

Quality Improvement Review

M3- VIC

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Objectives

- Provide overview of the material from IHI modules QI 101- 105
- Review material that will be testable on your exam
- Provide information about the structure of the M3 QIPS VIC exam
- Demonstrate examples of USMLE style exam questions

Overview

- What is QI and why is it important? (QI 101)
 - NAM (formerly IOM) 6 aims of QI
- How do you make improvement?/ Model for improvement
 - 1. Set and aim (QI 101)
 - 2. Establish measures (~ QI 102)
 - Define measurements
 - 3. Identify change (~ QI 103)
 - Process map, fishbone, and other tools
 - 4. Test changes (~ QI 104)
 - PDSA, Run chart
 - 5. Implement changes (~ QI 105)
 - Scale and scope, barriers to change

What is QI and Why is it Important?

To Err Is Human (NAM/IOM 1999-2000)

- Error are shockingly COMMON
- US spends twice as much on healthcare as other rich countries
- Poor Americans get worse care than the rich
- *Errors are due to the system and not the individual (paradigm shift in how we approach quality of care)*

Crossing the Quality Chasm (NAM/IOM 2001)

- “Between the health care we have and the care we could have lies no just a gap, but a chasm.”
- IOM 6 Aims for Improvement (defines quality for healthcare)
- Sets goals for healthcare improvement
- Makes recommendations on how to achieve those goals

What is QI and Why is it Important?

- With basic skills in the area of quality improvement, and the will to do so, **YOU** can make a dent in the statistics and inequalities!

What is QI and Why is it Important?

6 AIMS of QI:

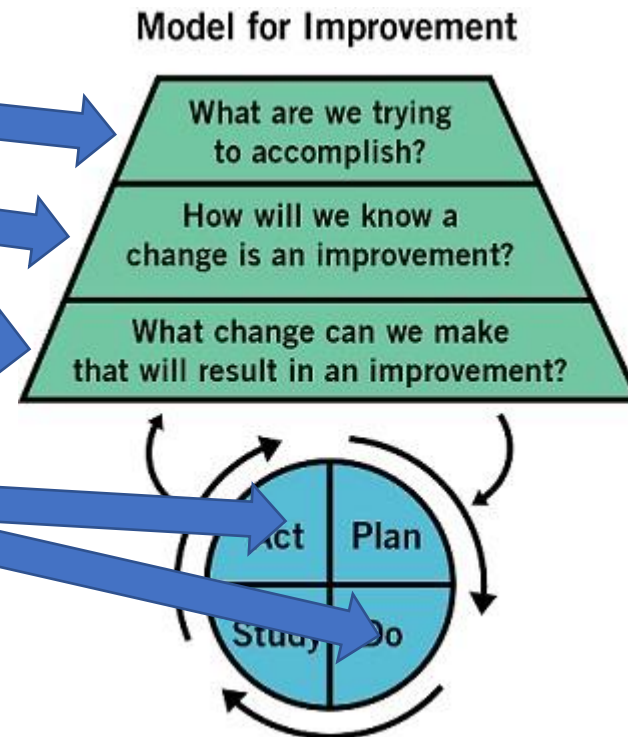
- Safe
 - Avoid injuries to patients from the care that is intended to help them.
- Timely
 - Reduce waits and sometimes harmful delays for patients and providers.
- Effective
 - Provide the appropriate level of services based on scientific knowledge.
- Efficient
 - Avoid waste, including waste of equipment, supplies, ideas, and energy.
- Equitable
 - Care shouldn't vary in quality because of personal characteristics.
- Patient-Centered
 - Provide care that is respectful of and responsive to individual patients.

How Do you Make Improvement?

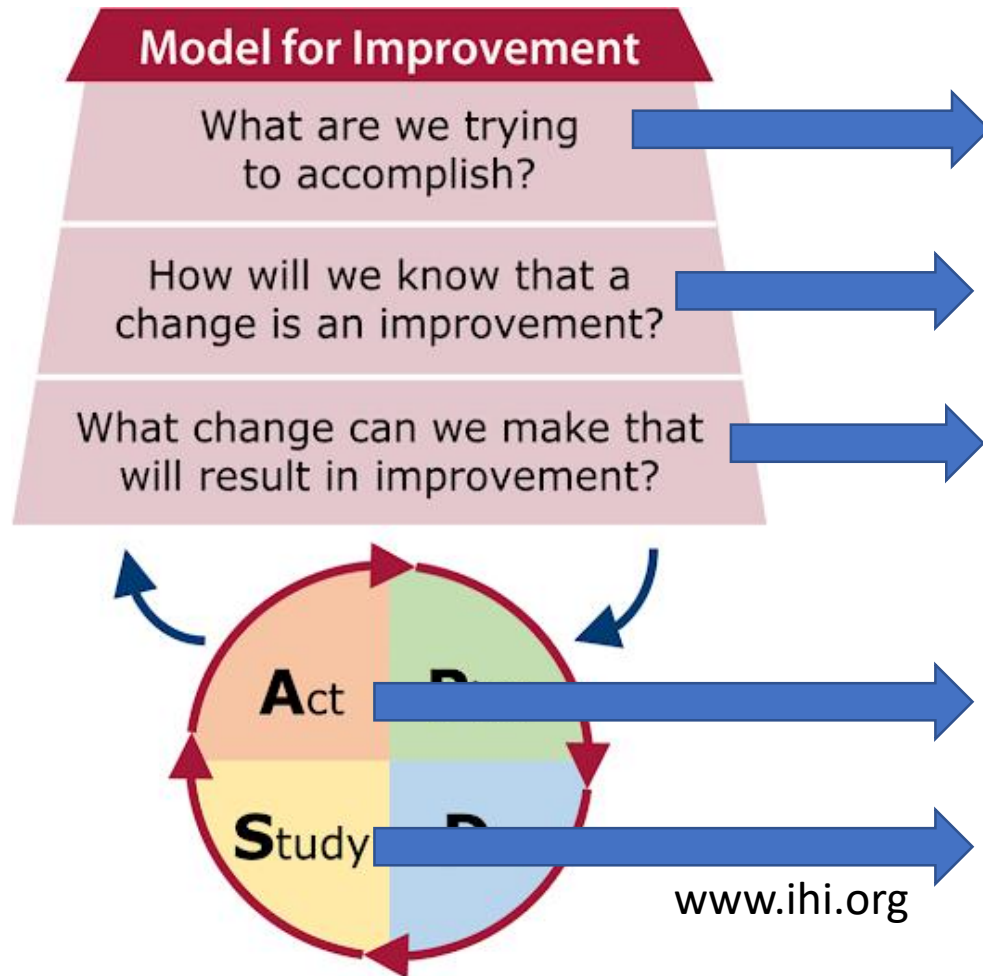
Steps for Improvement

1. Set and aim
2. Establish measures
3. Identify change
4. Test changes
5. Implement changes

Model for Improvement



IHI Model for Improvement



*Tools and Concepts

Aim statement

Define Measurements

QI Tools: Fishbone diagram,
Process map

Pilot with scale and scope

Run Chart

1. Set an Aim

Model for Improvement question “What are we trying to accomplish?”

- This is NOT a hypothesis! (you start with the outcome in mind)
- How good?
- By when?
- For whom?

1. Set an Aim

Bad Examples

- We'll do better on tests.
- I will lose weight.
- I'm going to exercise more often.

Good Examples

- Every member of my study group will increase their grade point average by 10 percent or more within eight months.
- I will weigh 160 pounds or less by February 1.
- I'm going to run at least 10 miles per week by July 4.

2. Establish Measures

Model for Improvement Question “How will we know change is an improvement?”

- You can make a change, but you will not know if its an *improvement* without MEASURING.
- Improvement data is typically collected as a family of measurement that consist of 3 types of measures:
 - *Outcome, process and balancing*
 - (4th Structural – how many hand dispensers, how many nurses to patients)

2. Establishing Measures

- Outcome measures:
 - The measures you ultimately want to move.
 - They tell you how the system is performing, i.e., the ultimate result.
 - Example: Reduction in readmissions from heart failure

2. Establishing Measures

- Process measures:
 - Tell you if the parts or steps in the system are performing as planned to affect the outcome measure.
 - Examples:
 - The number of patients who have a heart failure clinic appointment set at time of discharge
 - The number of patients who received educational and instructional packet on heart failure at time of discharge
 - The number of patients who were seen by their PCP within 1 week of discharge
 - The number of patients with an EF of $>30\%$ who were referred for ICD

2. Establishing Measures

- Balancing measures:
 - Are often not directly related to the aim
 - Assess whether the changes designed to improve one part of the system are introducing problems elsewhere.
 - Example:
 - Amount of time it takes for RN to educate the patient on the heart failure information packet
 - The weight time for non-hospitalized heart failure patients to set acute visits in heart failure clinic

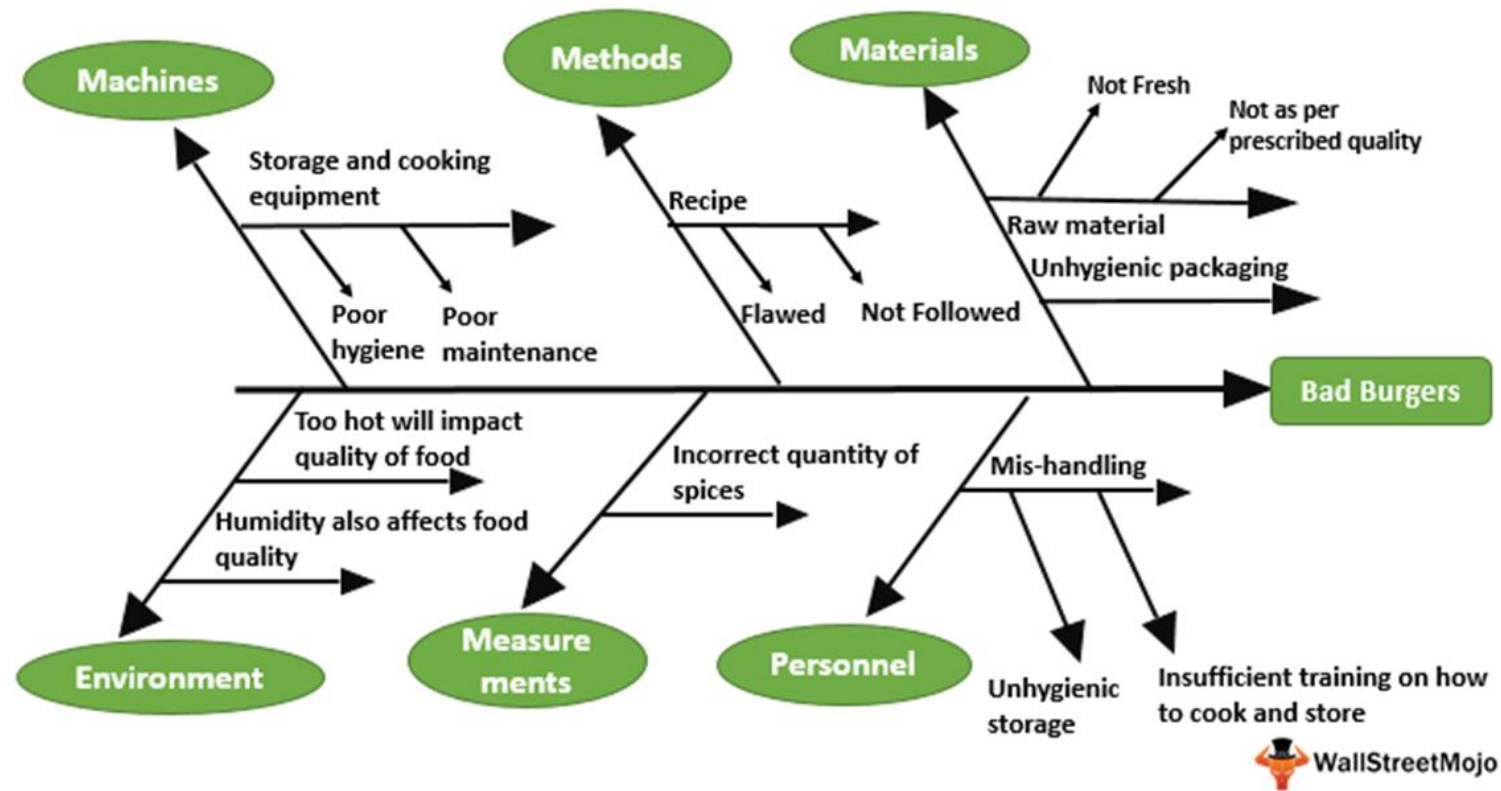
3. Identify Changes

Model for Improvement Question “What change can we make that will result in improvement?”

- How are you going to achieve your aim?
- Where do new ideas come from?
- There are tools that can help.
 - **Fishbone diagram**
 - **Process Map**

3. Identify Changes

Fishbone Diagram (Cause and Effect diagram or Ishikawa diagram)



3. Identify Changes

Fishbone Diagram (Cause and Effect diagram or Ishikawa diagram)

- Materials (supply, design, availability, and maintenance)
- Methods (steps in care process and steps in supply chain)
- Environment (staffing levels and skills, workload and shift patterns, administrative and managerial support, and physical plant, policies, and regulations)
- Equipment (any equipment/tools needed to get the job done)
- People (staff knowledge and skills/training, competence, patient behavior, and supervision)

3. Identify Changes

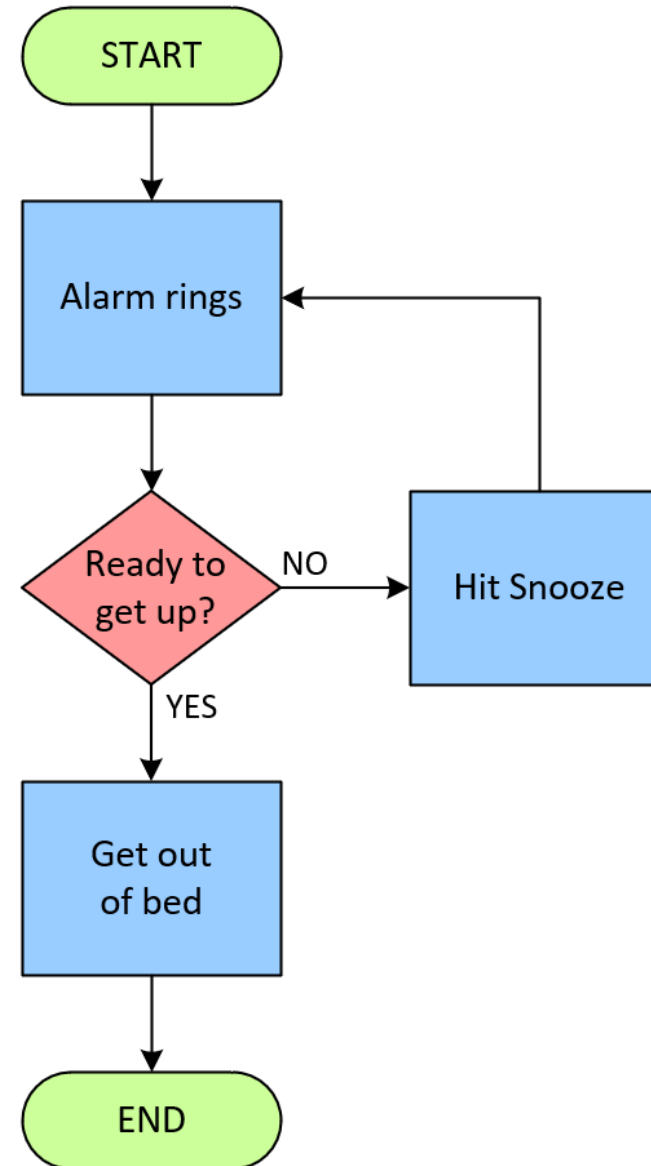
Process Map (Flow Chart)

- The process map is a tool that graphically shows the inputs, actions and outputs of a process in a clear, step-by-step map of the process.

3. Identify Changes

Process Map Key

- Oval: Start/ End
- Square: Necessary step
- Diamond: Decision point



4. Test Changes

Model for Improvement : PDS(A) Cycle

- This is where the **PDS(A) cycle** portion of the Model for Improvement comes in. By planning a test of change, trying the plan, observing the results, and acting on what you learn, you will progressively move toward your aim.
- **Run charts** are a simple and effective way to determine whether the changes you're making are leading to improvement.



4. Test Changes

Plan

- Set an intervention plan and make a prediction about what you think will happen.
- Plan the test (how are you going to Do it?), including a plan for collecting data.
- Develop a plan to test the change (how are you going to Study it?).
(Who? What? When? Where?)

4. Test Changes

Do

- Carry out the test.
- Document problems and unexpected observations.
- Collect and begin to analyze the data.
 - Improvement teams should strive to collect just enough data to make an informed decision about how to proceed.
 - Sampling

4. Test Changes

Study

- Analyze the results and compare them to your predictions.
- Complete, as a team, if possible, your analysis of the data.
- Compare the data to your prediction.
- Summarize and reflect on what you learned.
- Analysis Tools: **Run Chart** and Control Chart

4. Test Changes

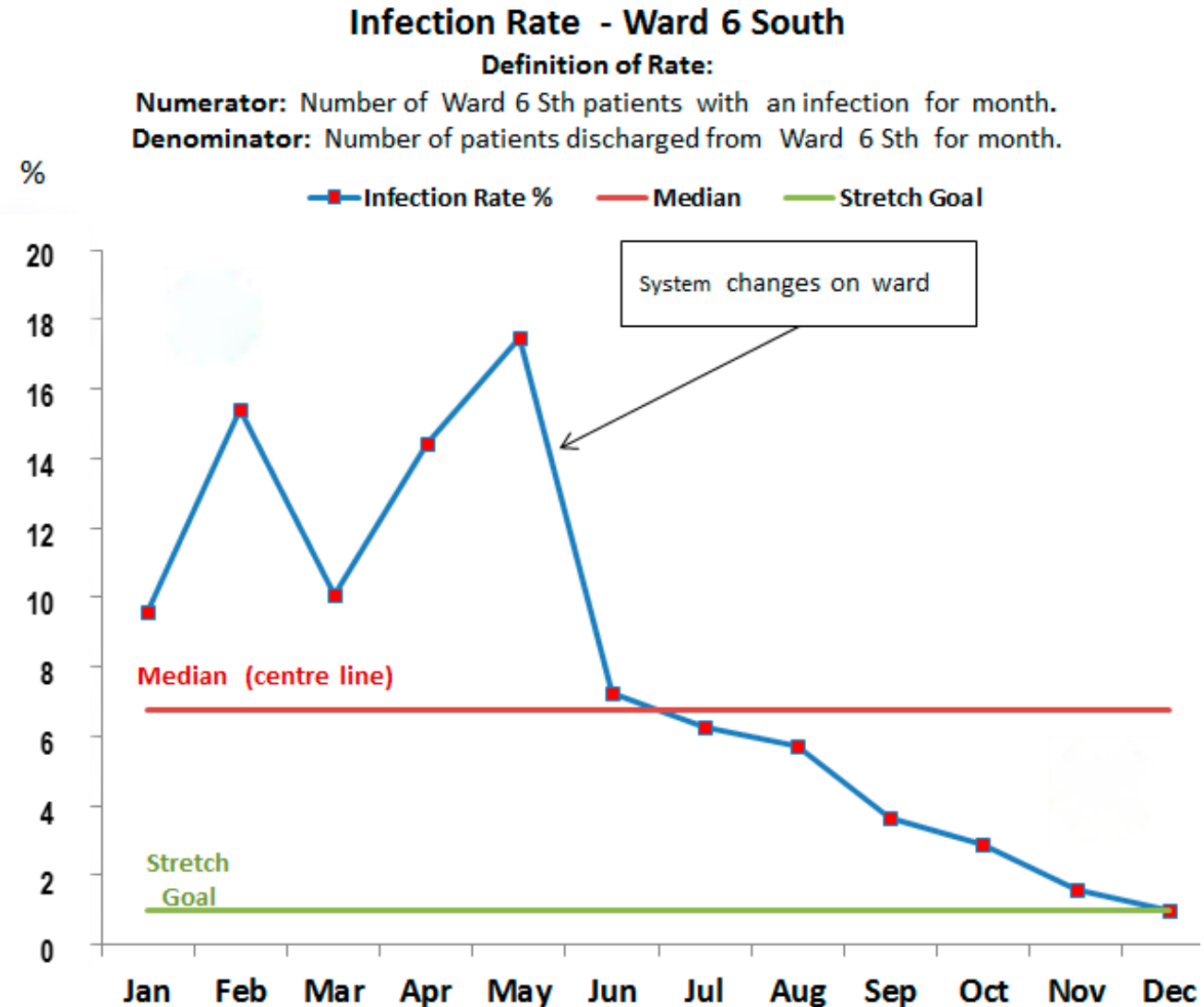
Run Chart

- Plotting data over time on a graph
- Discover trends and patterns
- Evaluate if a target is achieved
- Especially important at the beginning of a project
- Cannot predict “control” → need control chart
 - Cannot predict if process is stable
 - Cannot predict if variation is common cause (predictable variation) or special cause (unknown cause of variation)

4. Test Changes

Run Chart

- Need 10-12 pts minimum to be able to interpret the data
- X: time
- Y: scale of your data
- Median: need 10 pts to establish
- Goal: set by the organization
- Annotation: important to interpret data against changes in the intervention

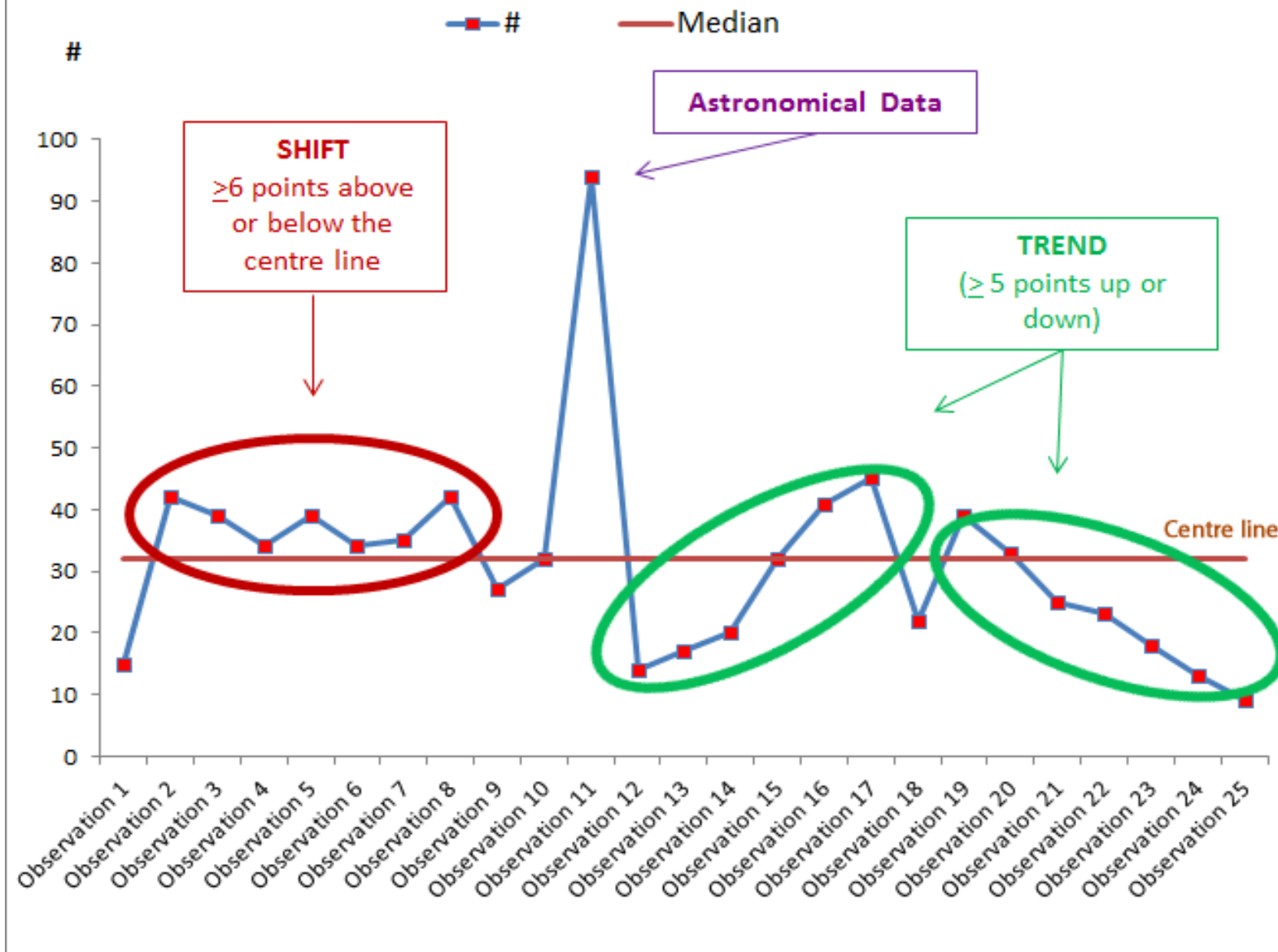


4. Test Changes

Interpretation of Run Chart:

- Shift: 6 or more consecutive data points above or below the median:
 - Note: **Don't count points on the median.**
- Trend: 5 or more sequential data points in a row all going up or all going down:
 - Note: **If two consecutive points are the same value, only count once.**
- Run: consists of one or more consecutive data points on the same side of the median.
 - Note: **It doesn't include data points that fall on the median.**
 - Count by drawing a circle around each run — that is, circle each set of points clumped together on either side of the median — and count the number of circles you end up with.
- Astronomical data point: One or more data points stand out as being very far away from the others, so much so that anyone would agree they appear highly unusual.
 - Note: every data set has a high point and a low point; this does not make them astronomical.

Interpretation of a Run Chart: Shift, Trend & Astronomical Data



4. Test Changes

Control Chart (Shewhart Chart)

- An advanced description of a run chart, which requires a minimum of 20 data points
- Shows the lower and upper control limits (stability)
- Determines between special cause and common variation
 - common cause (predictable/normal variation)- amount of seasonal rainfall
 - special cause (unusual/unknown cause of variation)- broken equipment
 - Interpreted by too few or too many runs (determined by a reference chart that already has mathematical equations calculated, see QI 104 lesson 2)

5. Implement Changes

Increasing Scale and Scope until you have Implemented Change

Scale

- Refers to the time span or number of events included in a test cycle — such as a specific number of patient encounters.
- When you scale up your test of change, you're thinking about more (more patients, more time, more events).

Scope

- Refers to the variety of conditions under which your tests occur — such as different combinations of patient, staff, and environmental conditions.
- When you expand the scope of your test, you're thinking about difference (different patients, different times, different staff).

5. Implement Changes

Increasing Scale and Scope until you have Implemented Change

- Pilot Study:
 - Your initial test cycles should demonstrate the potential for success in a range of conditions so that your team and managers have a high degree of confidence the change will lead to improved performance.
 - This can help minimize the natural resistance most people have to change.
- Avoid changing scale and scope at the same time

5. Implement Changes

Common Barriers to Change

- The expected autonomy of health care workers:
 - If a health care provider feels a change may reduce or alter his or her autonomy, he or she may be reluctant to embrace a change.
- Stability that comes with routine:
 - Routines such as standard operating procedures, certain recurring behaviors, or institutionalized ways of communicating create stability for people.
- Programmed behavior or behaviors that result from processes within a system (e.g., reward structures and promotions):
 - This is when a system or process can hinder change. For example, if your pay is tied to the speed or accuracy of accomplishing a task, you may perceive that a change could alter your performance of that task and consequently your pay.

5. Implement Changes

Common Barriers to Change Cont.

- A limited focus or tunnel vision:
 - People become so focused on their part of the puzzle that they cannot see how a change in a process will affect the whole system or process of care, of which they are just one part.
- A real or perceived limit on resources:
 - People involved in a change may think it will take too much time, money, or equipment, and thus they are reluctant to try it.
- An accumulation of policies, procedures, regulations:
 - When there is an accumulation of regulations, a change can be perceived as "just one more thing."

5. Implement Changes

How will you know when change is implemented?

- PDSA goal changes from how to make change to how to maintain change.
- During an implementation PDSA, the goal is to “hardwire” the change into the system, making it a permanent part of how the process is done.
- You will know a change has been implemented when you could have 100 percent staff turnover of the people who were involved in the original tests and studies, and the change would still remain in place — as part of the system

Exam Format

- Test will be 16 questions.
- The test will be multiple choice
- There will be a mix of short question stems and longer, case-based (USMLE style) question stems.
- You will be tested on both specific concepts/ skills and on general understanding of/nuance between concepts.
- There will be at least one (but may be more than 1) test question from each required IHI module (QI 101-105 and PS 101-105).
- The material tested will be at least referenced or covered within this review, though IHI modules should be your main source of material for studying.
- Not all the material covered in this review will be tested.

Test Examples

The hospital collects monthly data on follow up appointments set for patients prior to discharge with a goal of achieving 85% of appointments set. Over the last 6 months, the data was 85% in May, 89% in June, 89% in July, 92% in August, 95% in September, and 97% in October. Which is the most appropriate interpretation of the data when plotted to a Run Chart?

- A. Astronomical data
- B. A shift
- C. An upward trend**
- D. Data within the control limits
- E. Data is out-of-control limits

Test Examples

The Chief Medical Officer is tasked with increasing the patient satisfaction for patients hospitalized on the general medicine services. She meets with a multidisciplinary team of stakeholders and quality improvement specialists to plan a quality improvement project. The team develops an initiative utilizing the PDSA (Plan, Do, Study, Act) cycle. Which answer best describes the steps of the PDSA cycle the team followed?

- A. Make a hypothesis for a novel intervention, randomly assign the intervention or usual care to each patient, measure and study the individual patient data between the intervention group and the control group and analyze and publish your results.
- B. Meeting with a group of providers and stakeholders to brainstorm barriers to achieving your improvement aim and create a cause-and-effect diagram.
- C. Determine the timeline of what happened, map the typical process, identify the root cause, develop a list of recommended actions to prevent recurrence.
- **D. Determine the measures and plan for executing an improvement project, implement the new QI intervention and collect data, analyze the data from the QI intervention, and act to implement the new process into the system.**