



How to Get Started in Healthcare Quality Improvement

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Disclosures

- The presenter has no financial disclosures.



Assumptions

Basic knowledge of process improvement methodology or project management – **does not require.**

Without process improvement experience, can still be helpful.



Learning objectives

- Identify common types of health care improvement projects.
- Examine the use of 3 types of brainstorming techniques.
- Explore different prioritization methods and the importance of return on investment (ROI) in final decisions.
- Define the specific components of the Plan, Do, Study, Act (PDSA) methodology
- Describe how to move through successive, linked PDSA cycles starting with small tests to full implementation for continuous quality improvement



Agenda

- Common process improvement steps
- Where do you identify and select projects in the QI process
- What are types of improvement projects?
- Who should be involved?
- Where does PDSA fit in?
- Setting aims
- How to improve – Using PDSA
- Rules for tests, implementation and spread
- Using the PDSA work sheet
- Take-a-ways
- Q&A



General continuous quality improvement work flow

Common elements to Lean, Six Sigma, Model for Improvement, GE Workout, etc.

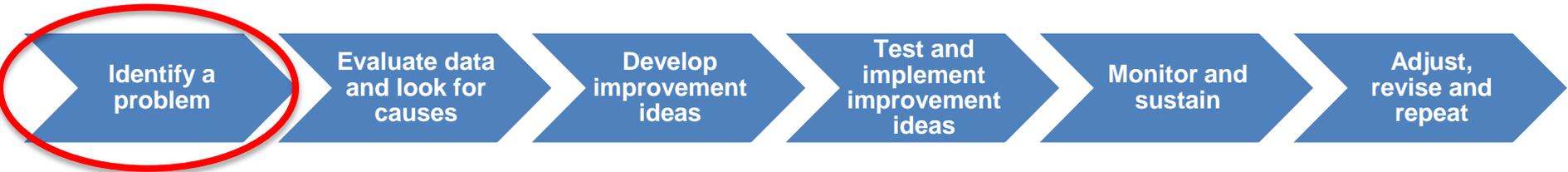




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Where in the improvement process do you focus on prioritizing your projects?



Project ideation/selection/scope

To identify appropriate projects, we need to:

- Generate a list of project ideas
- Select/prioritize projects using a structured approach
- Review and narrow scope, create project charters



Assumes that resources are always scarce and as a result, we must prioritize opportunities using a set of criteria.

Generating project ideas

Many ways to generate a list of improvement ideas

- Manager/process owner suggestions
 - Potential advantages: management support and aligned to business goals
 - Potential disadvantages: may be missing better opportunities; top-down – can stifle/suppress staff engagement/motivation
- Brainstorming by a cross-functional team
- Result of process mapping exercise that identified gaps/opportunities for improvement (Value-stream Mapping)
- Complete or near complete failure of an existing process (usually points to a number of process improvement opportunities)

Start with wastes

- **D**efects
- **O**verproduction
- **W**aiting
- **N**on- or under-used staff
- **T**ransportation
- **I**nventory
- **M**ovement
- **E**xcess processing





Identifying projects

- Patient safety problem or risk
- Complaints from patients
- Complaints from physicians or other employees
- Employee shortages
- Expanding or renovating facility space
- Routine extraordinary efforts by employees to keep things working – priority by crisis
- Systems that routinely require re-work in order to get things right
- Work flow issues – break downs, bottle necks, waiting
- Inventory challenges – too much or never enough
- Revenue growth opportunities (eliminating backlogs, improving utilization, or expanding services)

Brainstorming

- Brainstorming is a simple, small-group process that uses divergent thinking to generate ideas (e.g., list potential projects)
- Many versions exist and are built around the following guidelines
 - Engage in open/freewheeling idea generation
 - Seek a large quantity of ideas ('quantity breeds quality')
 - Defer judgement on ideas ('evaluate quality later')
 - Build upon others' ideas through combinations





Data collection: basis for prioritizing

Ask the following questions to determine scope, significance and importance?

- How often? – Frequency
- When does it occur? (shift-related?)
- Where does it occur? (local or global? May allow for comparisons)
- Who is involved? (Can be department level or individual level – not for punitive purposes but for identifying who should be involved in the improvement process)
- Who is affected at the end of the process? Ultimately, is it the patient?



Return on Investment (ROI): Calculation

$$\text{ROI} = \frac{\text{Revenue} - \text{Cost}}{\text{Cost}} \times 100$$



Return on Investment: Examples

Important to consider the return on investment (ROI) when assessing quality improvement and patient safety priorities. For example:

- A. Procurement of new beds with built-in alarms to reduce falls with an ROI of 0.9 (90%)
- B. Implementation of evidence-based guidelines to reduce the rate of catheter associated urinary tract infections with an ROI of 3.0 (300%)
- C. Implementation of Computerized Provider Order Entry to reduce the number of medication errors with an ROI of 1.0 (100%)
- D. Implementation of a sitter program, which has been shown to reduce falls and improve patient satisfaction with an ROI of 0.5 (50%)



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Questions to ask

- What keeps you up at night?
- What frustrates you?
- Of the five (pick a number ranging from 3 to 5) challenges that have been identified, which one interferes most to provide the best care to patients?
- What one issue would you like to address first to feel you are improving the way you provide care or work?

Then, compile a **list**.



Prioritization matrix

How to create:

- Create an L-shaped matrix
- Prioritize and assign weights to the list of criteria that will be used in the prioritization
- Prioritize the list of options based on each criterion
- Prioritize and select the item(s) across all of the criteria

When to use:

- When problems are identified and options must be narrowed down
- When options have strong interrelationships
- When options all need to be done but prioritization or sequencing is needed



Considerations

Project Impact and Complexity

- Will the project have a measurable impact (preferably in \$\$)?
- May the project be solved in a reasonable time period (maximum of 6 months)?
- Does the project have boundaries (clear start and end point)?
- Does the project have clear deliverables?

Resources

- Is there management commitment toward solving the problem?
- Is there available staff with the skill levels/influence to solve the problem?

Data gathering

- Are some existing data available?
- Will collecting data be relatively easy?

Yes to all of these questions suggests a high likelihood of success.



Example: Clinical Quality Priorities

Prioritization Matrix: Clinical Quality Priorities							
QI opportunity	High Risk	High Volume	Problem Prone	Cost	Customer Satisfaction	Regulatory	Total
Infection rates	3	2	2	3	1	3	14
Surgical complications	2	1	2	3	1	3	12
ED time to treatment	1	3	1	1	3	0	9
Falls with injuries	2	1	1	2	2	2	10
Medication safety	3	3	3	2	1	2	14

Adapted from Q Solutions: Quality and Performance Improvement. Third Edition. 2012.

Common filters and selection criteria

Filters

- Best solution/root cause is known?
- Problem being addressed elsewhere?
- Solution outside team control?
- Potential contradiction with other projects

May exclude projects if outside team control or if being addressed elsewhere.

Selection criteria

- Critical to next process customer
- Improves company profitability
- May be completed within timing goals
- Relatively low investment cost

Some projects may be contradictory – improvement in one area may adversely affect another.

Example: Determining necessity and sequence

Prioritization Matrix: Decision Example						
Projects	Low cost	High Strategic Priority	Meet Accreditation Standards	MD Concern	Staff Concern	Total
Repair roof	3	4	2	3	4	16
Purchase new X-ray machine	5	2	0	1	5	13
Develop skilled nursing	4	1	0	2	2	9
Develop better communications with home health	2	3	1	4	3	13
Develop staff newsletter	1	5	3	5	1	5

Adapted from Q Solutions: Quality and Performance Improvement. Third Edition. 2012.



How to construct:

1. Generate a list of items and number them
2. If the group agrees, combine items that seem to be similar
3. If necessary, renumber all items
4. Each member lists on a sheet of paper the items he/she considers the most important (number of items should be at least one-third of the total number of items on the list)
5. Tally the votes beside each item on the list; eliminate items with the lowest scores
6. Repeat above process until the list is narrowed down to an appropriate number for the group to focus on or the item with the top priority is identified.

When to use:

After brainstorming session to identify key items for group to focus on



Nominal Group Technique

1. Define the task as you would for brainstorming
2. Describe the purpose of the technique and the process to the group
3. Write the question to be answered for all to see. Clarify the question as needed by the group.
4. Generate ideas to address the question by having the group write down their ideas in silence.
5. List all the items using a structured approach so that all ideas are listed (but not for discussion)
6. Clarify and discuss each idea one at a time
7. Give each member 4-8 cards
8. Members should write one selection from the list on each card and assign a point value. (Highest value should be assigned for highest priority)
9. Collect the cards, tally the votes and mark each item on the list with combined value
10. The item with the highest number is the group's selection/priority

Nominal Group Technique (cont.)

When to use:

- Team members are new to each other
- Dealing with a controversial topic

Variation: Delphi Method

- Combination of brainstorming, multi-voting and nominal group techniques.
- Used when group members are not in one location and conducted via email.
- Data is sent to one person who compiles responses and sends out for additional round of voting until priorities are determined.





Failure Modes and Effects Analysis (FMEA)

Preventive approach to identify potential failures and opportunities for error, Used for processes, as well as installation or implementation of new equipment.

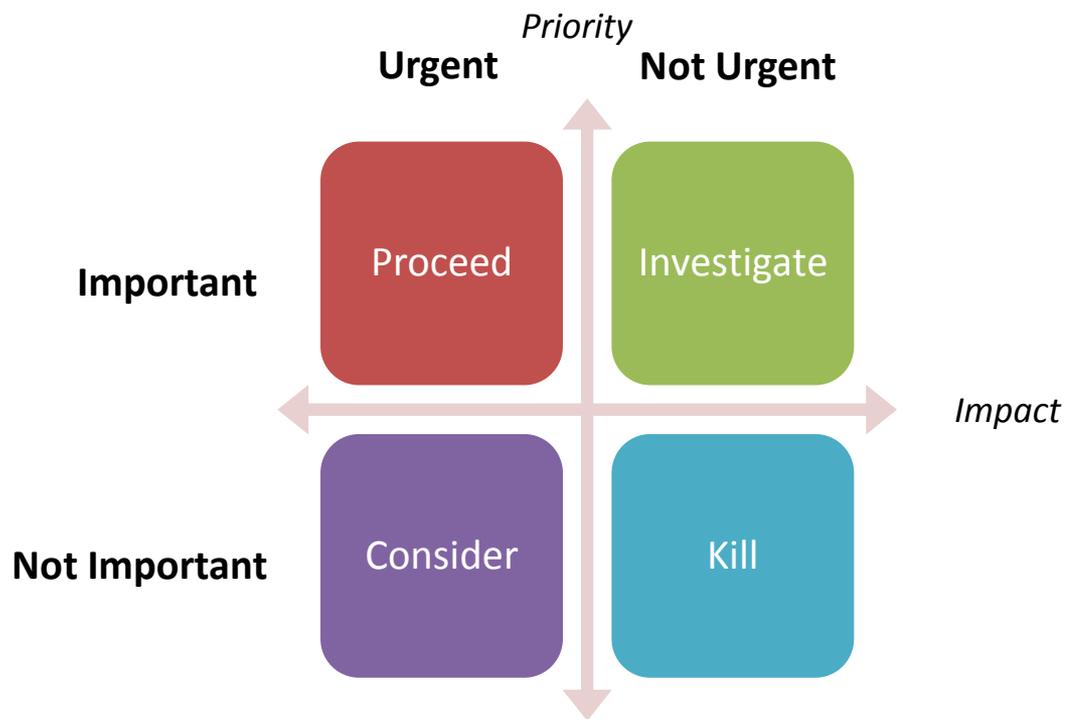
1. Define the process to be studied.
2. Convene a interdisciplinary team with content and process experts.
3. Develop a flow diagram/map (flow chart, spaghetti diagram, etc.) with consecutive numbering of each step and sub-processes.
4. List all possible failure modes of each sub-process, including the severity and probability of the failure mode, and then number the failure modes (using brainstorming may be helpful).
5. After analyzing the failure modes, determine the action for each failure mode to eliminate, control or accept.
6. Identify the corresponding outcome measure to test the redesigned process.



Three project selection criteria

1. Keep the number of projects small until you (the team) become comfortable with process improvement
 - Better to focus and be successful than to start to many projects and have several fail
2. Scope projects properly
 - Early on, champions tend to underestimate the time it takes to gather and analyze reliable data
 - May require scaling down a project but may take much longer than if starting with a properly scoped project.
 - Important to recognize that sometimes projects are scoped as one process, when they are, in fact, multiple processes or should be handled separately
3. Pay attention to external, paying customers
 - It's great to improve internal processes but ignore paying customers at your peril

PICK



PICK: Examples

- Crises
- Pressing problems
- Deadline-driven projects
- Medical emergencies
- Other true emergencies

Important

Priority
Urgent **Not Urgent**

Proceed

Investigate

- Preparation
- Prevention
- Values clarification
- Planning
- Relationship building
- True re-creation
- Personal growth

Impact

Not Important

Consider

Kill

- Interruptions
- Some phone calls, many emails
- Some meetings
- Many pressing issues

- Busywork
- Some phone calls, emails
- Time wasters
- Escape activities
- Excessive TV, web surfing



Cautions

- Projects must benefit the business or mission of the organization
- Leaders should not be in a hurry to get things done (especially before teams are skilled in process improvement)
- Improper initial scope or scope creep can impede progress
 - Rash decisions lead to mistakes that can cause rework and end up being de-motivating
 - Success breeds success
 - Often an urge to jump to selecting projects or solutions without adequate data and analysis; Need to work the improvement process to improve the process

Project Selection Process

- Step 1. Review up-to-date internal and external sources of information about your business
 - Surveys
 - Interviews
 - Formal complaint systems
 - Market research
 - Data mining
- Step 2. Identify potential projects and describe the “Pain”, Goal and Rationale for each
 - Who is suffering?
 - What would you like to accomplish?
 - Why this projects compared to others?





Project Selection Process (cont.)

Step 3. Screen the possibilities

- Review for significant gap between the current performance and the expected or desired performance
- The cause of the problem is not known or is poorly understood
- The solution is not predetermined nor readily apparent

Step 4. Operationalize remaining criteria

- What benefits are key?
- How do you determine feasibility?
- What is the lesson or strategic benefit to the organization?

Step 5. Evaluate remaining projects and select best candidates

Project Selection Process (cont.)

Step 6. Evaluate the set of projects selected

- Do you have enough staff to work on the project while ensuring everyday works continues?
- If the problem is complex, how well do your existing processes cope?
- Do you have the skills and expertise to conduct the project?

Step 7. Draft a charter for each project (brief)

- Written description of the project or opportunity
- Value and need to the business
- Broad improvement expected by end of the project
- Scope, constraints and assumptions
- Include a timeframe and identify support and required resources for success
- Serve as a starting point to provide direction, yet not tie team's hands to prevent improvement

NOTE: Project charters are living documents and may evolve as you learn more.

Common for scope to be reduced.



Project Selection Do's and Don'ts

Do's

- Base your improvement project selection on solid criteria
- Balance efficient/cost-cutting projects that directly benefit external paying customers
- Prepare for an effective handoff from Champion to Team Leader

Don'ts

- Create “world hunger” projects
- Fail to explain the reason a project has been selected
- Start too many projects before you are ready and have experience with improvement methods and tools



Who should be on the improvement team?

Forming the team

- Right people on the team
- Vary in size and composition depending on needs
 - Clinical leaders
 - Technical expertise
 - Day-to-day leadership and workers
 - Project sponsor



What is PDSA?

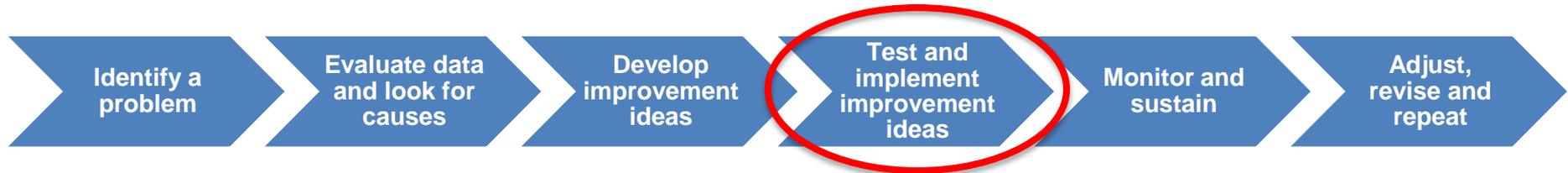
Plan, Do, Study (or check), Act – A change process originally developed by Walter Shewhart (PDCA) and later revised by W. Edwards Deming (PDSA). It is sometimes referred to as the Deming wheel. It is intended to be used in multiple, successive cycles.



General continuous quality improvement work flow

Common elements to Lean, Six Sigma, Model for Improvement, Scientific Method, GE Workout, etc.

When do you use PDSA?



Setting Aims

- “What are we trying to accomplish?”
 - Time specific and measureable (SMART- Specific, Measurable, Attainable, Relevant, Time-bound)
 - Specific population of patients affected or specific system involved
 - Tied to IOM’s six “Overarching Aims for Improvement” - defined in *Crossing the Quality Chasm: A New Health System for the 21st Century*.
 - Safe
 - Effective
 - Patient-centered
 - Timely
 - Efficient
 - Equitable

When creating aims, clearly state:

- Whose doing the work
- For whom
- Where
- Expected rate of improvement
- By when



Aim statement examples

- Increase early identification and treatment of severe sepsis using the Surviving Sepsis Campaign bundle on hospital medical, surgical, and telemetry units by 75% in 12 months.
- Reduce Emergency Department patients' wait time for initial physician visit to 20 minutes or less within 6 months.
- Reduce time to schedule, complete and close referrals for cardiac patients by 50% within 6 months.
- Achieve 95% hand hygiene compliance in all inpatient units with new protocol within 12 months.
- Reduce the average number of rapid response team visits to patients admitted to hospital floors from the ED from 3.5 to 1 per month within 90 days using the new hand off standard work procedures and EHR-based communication tool.

Using PDSA

Plan

- State the objective or purpose
- Make a prediction of what will happen and why
- Develop a plan to test the change (Who? What? When? Where? What data needs to be collected?)

Do

- Test the change on a small scale (e.g., one patient, one unit, one shift, one hour – “1:1:1 test”)
- Document what happened – problems and unexpected observations
- Begin data analysis



Using PDSA

Study

- Complete data analysis
- Compare data to predictions
- Summarize learnings and think about meaning

Act

- Adopt, adapt, abandon the change based on results of the test
- Prepare plan for next test





Designing the test

Start with the “1:1:1” test

For example:

- 1 patient
- 1 unit
- 1 shift

Or

- 1 clinical team
- 1 shift
- 1 clinic

- It’s a way to determine if the change has merit.
- If it doesn’t produce the desired results, start over.
- If it does produce the results you want, you can scale.
- **Special note:** Don’t test multiple changes at one time. You won’t know what’s contributing value or making things worse.



How to scale – use “The 5 Times (5X) Rule”

If you are satisfied with the results of your initial experiment using the “1:1:1 test,” its time to scale!

- Use the “5 times (5X) rule”
 - Multiply the number of patients, units, etc. by a factor of 5.

1 patient X 5 = 5 patients

1 unit X 5 = 5 units

And then: 5 patients X 5 = 25 patients and then multiply by 5 and you have 125 patients

From there you can expand the number and variety of units or environments or implement organization-wide if you are ready. **Then it’s...**



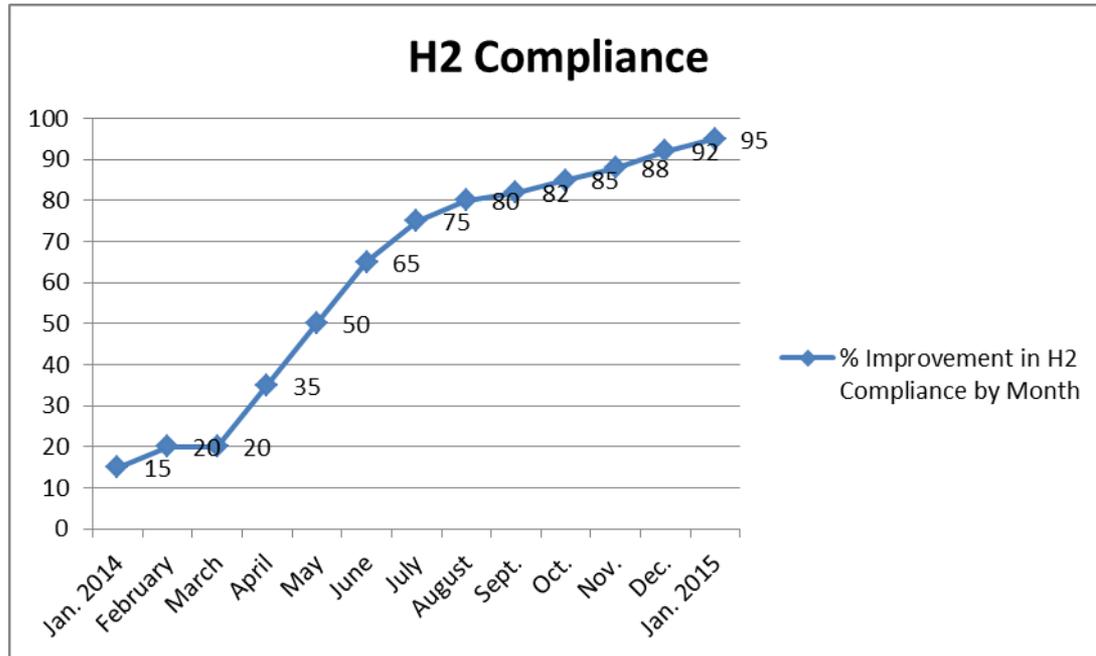
...time to finalize standard work

That may include:

- Process work streams and flow maps
- Checklists
- Work orders
- Education and training approaches and programs
- Changes to EHR

Monitor and sustain the improvement

Track performance to ensure improvement occurs and is sustained.
But how? Use a Run or Trend Chart:



Example:
Shows improvement in following new hand hygiene protocol based on direct observation and use of hand sanitizer.



Using the PDSA Worksheet

Clarify the purpose of the PDSA cycle

This cycle will be used to:

- Develop...
- Test...
- Implement...

...a change.

- What question(s) do we want to answer?
- What are our predictions about the change?
- Does the data indicate the change is an improvement? (Quantitative and qualitative data collected)
- Can the improvement be sustained?
- Are we ready to implement? If not, can we revise and retry or do we need to start over?

**PDSA Planning Worksheet**

DATE _____

Aim statement:

Purpose of this PDSA Cycle:

Is this cycle used to develop, test, or implement a change? _____

What question(s) do we want to answer with this PDSA cycle:

Plan:*Plan to answer questions: What, Who, When, Where*

<i>What are we developing, implementing or testing?</i>	<i>To whom are we testing the change?</i>	<i>When is the test going to be done?</i>	<i>Where will the test occur?</i>

Plan for collection of data: What, Who, When, Where

<i>What data do we need to collect?</i>	<i>Who will collect the data?</i>	<i>When will the data be collected?</i>	<i>Where will data be collected?</i>

Predictions (for questions above):

Do: Report what happened: the completed change or test; data; and begin analysis.

Study: Complete analysis of data.

Compare the data to your predictions and summarize the learning.

<i>Prediction</i>	<i>Specificity</i>	<i>Findings</i>

Act: Are we ready to make a change (adopt, adapt, abandon)? Plan for the next cycle:

<i>Are we ready to implement?</i>	<i>What changes can we make before the next cycle?</i>	<i>What will be the next test?</i>



Example: Use ED Clinical Summary in EMR as ED to floor hand off tool

Purpose of Cycle: To test value of the EHR's ED clinical summary to replace EHR SBAR tool, to assist inpatient nurses (receiving) to prepare for patient hand off from the ED.

PLAN

The Change:

<i>What are we testing?</i>	<i>Who are we testing the change on?</i>	<i>When are we testing?</i>	<i>Where will it occur?</i>
Test whether the ED clinical summary in the EHR has sufficient information to support a smooth hand off between the ED and inpatient nurses.	We are initially testing the change on all patients transferred from ED to floors (in scope of project).	From 10 am to 12 pm.	2 West, 2 East, 4 West.



Example: Use ED Clinical Summary in EMR as ED to floor hand off tool

DO

The Prediction:

We expect that the information contained within the ED clinical summary to answer inpatient nurses questions about patient prior to their arrival on the floor from the ED.

Data:

<i>What data do we need to collect?</i>	<i>Who will collect the data?</i>	<i>When will the data be collected?</i>	<i>Where will the data be collected?</i>
Subjective findings from the primary and charge nurses after they have had a chance to review relevant field in the ED clinical summary.	RIE (Rapid Improvement Event) team members assigned to specified units.	From 10 am to 12 pm today.	RIE members will be stationed in units when patients arrive collect on paper forms for test.



Example: Use ED Clinical Summary in EMR as ED to floor hand off tool

STUDY

Complete analysis of data, summarize what was learned, compare data to predictions.

Data:

<i>Prediction</i>	<i>Specificity</i>	<i>Findings</i>
Receiving nurses (floor primary and charge) will find the ED clinical summary data to be a significant improvement over the existing EHR hand off communication tool (SBAR) in being prepared for patients when they arrive on the floor.	Use of the ED clinical summary, with the opportunity to talk with ED primary or charge nurse provides an improved, patient hand off.	Once oriented to the ED clinical summary, 100% of floor nurses said it was far superior to using EHR SBAR or other paper forms in use. They liked that although they did not always talk with sending ED nurses on initial call, it was helpful to have ED contacts listed. The new tool reduced back and forth, missed calls and frustration among the staff in the 9 patients followed.

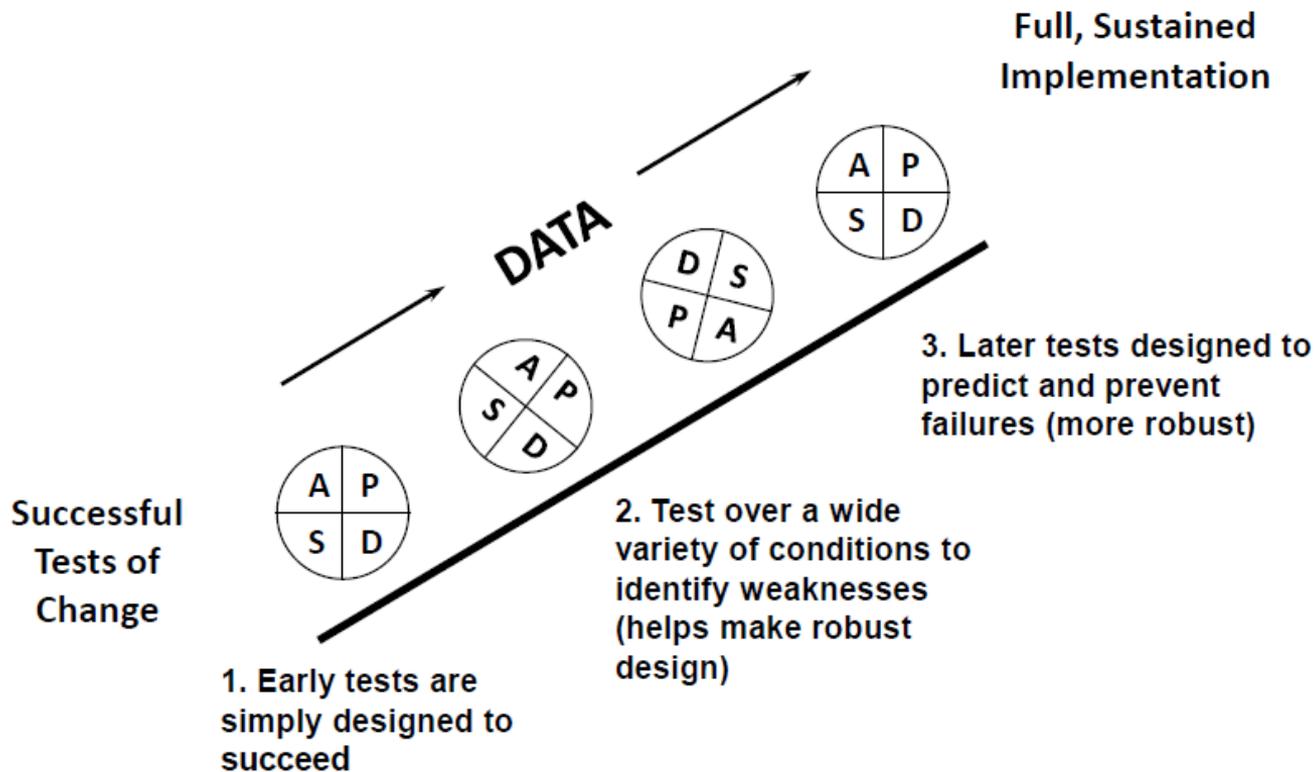


Example: Use ED Clinical Summary in EMR as ED to floor hand off tool

ACT

<i>What changes can we make before the next cycle?</i>	<i>Are we ready to implement the change we tested?</i>	<i>What will the next test be?</i>	<i>When will the next test be?</i>
RIE will meet with EHR team to make modifications based on feedback to create specific handoff tool.	Yes. We have created standard work flow and new hand off tool can replace ED clinical summary when it is available following system-level review and approval.	No new test required.	System-wide implementation of temporary tool with new standard work for bed coordinators, ED nurses, inpatient nurses, ED MDs (residents). Organization-wide implementation will be on Monday, July 18, 2016

Linking PDSA Cycles





Take-a-ways – The Baker’s Dozen

1. Use a defined selection process or set of processes and tools
2. Include data to determine significance of the problem
3. Focus on projects that cause “pain” or keep you up at night
4. Gather a team with knowledge of the process, issue and subject matter expertise
5. Engage those involved in the work with the solutions to improve how they work
6. Focus on the customer or recipient (patient and family) of the process’s output
7. Don’t rush - let the process lead to improvement
8. Try not to solve “world hunger” – focus on improving “local hunger” first
9. Set realistic goals and time lines
10. Test small changes to assess impact and whether they are actual improvements
11. Modify and refine standard work (processes and protocols) and tools in near real-time
12. Re-test on a larger scale before full implementation
13. Minimize disruption and potential for adverse operational and safety outcomes



Thank you!

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