Performance Improvement (PI) in Healthcare

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Disclaimer

- Paid consultant for Prolacta BioScience
Learning Objectives

At the conclusion of this program, participants will be able to:

• Describe the elements of Plan-Do-Check-Act (PDCA) and their utilization in performance improvement initiatives.

• Identify key tools that may be used to assist with the PDCA process.

• Describe the steps involved in the process of developing and implementing a performance improvement plan.

• Understand how to implement a human milk Performance Improvement program at your institution.
Performance Improvement Programs: An Overview

What is a Performance Improvement Program?

• A PI program involves systematic activities that are organized and implemented by an organization to monitor, assess, and improve its quality of healthcare.

Purpose of PI in Healthcare

• To provide the highest quality healthcare using evidence-based practice that results in improved patient outcomes.

Why Are Quality Improvement Programs Important?

• Improved patient health (clinical) outcomes that involve both process outcomes (e.g., provide recommended screenings) and health outcomes (e.g., decreased morbidity and mortality).
• Improved efficiency of managerial and clinical processes.
• Avoided costs associated with process failures, errors, and poor outcomes.
• Proactive processes that recognize and solve problems before they occur ensure that systems of care are reliable and predictable.
• Improved communication with resources that are internal and external to an organization, such as funders and civic and community organizations.

Healthcare is a Series of Processes and Systems

Resources (Inputs)
- People
- Infrastructure
- Materials (i.e. vaccine)
- Information
- Technology

Activities (Processes)
1. What is done
2. How it is done

Results (Outputs or Outcomes)
- Health services delivered
- Change in health behavior
- Change in health status
- Patient satisfaction

Quality Improvement can occur at any level. However, its impact on results is most powerful if it can address Resources and Activities together

Institute of Healthcare Model for Improvement

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?

Institute of Healthcare Model for Improvement

**Setting Aims**

The aim should be time-specific and measurable; it should also define the specific population of patients or other system that will be affected.

Establishing Measures

Teams use quantitative measures to determine if a specific change actually leads to an improvement.

What are we trying to accomplish?

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What changes can we make that will result in improvement?

Selecting Changes

Ideas for change come from those who work in the system or from the experience of others who have successfully improved.
Institute of Healthcare Model for Improvement

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Testing Changes

The Plan-Do-Study-Act (PDSA) cycle is shorthand for testing a change in the real work setting—by planning it, trying it, observing the results, and acting on what is learned. This is the scientific method adapted for action-oriented learning.

Energy and persistence conquer all things.

*Benjamin Franklin*
Basic Steps in the Process of PI

• Identify an area in your practice requiring improvement
• Make change in a process or practice in your setting
• Measure whether it improved your outcome or process
• If it improved, then make it your usual practice
• Measure periodically to make sure the outcome remains good

Step 1: Plan

- Identify the problem (current state vs what should be happening)
- Collect and analyze data (use metrics)
- Search for root cause (look for all possible causes, brainstorm)

Step 1: Identifying the Problem

Issue/problem identification

- What needs to change?
- Problem needs to be clearly stated with a specific goal
- Problem statement should be concise and to the point
- Goal should be measurable

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?
Step 1: Background/Current Condition

- Why is this problem important?
- Why is this a priority for our organization or department?
- Who is involved in the problem?
Step 1: Verifying and Root Cause

Data to verify the problem

- What is the current data source?
- The problem needs to be factual, not an educated guess and not based on someone’s opinion

What is the root cause?

- Keep asking “why?”
- Are current practices based upon EBP?
Role of Evidence-Based Practice (EBP) in PI

Definition of EBP

• The integration of best research evidence with clinical expertise and patient values to facilitate clinical decision making

Using EBP to improve quality patient care

• Current practice needs to be supported by strong research, resulting in improved outcomes (i.e. decreased complications, decreased cost, decreased length of stay, etc.)
• EBP reduces variation, resulting in standardization of how patient care is provided

Step 1: The Literature Review

Check the evidence

• Conduct a thorough literature search
• Focus on best practices

What are we trying to accomplish?
How will we know that a change is an improvement?
What changes can we make that will result in improvement?
Step 1: The Literature Review

Evaluate strength of research, best practices implementation\(^4\)

- RCTs—are they well designed?
- Meta-analyses, systematic reviews included

Is the research specific to the problem identified?
Can the research be applied to your specific patient population?
How motivated is the department or organization to making changes?
What are the barriers to change?

Step 1: Making Your Plan

Write it down!!

- What do you hope to achieve?
- What is your improvement goal?
- How will we accomplish our goal?
- What interventions will be used?

What are we trying to accomplish?
How will we know that a change is an improvement?
What changes can we make that will result in improvement?
Example: Quality Improvement in Human Breast Milk Delivery

What was the problem?

• Increased rate of necrotizing enterocolitis (NEC), late-onset sepsis

What were the data supporting the problem?

• A retrospective chart review of infants admitted to the NICU from 2009-2012 showed 10.6% rate of NEC, 10.6% rate of late-onset sepsis

What were potential root causes?

• Timing and introduction of feedings, method of feeding (bolus vs continuous), routine aspiration of gastric residuals, frequency of tubing changes, use of cow’s milk protein feedings and fortifiers

Formed a unit-based multidisciplinary committee

• Included neonatologist, NICU nurses, lactation consultant, neonatal nurse practitioner, neonatal dietitian
What Did the Literature Say?

**Human Breast Milk Example:**

Infants at greatest risk for NEC are those born at less than 1500 grams and less than 32 weeks gestational age

Early enteral feedings (within 12 hours of life) and achieving full enteral feedings by the second week of life reduces the incidence of sepsis

Exclusive human milk feedings have shown the strongest correlation in reducing NEC in this high-risk population

Bolus feeding is preferred as it stimulates maturation of hormone secretion and motility of the GI tract

Avoid routinely aspirating to check for gastric residuals, to decrease risk of contamination and growth of bacteria in the tube

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Quality Improvement in Human Breast Milk Delivery

What did you hope to achieve?

• A reduction in NEC, late-onset sepsis

What is your improvement goal?

• 0% NEC, late-onset sepsis vs current rate of 10.6%

How will we accomplish our goal?

• Revise current feeding protocols using current evidence-based practice

What interventions will be used?

• Initiate exclusive human milk feeding protocol
Step 2: Do

- Develop interventions or countermeasures to improve the process
- How will this be accomplished?
- Determine start dates and ownership for each intervention or countermeasure
- Outline specific steps in the process change and who will be responsible for each task
Step 2: Form a Team

Who is involved in the care of the patient? What disciplines?

• The care team may include a physician, nurses, ancillary departments, etc. Input from all members is important in order to facilitate any change in process by encouraging participation and, therefore, fully utilizing the resources of the team.

Identify project leader

• Important to have someone in charge to keep the team focused and moving forward in the right direction.

Create accountability

• Assures that team members are accountable for the completion of tasks within the time frame agreed upon by the team.
Step 2: Your Action Plan

Develop action plan with timeline

• How will results be accomplished?
• What specific steps will be taken?
• What specific tasks need to be completed and when? By whom?

Use of an action planning type of form can be helpful in keeping everyone on task and communicating progress made.

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?
Step 2: Formalize Interventions and Action Plan

What process or processes will change?

- Use a flowchart or a diagram to show the change in process
- Start with major steps then add in details
Example Plan

Performance Improvement Issue Clarification Form

SUMMIT TYPE FORMAT, HANDWRITTEN APPLICATIONS WILL NOT BE ACCEPTED

Before beginning project, complete this form. Obtain permission from your Director/Manager and/or Unit Council and submit the plan to the Nursing Research, Quality and BIB Council. An action plan with timelines and accountable must accompany this form. Email application to:

Project Title: Increasing Availability of Mothers Own Milk in the NICU

Mentor name and email contact:
Rebecca L. McGee, RN, MS, CLC, rebecca@valleymealtime.com

Project Dates Start: September 2013
Anticipated Completion Date: July 2015

1. Background and Significance:
   a. State the current problem or opportunity for improvement.
   b. Why is this an opportunity for organization/departament?
   c. Why is this a priority for our organization/departament?
   d. Do you know of previous efforts to resolve this problem?
      Yes \[\]
      No \[\]
      N/A \[\]

2. What do you hope to achieve? (Desired State)
   Need to implement a consistent method of recording usage of mothers own milk vs donor milk in NICU as well as in the Nutrition Room when feedings are prepared. On the recording method is implemented, need to collect baseline data (for 6 months) to amount of mothers milk vs donor milk fed to each infant on 2 protocol growth rates. If growth falloff, amount of fortification (calories per ounce) to achieve optimal growth. Once baseline data is collected and analyzed, determine appropriate interventions to improve pumping rates and availability of mothers own milk. Once interventions have been completed, will continue to track data as baseline to determine if interventions resulted in improved outcomes.

3. What is the current data source to assist with measurement? (Data to verify the problem)
   Current log sheets from Nutrition Room to estimate donor milk usage are less reliable but have shown ~ 40% increase in volume of donor milk used from the previous year with number of babies meeting criteria about the same.

4. What is your baseline date? (Number or Percentage)
   Appropriate through baseline recording donor milk in order to comply with the protocol receiving less than 50% of mothers own milk.

5. What is your improvement goal? (Number or Percentage)
   Goal is to decrease in the room to receive less than 50% of mothers own milk in order to improve growth.

6. List the Departments and/or Disciplines that have been involved?
   NICU Staff
   Labor and Delivery
   Nutrition
   Nutrition Therapy
   Mother/Baby

7. Name the following an anticipated outcome, discuss with your director and coach:
   a. Improved growth
   b. Improved nutrition
   c. Additional support
   d. Improved health

8. What is the focus of your improvement and/or regulatory functions will this project effect? Check ALL that apply:
   a. Infant Growth/Organizational Effectiveness
   b. Management or Human Resources
   c. Medication Management
   d. Management of Information

Revised June 2013, NCCIR Council
Step 2: Minimize Barriers and Create Alignment

Who will be affected by these changes?

- Identify staff in these areas and obtain their input
- Be willing to listen to their concerns and provide support
Step 2: Act and Hold Accountable

Identify persons responsible, specify dates for implementing changes

• Identify education plan for making changes

• Develop a timeline and start date

• Develop measurement tools and timeline for measuring changes and outcomes

• EXECUTE YOUR PI ORGANIZATIONALLY OR DEPARTMENT WIDE

What are we trying to accomplish?

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Performance Improvement Action Planning Form

From March 2014 to February 2015, donor milk usage has increased by ~16% compared to March 2013 to February 2014. ELBW and VLBW infants appear to have improved growth on mother’s own milk vs donor milk.

<table>
<thead>
<tr>
<th>Problem:</th>
<th>human milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit:</td>
<td>NCU</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action - how will results be accomplished, what specific steps will be taken? Tasks to be completed</th>
<th>Person Responsible</th>
<th>Due date/Actual completion date (comments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Consistent method of documentation by nursing in EPIC (EMR) re: volume of mother’s own milk and donor milk given to infants (daily)</td>
<td>Laura, MD</td>
<td>September 1, 2015</td>
</tr>
<tr>
<td>3. Education re: how to document in the nutrition room log by techs and in EPIC (EMR) by nursing via daily huddles and huddle</td>
<td>Barbara, RD, CNSC</td>
<td>September 1, 2015</td>
</tr>
<tr>
<td>Obtain % of mother’s own milk vs donor milk for all ELBW and VLBW infants for ~6 months</td>
<td>Eileen, RN, NNP-BC</td>
<td>September 1, 2015</td>
</tr>
</tbody>
</table>

Revised June 2015 NRQEBP Council
The feeding protocol for ELBW and VLBW infants was reviewed with respect to current research, with revisions adopted based on strength of research and best practices for reducing NEC and sepsis (implemented March 2013)

- Enteral feedings should be initiated within 12 hours of life

- All infants less than or equal to 1250 grams, or less than 30 weeks gestation at birth, will receive exclusive human milk feedings (mother’s own or donor milk) fortified with donor human milk fortifier (no cow’s milk products of any kind)

- Bolus feedings are preferred to continuous feedings

- No routine checking of gastric residuals prior to feedings

- Increased frequency of tubing changes from every 24 hours to every 8 hours
Step 3: Study

How will you know if the changes are working?

- Study your intervention

What data will be collected by whom and for what time period?

DON’T FORGET TO COMMUNICATE YOUR RESULTS INTERNALLY AND EXTERNALLY!!
Measure Outcomes and Evaluate Change in Process

Evaluate compliance with process change

• Is it working as expected?

• Are there problems identified with the change in process?

Monitor staff for understanding and compliance. Make sure the change in process is being followed. If not, is there a barrier to compliance that was not anticipated?
Human Breast Milk
Data Collection Example

Data doesn't need to be hard, sophisticated, or expensive. Simple forms and Excel files are OK.

<table>
<thead>
<tr>
<th>Name</th>
<th>MR #</th>
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</thead>
<tbody>
<tr>
<td>Date admitted to NICU</td>
<td>Date discharged</td>
</tr>
<tr>
<td>GA @ birth</td>
<td>GA @ discharge</td>
</tr>
<tr>
<td>Birth weight</td>
<td>Weight @ discharge</td>
</tr>
<tr>
<td>OFC @ birth</td>
<td>OFC @ discharge</td>
</tr>
<tr>
<td>Length @ birth</td>
<td>Length @ discharge</td>
</tr>
<tr>
<td># of TPN days</td>
<td>Average cost of TPN</td>
</tr>
<tr>
<td>Incidence of NEC</td>
<td></td>
</tr>
<tr>
<td>Late onset sepsis (not UTI's) (yes or no)</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>
# A Snapshot of Our Excel Database

<table>
<thead>
<tr>
<th>MR#</th>
<th>TPN days</th>
<th>NEC (1=yes, 0=no)</th>
<th>LOS (1=yes, 0=no)</th>
<th>Length of Stay</th>
</tr>
</thead>
<tbody>
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<td>0</td>
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<td>13864647</td>
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<td>0</td>
<td>88</td>
</tr>
</tbody>
</table>

**Average**

<table>
<thead>
<tr>
<th>TPN days</th>
<th>NEC (1=yes, 0=no)</th>
<th>LOS (1=yes, 0=no)</th>
<th>Length of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11.7%</td>
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<tr>
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<td>64.6</td>
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</table>
Human Breast Milk Example

A retrospective chart review of infants admitted to the NICU from 2009-2012 showed a rate of 10.6% NEC (VON criteria of Stage II A or greater using Modified Bell’s Staging Criteria for NEC), 10.6% late-onset sepsis in infants less than or equal to 1250 grams.
Human Breast Milk Example

Results

Since implementation of the revised feeding protocol, rate of NEC has been reduced from 10.6% to 1.5% and rate of late-onset sepsis from 10.6% to 7.7%

In addition, average # of days on total parenteral nutrition (TPN) has been reduced from 15.2 to 9.3, with average cost of TPN per infant admission reduced from $9268.39 to $6167.14
Step 4: Act

- Was the desired outcome achieved? If so, incorporate into current practice.
- If desired outcome was not achieved, what was learned and what changes need to be made to achieve that target condition?
Step 4: Act

- Make adjustments/modify interventions as needed to achieve desired state
- Based upon findings—adjust: the process, the intervention
- What actually happened after process change was implemented? Look at your measurement tools for tracking data/outcomes. Obtain input from the team as to what changes or adjustments need to be made.
- Is additional education needed?
- Re-educate to changes as needed, with new implementation date and timeline for measuring.
Role of Human Breast Milk Example

After successful results, PI plan has been implemented hospital-wide.

Data collection is ongoing to make sure our metrics continue to show improved outcomes.
Summary

Performance improvement in healthcare involves striving for best patient outcomes and looking for ways to continue to improve those outcomes.

The use of EBP when making changes to current practice is an important part of improving quality of patient care, resulting in standardization of how patient care is provided.

Using Plan-Do-Study-Act is an effective method to implement performance improvement in the healthcare setting.
The reason most people never reach their goals is that they don’t define them, or ever seriously consider them as believable or achievable. Winners can tell you where they are going, what they plan to do along the way, and who will be sharing the adventure with them.

Denis Watley
References


