

Quality Improvement Basics for Value-based Payment

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Learning Objectives

1. Discuss the importance of quality improvement for value-based care delivery and payment.
2. Describe the theory behind quality improvement.
3. Discuss tools used for quality measurement and improvement.
4. Apply QI concepts to organizational initiatives.

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Audience Engagement System

The image shows three sequential screenshots of a mobile application interface for an audience engagement system. Step 1 shows a home screen with a navigation bar at the top and a grid of icons for various features like 'Home', 'CME', 'My Profile', 'My CME', 'My Schedule', 'My History', 'My Settings', and 'My Support'. Step 2 shows a list of CME activities with columns for 'Date', 'Title', and 'Status'. Step 3 shows a detailed view of a CME activity titled 'CME011 Acute Coronary Syndromes: Unchain My Heart' with fields for 'Date', 'Time', 'Status', and 'Details'.

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Quality Improvement (QI)

- Systematic and continuous actions that lead to measurable improvement in health care services and health status of targeted patient groups.

US Dept. Health and Human
Services Health Resources and
Services Administration (HRSA)

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Why Does QI Matter?

- a. Improves patient care
- b. Improves physician performance
- c. Drives payment
- d. All of the above

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Why Do Health Care Systems Focus on QI?

- Improved patient outcomes
- Improved efficiency leading to reduced waste and reduced cost
- Avoid costs associated with poor outcomes and errors

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Why Do Health Care Systems Focus on QI?

- Creates reliable, predictable care
- Improved communication to external resources

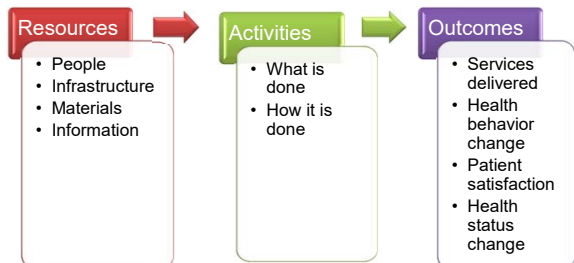
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Key Principles of Quality Improvement

- Works on systems and processes
- Focus on patients
- Focus on team
- Focus on use of data

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Works on Systems and Processes



Focus on Patients



- To be high quality, care should be:
 - Evidence based
 - Promote safety
 - Support patient engagement
 - Include elements of cultural competency and coordination with a larger system

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Focus on Team

- Team approach is used because:
 - System change is complex
 - No one person knows the full issue
 - Process always involves more than one area
 - Buy-in needed



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Focus on Data

- Spreadsheets matter!
 - Distinguishes perception from reality
 - Establishes a baseline
 - Allows monitoring of effectiveness and sustainability
 - Allows comparison
 - Quantitative and qualitative methods OK
 - Should have appropriate rigor

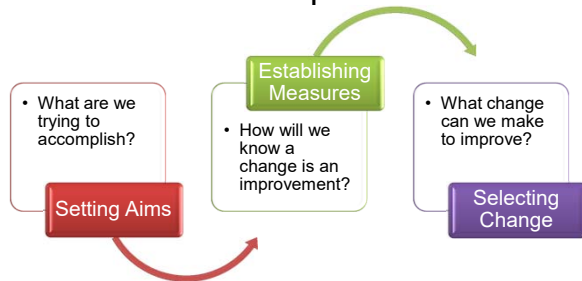
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QI Models

1. LEAN
2. Six Sigma
 - DMAIC
3. CARE
4. FADE
 - Focus, Analyze, Develop, Execute
5. Quality by Design
6. Model for Improvement

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Model for Improvement



Selecting a Practice Change

- Choose something that is:
 - Manageable to implement
 - Impactful to your patient population
 - Measurable
 - Interesting to you

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Defining a Practice Change

- Making a change in the practice is a team effort
- A variety of perspectives will help you to make a stronger choice

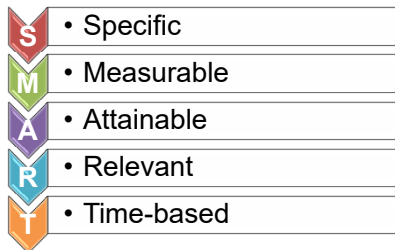
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Defining a Practice Change

- Obtaining buy-in early will increase team engagement in times of change
- A team selected change often has more staying power than one chosen by an individual

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Defining a Practice Change

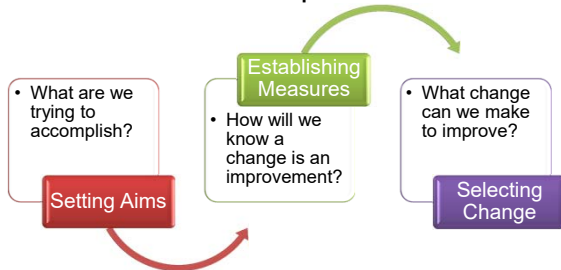


Defining a Practice Change

- Good goal**
- We plan to increase breastfeeding rates in new mothers by encouraging breastfeeding at the 36 week prenatal visit.
- Better SMART goal**
- We plan to increase rates of mothers who breastfeed at least once by 25% over the next year by having all physicians review a standardized handout on the benefits of breastfeeding at the 36 week prenatal visit.

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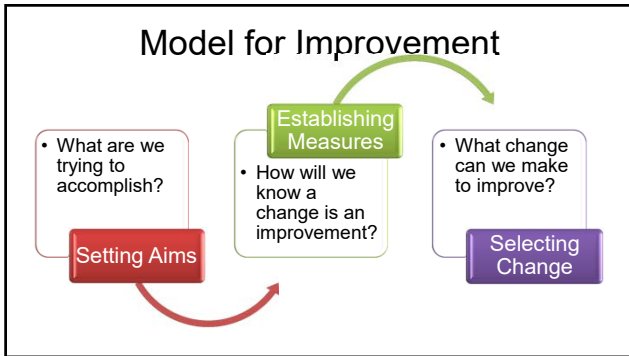
Model for Improvement



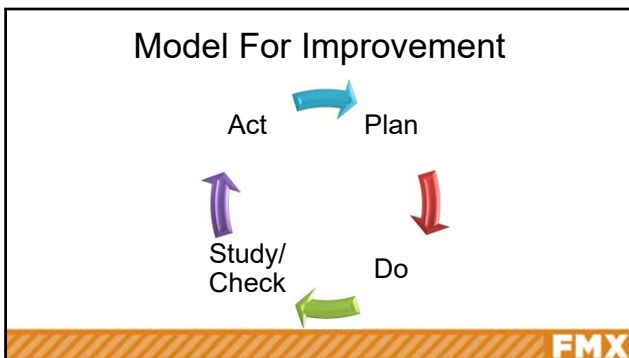
Establishing Measures

- Without measures, cannot assess improvement effectiveness
- Can often prompt a discussion of the opportunity costs of any decision

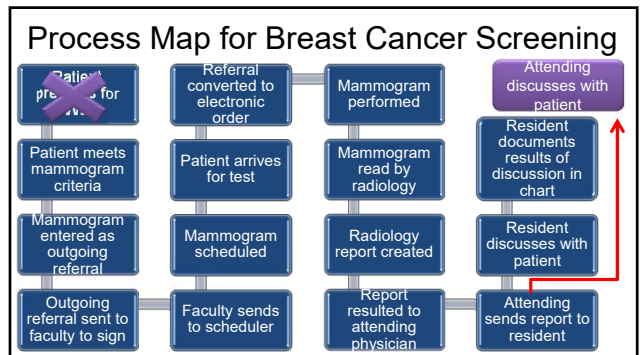
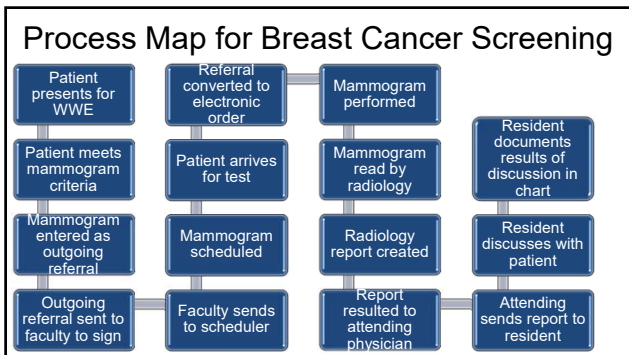
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- ### Selecting Change
- Brainstorming broadly can be helpful
 - Clarity on who makes the decision
 - Focus on small, rapid cycle changes



- ### Process Mapping
- Define each step in the process in sequence
 - For example...



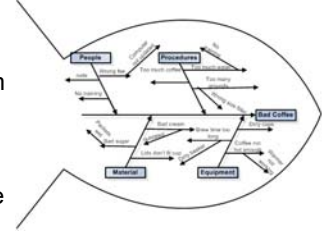
How do Process Maps Help?

- Visual depiction of every step
- The more detailed the better
- Improved efficiency improves outcomes, limits errors
- Re-creating a process map can help demonstrate change

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Fishbone Diagrams

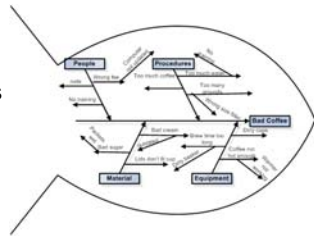
- Identify stakeholders
- Start with the problem
- List everyone who impacts or is impacted by the issue



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Fishbone Diagrams

- Great way to identify who should be on your team, who needs to buy in and what stakeholders you may have missed



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Data and QI

- Needs to be a data plan
 - Systematic method of handling information to ensure information is reliable and accurate
- Should be a well thought out approach and should not vary over time

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Data Analysis

- What do you really want to know?
 - Example: Performance on a knowledge test
 - How many people score at least 80%?
 - How many people improve on a pre and post test?
 - What is the mean score on the test?

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Data Analysis

- Pick a meaningful measure
 - An improvement of 2% in vaccination rate may be statistically significant, but not clinically meaningful or vice versa

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Data Analysis

- Pick measures that are easy to obtain
 - Example: Procedure logs vs. automatic note counts
 - Both get the data of how many ICU patients were seen, but data is better with an easier method of collection

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Data Plan Elements

- Name of measure
- Denominator detail with inclusions/ exclusions
- Numerator detail with inclusions/ exclusions
- Data source with specific queries and parameters for numerator and denominator
- Individual assigned to collecting each data element
- Calendar of performance measure reporting

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Performance Measures

Relevant

- Does this really impact my patients?

Measureable

- Can I realistically and efficiently measure this?

Accurate

- Is the measure clinically sound?

Feasible

- Can I realistically improve this?

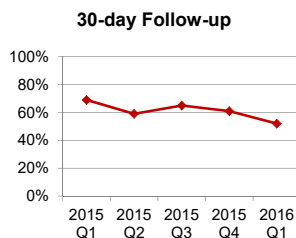
Data Analysis

- Consider benchmarking
 - Benchmarks should be appropriate
 - Should be a stretch goal
 - Should be based on available data when possible

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Run Charts

- See change over time
- Show the impact of interventions
- Visual depiction of progress and what works best for your practice



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Check Sheet

- Collects data in real time
- Useful for assessing a process or input to other analyses
- Can be used to generate frequency graphs

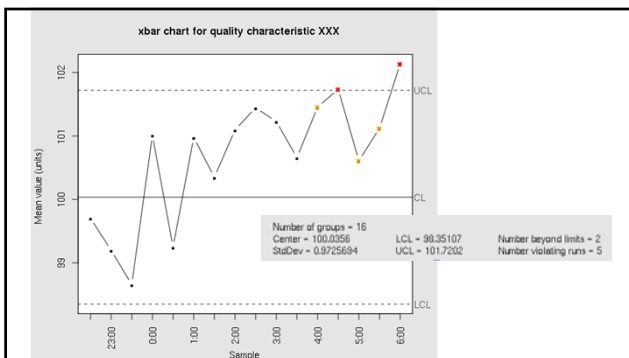
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Motor Assembly Check Sheet								
Name of Data Recorder:	Leister B. Rapp							
Location:	Rochester, New York							
Data Collection Dates:	1/17-1/23							
Defect Type	Days							TOTAL
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Supplied parts not used								20
Misaligned weld								5
Improper test procedure								0
Wrong part issued								3
Film on parts								0
Welds in casting								5
Incorrect dimensions								2
Adhesive failure								0
Masking insufficient								1
Spray failure								5
TOTAL		10	13	10	5	4		52

Control Chart

- A chart showing quality measure at different points in time. Mean of measure is shown as are lines of standard error.
- Upper and lower control limits shown at 3 standard errors from mean of measure.
- 99.73% of all points fall within control lines, suggesting anything out is true variation
- Tells you something is outside of normal parameters, but not why the process is or isn't delivering the goal.
 - Useful for projects where you want to detect change, not if change is good, bad or why change occurred

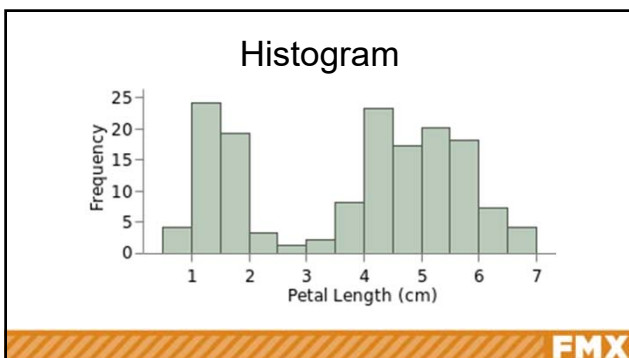
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Histogram

- Graphical representation of distribution of numerical data
 - How often does a specific outcome occur?
 - Useful for continuous variables
 - Ranges of data are used here and the bars touch to show continuity
- Depicts the frequency with which a range of variables occurs

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Pareto Chart

- Contains bars and lines
 - Individual values = bars
 - Cumulative total = line
- Left axis- frequency of occurrence, cost or unit of measure
- Right axis- Percentage of total number of occurrences, total cost, total measure
- Highlights most important factors contributing to quality issue, cost etc.

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Pareto Analysis

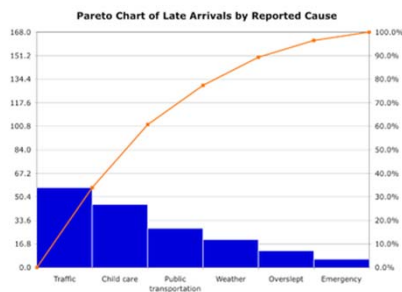
- Estimate the effect of each action then sequence effects to achieve total benefit
- Focuses attention on key issues, but can exclude the small, but significant problems

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Pareto Analysis

- Snapshot in time
- Often used with a fishbone
 - Pareto determines top causes, then fishbone used to drill down into the 5 whys

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Choosing a Statistical Test

- Question 1:
 - Is the data categorical or continuous?
 - Categorical = variables cannot be sequentially ordered or mathematically differentiated
 - Gender, ethnicity, block curriculum
 - Continuous = variables that can be sequentially ordered, but don't fall in natural ranges
 - Weight, time to perform a C-section, temperature

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Independent vs. Dependent Variables

- Variable- what you are trying to measure
 - Independent
 - Stands alone, is NOT changed by the other variable
 - Trying to see if this variable causes a change in something else
 - EX: Age, gender, PGY
 - Dependent
 - Depends on other factors,
 - Is changed by something else and you're usually testing to figure out what that thing is
 - EX: test score, vitamin D levels

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Independent vs. Dependent Variables

- Blood pressure control in children
- Educational handout

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Independent vs. Dependent Variables

- Sentence test
 - INDEPENDENT VARIABLE causes a change in DEPENDENT VARIABLE and it isn't possible that DEPENDENT VARIABLE could cause a change in INDEPENDENT VARIABLE

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Independent vs. Dependent Variables

- Option 1**

 - **BP Control in children** (INDEPENDENT VARIABLE) causes a change in **Educational handout** (DEPENDENT VARIABLE) and it isn't possible that **Educational handout** (DEPENDENT VARIABLE) could cause a change in **BP Control in children** (INDEPENDENT VARIABLE)

Option 2

 - **Educational handout** (INDEPENDENT VARIABLE) causes a change in **BP Control in children** (DEPENDENT VARIABLE) and it isn't possible that **BP Control in children** (DEPENDENT VARIABLE) could cause a change in **Educational handout** (INDEPENDENT VARIABLE)

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Independent Variable	Dependent Variable	Test
Categorical	Categorical	Chi Square
Continuous	Continuous	Regression
Categorical	Continuous	t-test, ANOVA
Continuous	Categorical	Linear and quadratic discriminant analysis

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Choosing a Statistical Test

- Extra consideration for ordinal or interval variables, parametric or non-parametric data

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1 IV with 2 or more levels (dependent/matched groups)	ordinal or interval	Friedman test	SAS	Stata	SPSS	
	categorical	repeated measures logistic regression	SAS	Stata	SPSS	
2 or more IVs (independent groups)	interval & normal	factorial ANOVA	SAS	Stata	SPSS	
	ordinal or interval	???	???	???	???	
1 interval IV	categorical	factorial logistic regression	SAS	Stata	SPSS	
	interval & normal	correlation	SAS	Stata	SPSS	
	ordinal or interval	simple linear regression	SAS	Stata	SPSS	
	categorical	non-parametric correlation	SAS	Stata	SPSS	
1 or more interval IVs and/or 1 or more categorical IVs	categorical	simple logistic regression	SAS	Stata	SPSS	
	interval & normal	multiple regression	SAS	Stata	SPSS	
	categorical	analysis of covariance	SAS	Stata	SPSS	
	interval & normal	multiple logistic regression	SAS	Stata	SPSS	
2 or more	1 IV with 2 or more levels (independent groups)	discriminant analysis	SAS	Stata	SPSS	
2 or more	2 or more	one-way MANOVA	SAS	Stata	SPSS	
2 sets of 2 or more	0	multivariate multiple linear regression	SAS	Stata	SPSS	
2 or more	0	canonical correlation	SAS	Stata	SPSS	
2 or more	0	factor analysis	SAS	Stata	SPSS	
Number of Independent Variables	Nature of Independent Variables	Names of Dependent Variable(s)	Test(s)	How to SAS	How to Stata	How to SPSS

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How Big of a Sample Should I Have?

- Depends on what your analysis will be
 - If statistically evaluating, need to consider if the study is powered to detect a difference
 - In QI, usually samples of convenience or relevance are used knowing that it isn't about power
- If you are going to do stats, need to think about power during study design

Data Analysis

- Must act on the data
 - Measurement without action won't move an organization forward

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Communicating Results

- Quality Improvement is not done alone, so don't keep the results to yourself
- From the beginning have a plan to share data so you can:
 - Celebrate success!
 - Troubleshoot if needed
 - Brainstorm new ideas to improve even more



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Getting Unstuck

- Ensure data is reliable
- Re-evaluate underlying systems
- Re-evaluate change made
 - Was it consistent and sustained?
- Increase number of changes per week
 - QI is rapid cycle change!

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Continuous Quality Improvement

- Quality improvement keeps going
 - When something is successful, build on it
 - When something fails, try a new approach
 - Builds a culture within the practice

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Quality Improvement Challenges

- Defining the right population and right measure
 - PSA debate
- Time
 - Yarnall et al 2003- to provide all USPSTF recommended services to a patient panel of 2500 a physician would need 7.4 hours per working day
- Electronic record
 - Where is information documented and how can it be found?

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Quality Improvement Opportunities

- Every practice has a large population that needs prevention
- Measures have been well defined for many conditions
 - Though may not be what is done in practice
- Buy-in usually easy as impact is well established

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Questions

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Contact Information

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Resources

General Quality Improvement Resources

- [Quality Improvement](#)
- [Quality Measures](#)

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Interested in More CME on this topic?
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