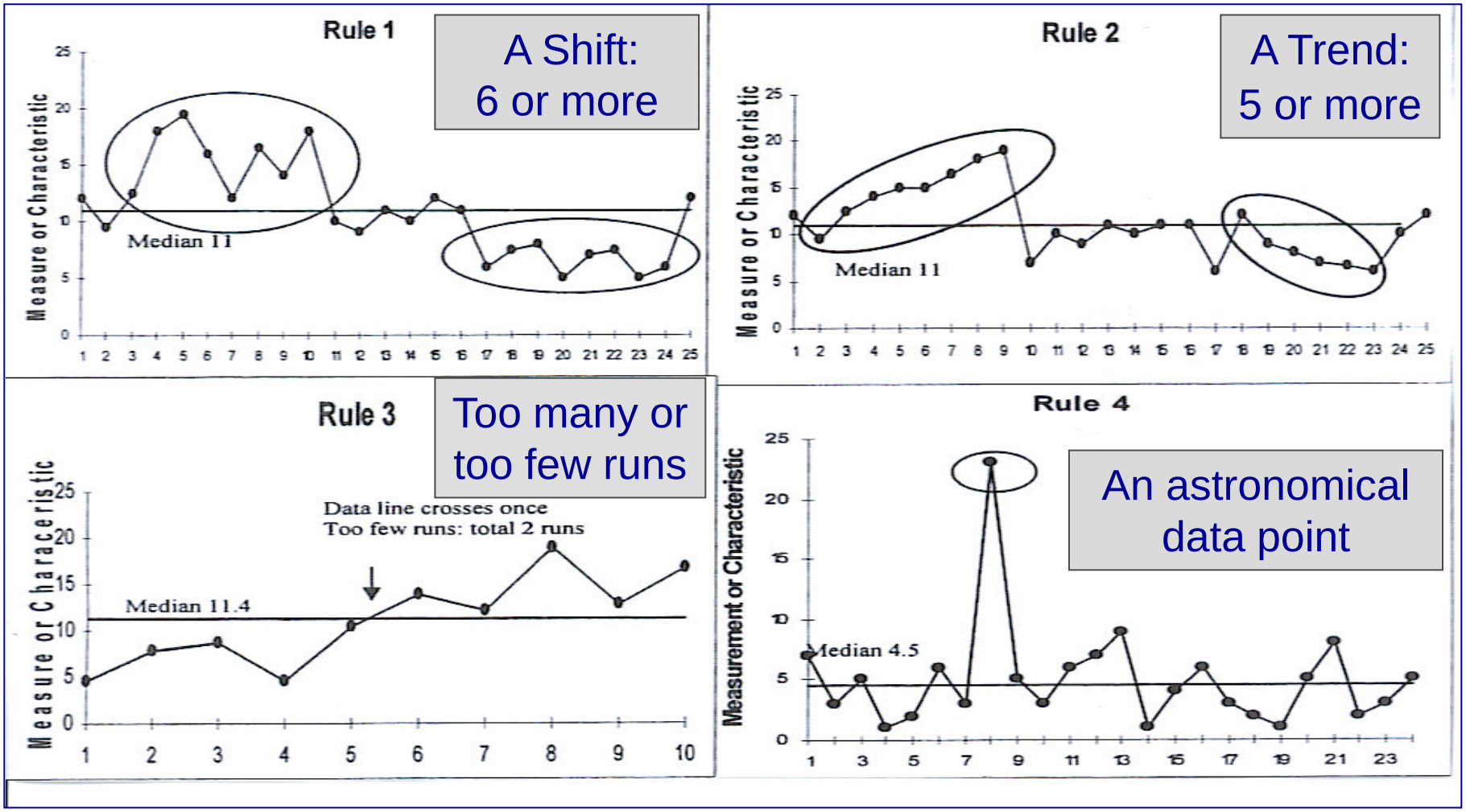


Tracking Changes on an Annotated Run Chart

Plot small samples frequently over time

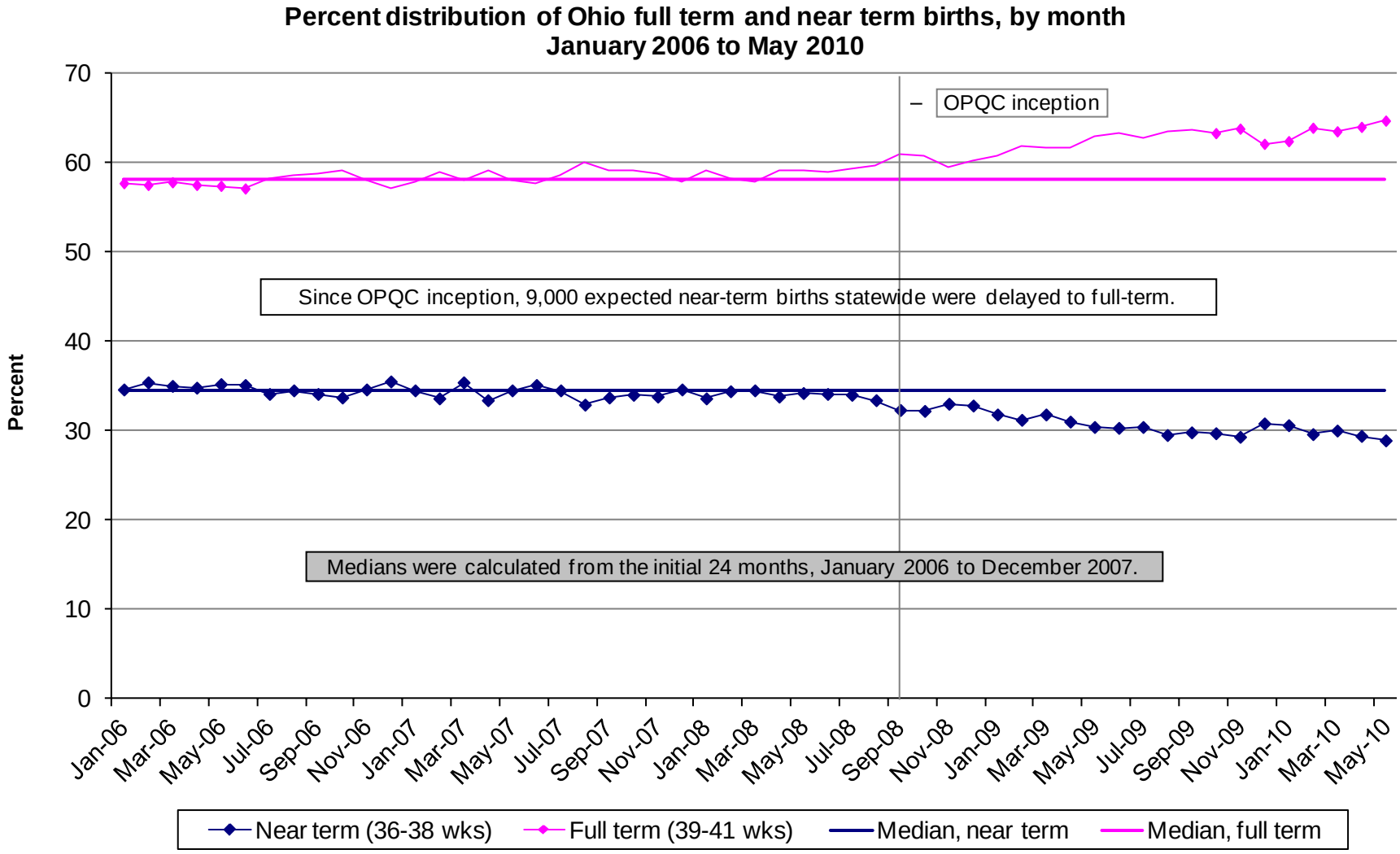


Rules for Run Charts



Thank you to IHI and API for this slide presented at the Office Practice Summit 04/07/13 Phoenix

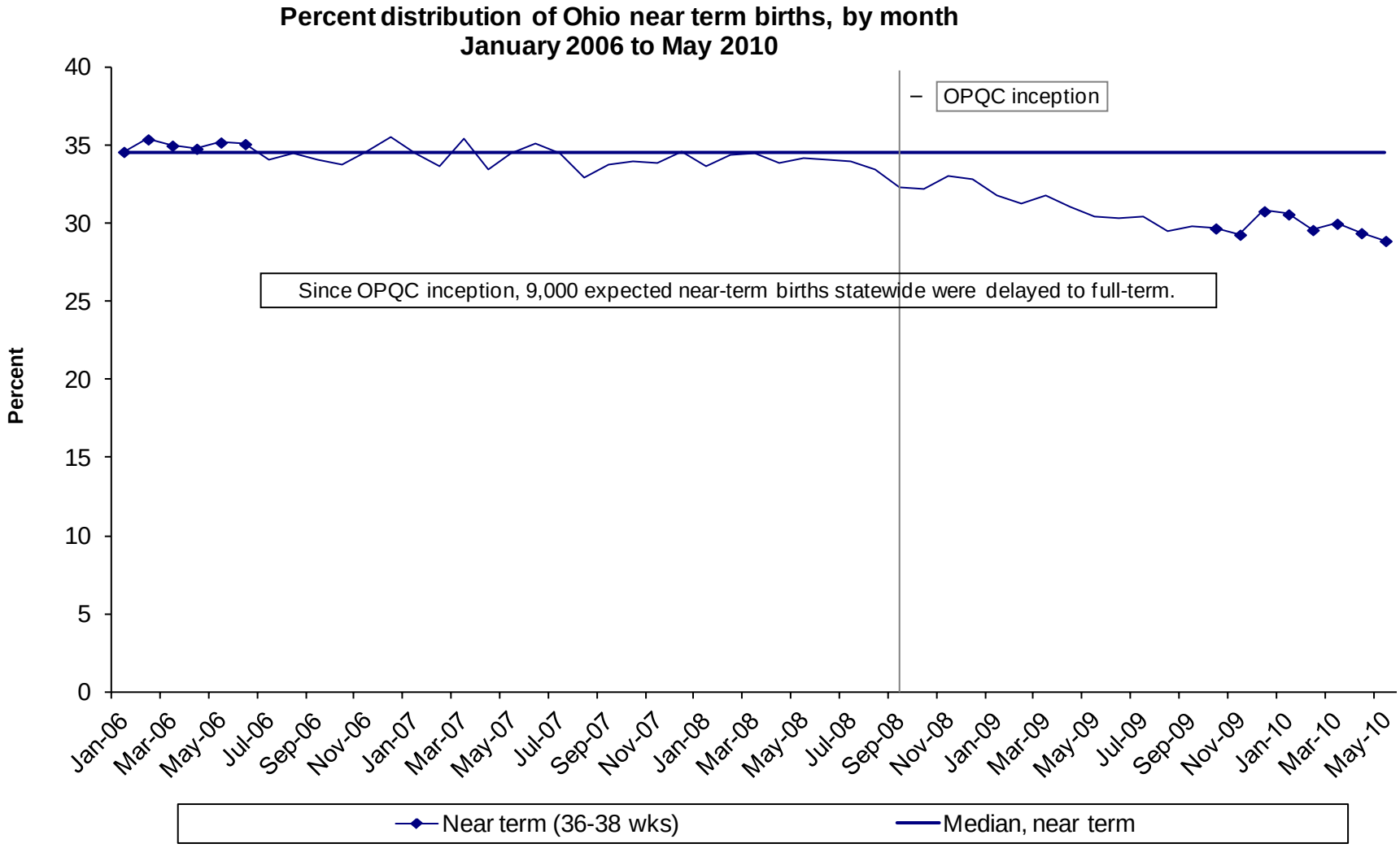
Using Run Chart Rules to Understand Improvement



*Data from Ohio Perinatal Quality Collaborative, CMS Neonatal Outcomes Improvement Project

Medicaid/CHIP
Health Care Quality Measures

Please Complete the Poll on the Right Side of Your Screen



*Data from Ohio Perinatal Quality Collaborative, CMS Neonatal Outcomes Improvement Project

Medicaid/CHIP
Health Care Quality Measures

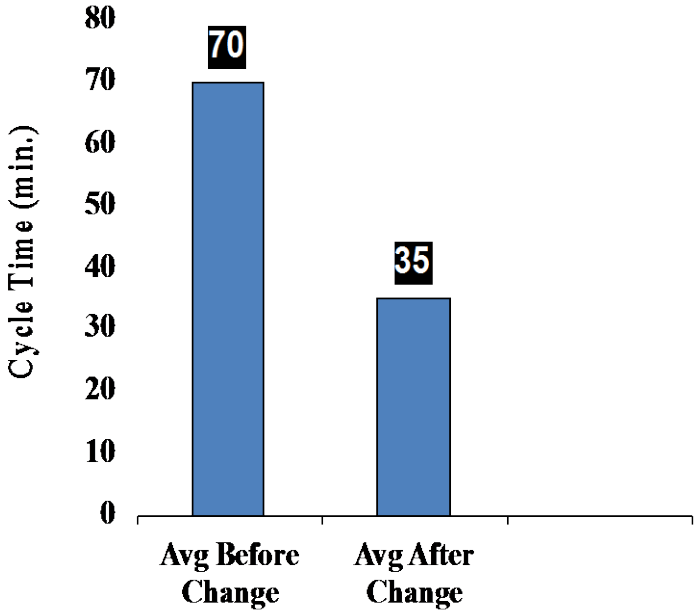
Poll Question and Responses

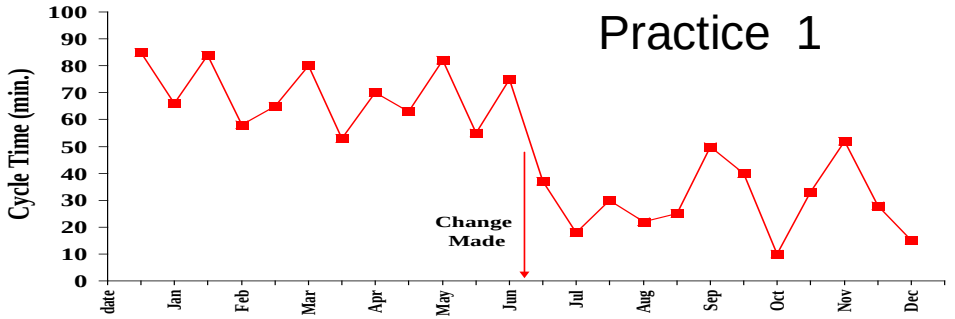
Question: Looking at the blue data in the run chart, what do you see?

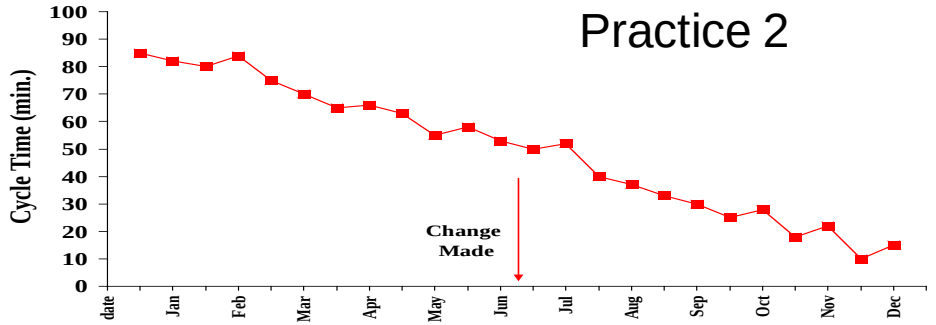
Responses (choose one):

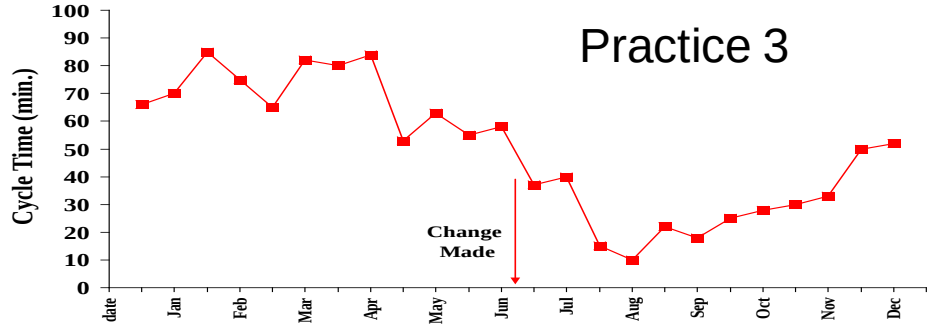
a. Evidence of a shift in the data (6 points in a row above or below the median)
b. Evidence of a trend in the data (5 points steadily ascending or descending)
c. Astronomical point
d. Evidence of both a shift and a trend in the data

How a Summary Statistic May Mask Trends





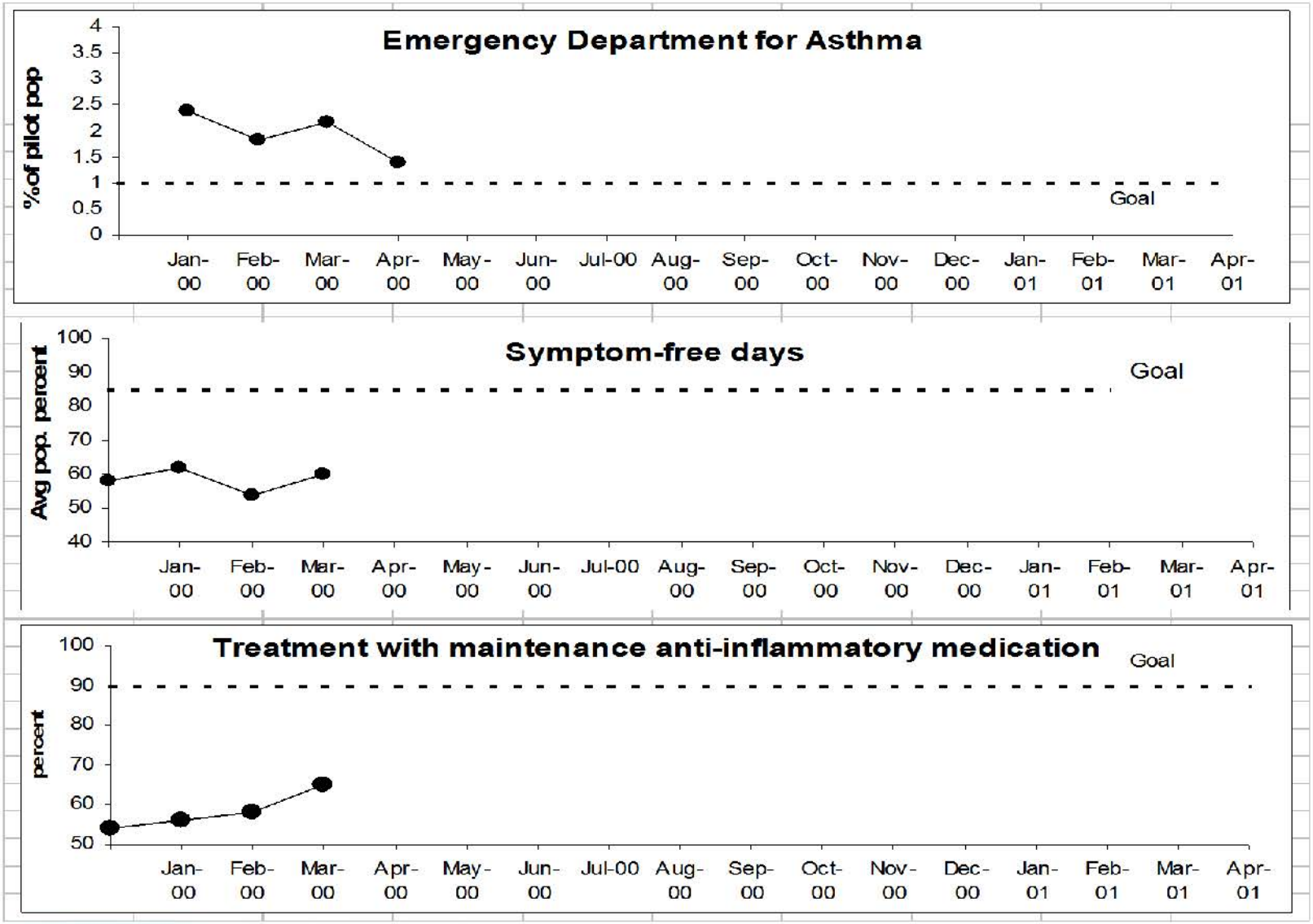




Source: Institute for Healthcare Improvement & API, *The Improvement Guide,2nd ed.* pp 149-150

Questions?

Examples of Using Data for Asthma Care



Dashboards and Transparency

Dashboards

- Assess progress
- Early warning
- Avoid red/yellow/green – may lead to wrong action because it is only a snap shot of the data, not the voice of the process or system
- Use small run charts to reflect changes in the system

Transparency

- Emphasize that data is for learning
- Motivation to change

Recap

PDSA Cycles

- Changes derive from driver diagram
- Increases the belief that the change will result in improvement
- Test on a small scale
- Build knowledge sequentially with multiple PDSA cycles for each change idea
- Include a wide range of conditions in the sequence of tests

Measurement

- Look at data over time
- Keep measures simple, actionable
- Data are for learning not judging
- Be transparent
- Use run chart rules to understand improvement
- Annotate run charts with changes
- Other tools help analyze data

Questions?

Continuing Education

- Continuing education (CE) is provided jointly through Tufts University School of Medicine Office of Continuing Education and the National Initiative for Children's Healthcare Quality
- CE credit available for this three-part webinar series includes:
  - 2.25 AMA PRA Category 1 Credits™
  - 2.25 Contact Hours for nurses
  - Certificate of participation
- Attendance at all three webinars is required to receive full credit
  - Sign in for Webinar 3: http://www.cvent.com/d/hcqvtd
- Completion of a **CE evaluation survey** is **required** and a link will be circulated to all those who signed in for the three surveys
- Certificates will be available electronically 6 to 8 weeks after completion of the CE evaluation survey

Preview of the QI 201 Action Learning Series

- Purpose
  - Enable states to undertake a QI project with technical assistance and support
- Next Steps
  - Your input will help us shape the QI 201 Track
  - Please complete the evaluation as you exit the webinar to let us know what would be helpful
    - Topics
    - Format
    - Intensity
    - Your state's level of interest

Thank you for participating in today's webinar!

Please complete the evaluation
as you exit the webinar.

Appendix

Jointly Sponsored by Tufts University School of Medicine and National Initiative for Children's Healthcare Quality

Accreditation

Physicians

- This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of Tufts University School of Medicine (TUSM) and National Initiative for Children's Healthcare Quality. TUSM is accredited by the ACCME to provide continuing medical education for physicians.
- TUSM designates this enduring material for a maximum of 2.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nurses

- Tufts University School of Medicine Office of Continuing Education is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's COA.
- This activity provides 2.25 Contact Hours for nurses.

Requirements for Successful Completion

- To receive CE credit, participants must register, view the content and complete the evaluation. Certificates will be available electronically 6-8 weeks after successful completion of the activity.

Disclosure of Relevant Financial Relationships with Commercial Interests

- All faculty course directors, planning committee members and others in a position to control the content of an educational activity are required to disclose to the audience any relevant financial relationships with commercial interests. Conflicts of interest resulting from a relevant financial relationship are resolved prior to the activity during the content review.

No relevant financial relationships are held by any of the planners, presenters or TUSM OCE staff.

Building a Measurement Plan

For each measure:

- How is it operationally defined? (e.g., numerator, denominator)
- What data will be collected?
- On which population?
- What is your sample size?
- How will the data be collected?
- Who will collect the data?
- When will you collect the data? (Tip: begin immediately)

Other Analytic Tools for Understanding Improvement

- Traditional method is with run charts
- Other (selected) analytic tools
  - Pareto diagrams – 80/20 rule
  - Scatter diagrams –shows relationship between two changes
  - Histograms – frequency distribution of a process

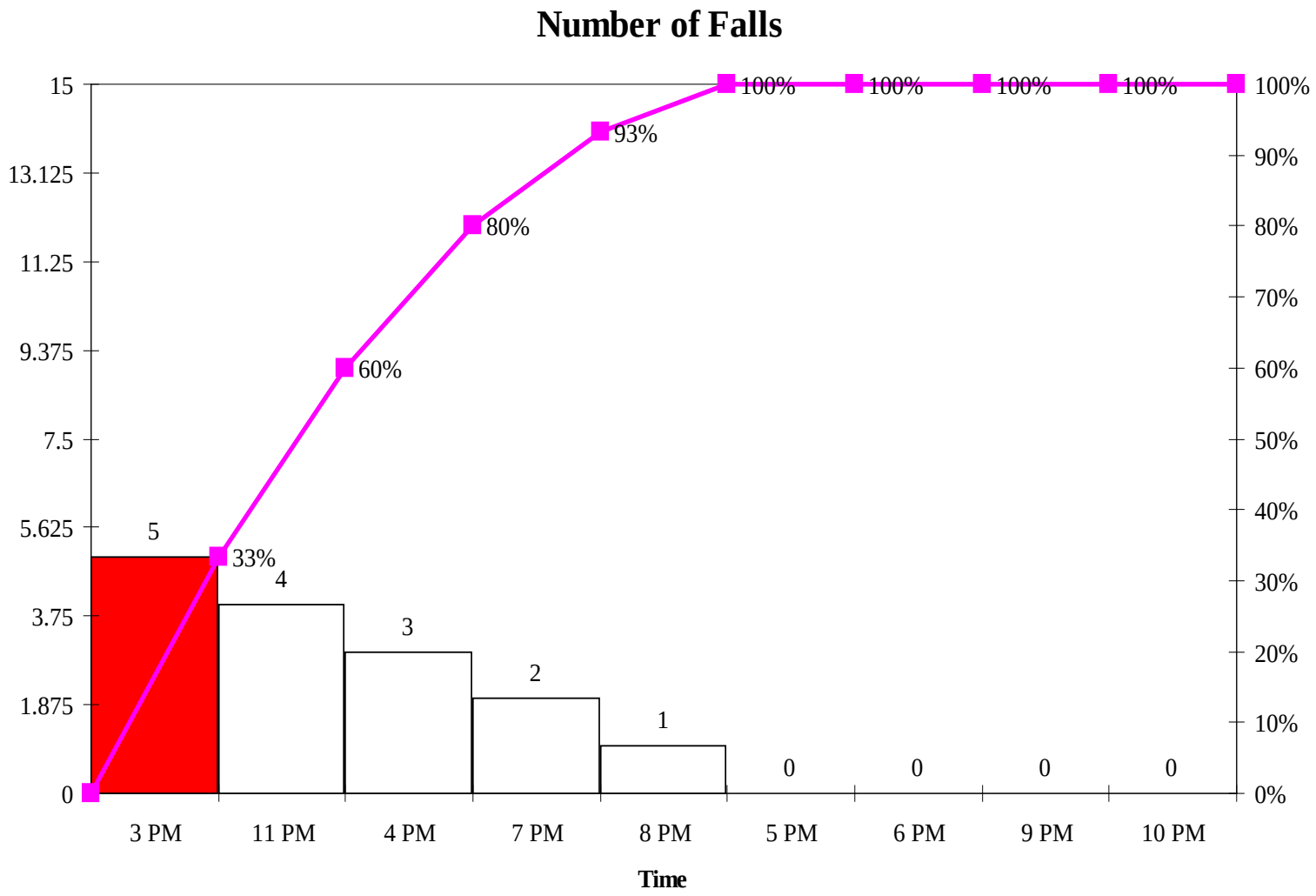
Pareto Diagrams

- Best used when you want to see where to start to study or improve a process
- Use with categorical (count) data
- Frequently you have a large population in the area you want to study or improve and need to break it down to something manageable
- This is where the 80/20 rule applies:
  - 80% of your problems come from 20% of the data/bars
  - If you focus on the areas where you can make the biggest difference, you can solve most of your issues/problems faster

Use of Pareto Diagrams in Real Life

- Reasons for patient dissatisfaction
- Unplanned readmission rates
- Reasons for no care plan in chart
- Types of medication errors
- Missing documentation in the medical record

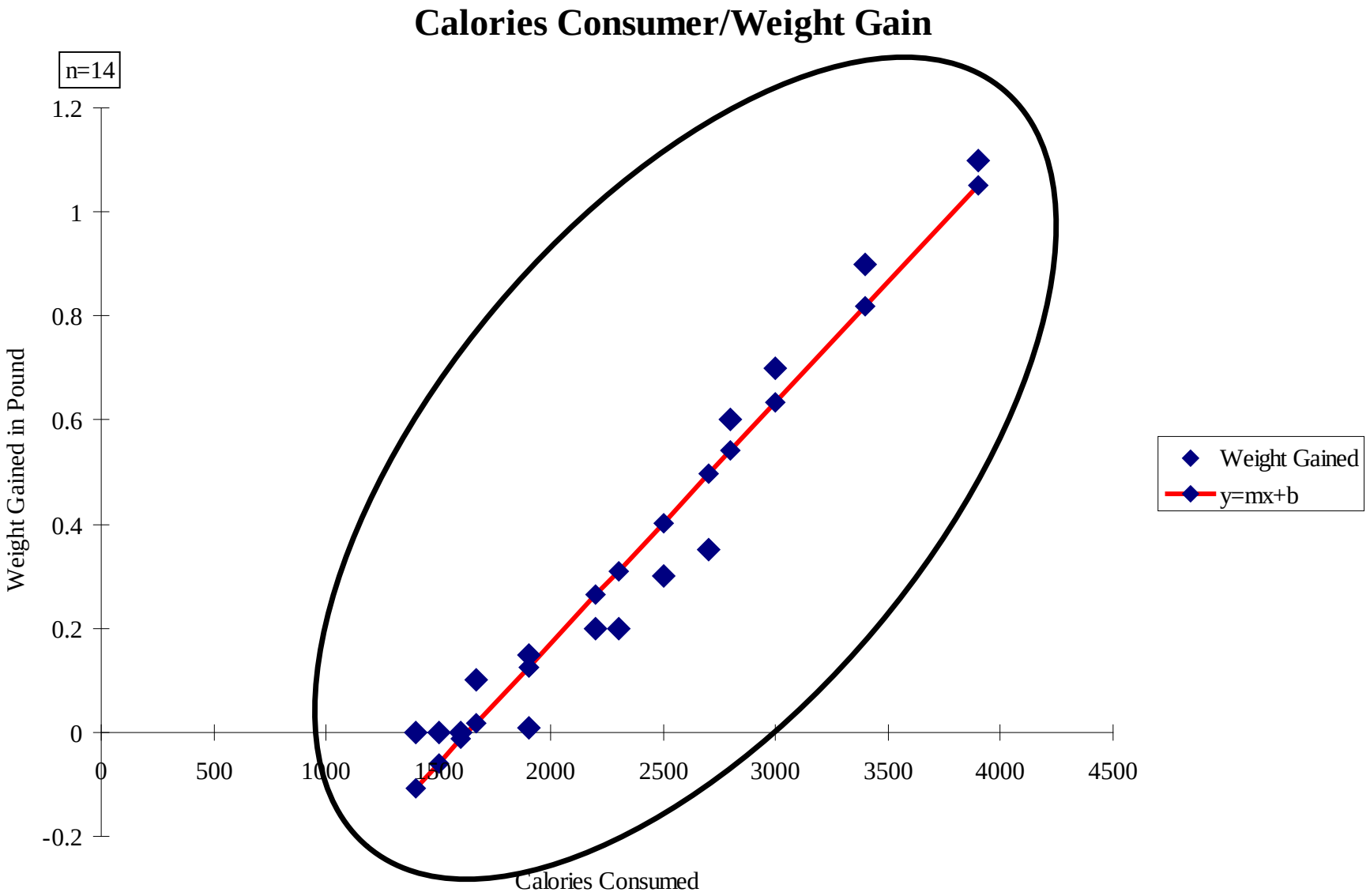
The **Pareto** chart and analysis is used when dealing with chronic problems and helps identify which of the many chronic problems to attack first. The chronic problem with the highest number of events will show up on the Pareto chart with the tallest bar, which represents the most frequent occurring problem.



Use of Scatter Diagrams

- Can be used to answer the question: Is variable A possibly related to variable B?
- An indication of the relationship between independent and dependent variables
- Does NOT prove causation
- Does suggest further investigation

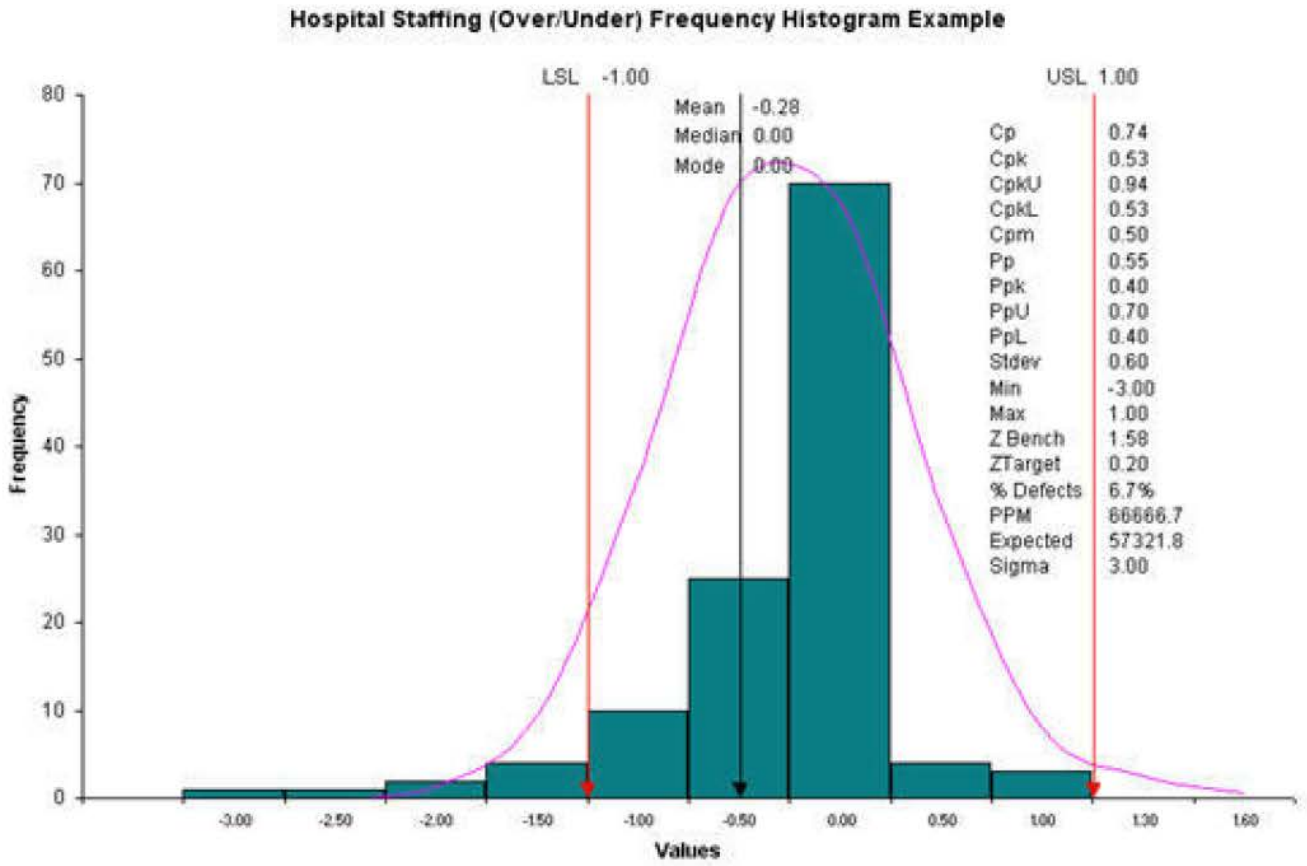
Example of a Scatter Diagram



Interpreting Scatter Plots

- Narrow band of points extending from the lower left to the upper right suggests a positive correlation
- Means that as one factor increases so does the other
- Possible to predict the approximate value of one factor when you know the value of the other

Example of a Histogram



Source: KnowWare International, Inc.

Commonly Used Quality Tools

- Affinity Diagram – categorize data
- Interrelationship Digraph – classify cause and effect, relationships; ascertain key drivers
- Cause and Effect Diagram – identify causes creating an effect
- 5 Why's Flow Chart – expose needless complexity, rework, delays
- Swim Lane Chart
- Value Stream Chart
- Force Field Analysis – identify forces acting for or against a change
- Brainstorming – idea generation
- Nominal Group Technique – brainstorming technique
- Multi-voting – reduce large list

Additional Resources

The Improvement Guide: A Practical Approach to Enhancing Organizational Performance. G. Langley, K. Nolan, T. Nolan, C. Norman, and L. Provost. San Francisco: Jossey-Bass Publishers, 1996.

Quality Improvement Through Planned Experimentation. 2nd edition. R. Moen, T. Nolan, and L. Provost. New York, NY: McGraw-Hill, 1998.

"Understanding Variation," T. W. Nolan and L. P. Provost. *Quality Progress,* Vol. 13, No. 5, May 1990.

The Memory Jogger. M. Brassard and D. Ritter. Salem, NH: GOAL/QPC, 1985.

2013 Core Set of Children's Health Care Quality Measures

Prevention and Health Promotion
Timeliness of Prenatal Care
Frequency of Ongoing Prenatal Care
Behavioral Health Risk Assessment (for Pregnant Women) – ***NEW IN 2013***
Percentage of Live Births Weighing less than 2,500 Grams
Cesarean Rate for Nulliparous Singleton Vertex
Childhood Immunization Status
Adolescent Immunization Status
Human Papillomavirus (HPV) Vaccine for Female Adolescents – ***NEW IN 2013***
Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents: Body Mass Index Assessment
Developmental Screening in the First Three Years of Life
Chlamydia Screening in Women
Well-Child Visits in First 15 Months of Life
Well-Child Visits in the 3rd, 4th, 5th, and 6th Years of Life
Adolescent Well-Care Visit
Percentage of Eligibles Who Received Preventive Dental Services
Availability
Child and Adolescent Access to Primary Care Practitioners
Management of Acute Conditions
Appropriate Testing for Children with Pharyngitis
Percentage of Eligibles who Received Dental Treatment Services
Ambulatory Care: Emergency Department Visits
Pediatric Central-line Associated Bloodstream Infections – Neonatal Intensive Care Unit and Pediatric Intensive Care Unit
Management of Chronic Conditions
Annual Percentage of Asthma Patients with One or More Asthma-related Emergency Room Visits
Medication Management for People with Asthma – ***NEW IN 2013***
Follow-Up Care for Children Prescribed Attention Deficit-Hyperactivity Disorder (ADHD) Medication
Annual Pediatric Hemoglobin A1C Testing
Follow-up After Hospitalization for Mental Illness
Family Experiences of Care
Consumer Assessment of Healthcare Providers and Systems 5.0H (child version including children with chronic conditions supplemental items)

Initial Core Set of Health Care Quality Measures for Adults Enrolled in Medicaid

Prevention and Health Promotion
Flu Shots for Adults Ages 50-64
Adult BMI Assessment
Breast Cancer Screening
Cervical Cancer Screening
Medical Assistance With Smoking and Tobacco Use Cessation
Screening for Clinical Depression and Follow-Up Plan
Plan All-Cause Readmission
Diabetes, Short-term Complications Admission Rate
Chronic Obstructive Pulmonary Disease (COPD) Admission Rate
Congestive Heart Failure Admission Rate
Adult Asthma Admission Rate
Chlamydia Screening in Women age 21-24
Availability
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment
Prenatal and Postpartum Care: Postpartum Care Rate
Management of Acute Conditions
Follow-Up After Hospitalization for Mental Illness
Elective Delivery
Antenatal Steroids
Management of Chronic Conditions
Annual HIV/AIDS Medical Visit
Controlling High Blood Pressure
Comprehensive Diabetes Care: LDL-C Screening
Comprehensive Diabetes Care: Hemoglobin A1c Testing
Antidepressant Medication Management
Adherence to Antipsychotics for Individuals with Schizophrenia
Annual Monitoring for Patients on Persistent Medications
Family Experiences of Care
CAHPS Health Plan Survey – Adult Questionnaire *with* CAHPS Health Plan Survey v. 5.0H
Care Coordination
Care Transition – Transition Record Transmitted to Health care Professional