The Adventures of Pharmacy Kaizen: 
*Endlessly Essential and Essentially Endless*

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Learning Objectives

1. Identify Kaizen principles during a team-based activity

2. Define the basic concept of Kaizen as it relates to pharmacy department process improvement

3. Discuss Sequential Planning Tools and their purpose in continuous process improvement
Today’s Agenda

A. Group adventure
B. Kaizen concept introduction and history
C. Outline a process improvement approach
   1. Philosophy
   2. Framework
   3. Sequential Planning Tools
D. Focus on “Sequential Planning Tools”
   1. Aim statement
   2. Sequential use of tools
   3. Group discussion

Group Adventure

**Monster Maria** has infiltrated your hospital and is gobbling up her favorite snack:

*Your vial adapter fluid bags, commonly used for connection with life-saving antibiotics for quick administration by nursing!!*
Your Mission

1. Place as many fluid bags (corn kernels) into the Monster Maria-Proof container (paper cup) as possible

One important consideration:

- Your precious fluid bags are also on your institution’s hazardous list and have to be handled with the correct Personal Protective Equipment (PPE)
- Your hazardous list has defined this PPE as chopsticks

Within 30 seconds, Monster Maria will be upon you.

End of Round One

- What challenges did you experience?
End of Round Two

• What techniques did you use to improve?

End of Round Three

• What team member roles emerged at your table?
Kaizen as a Philosophy

(“good change”)

Kaizen’s Origination

• Originated after Japan’s rebirth in post-WWII era

• American occupation forces tasked to help rebuild Japanese industry
  • W. Edwards Deming
  • Edgar McVoy

• “The Toyota Way”
Kaizen as a Philosophy

“Small, aligned, continuous improvements that combine to yield large results and ever-higher higher standards of performance.”

• Key emphasis: everyone is involved, from the CEO to the frontline operator

• Replaces large-scale pre-planning and command/control philosophies
  • Small experiments
  • Monitoring results
  • Regular changes
  • Constant education

Choosing a Process Improvement Framework

**FOCUS-PDCA**
- Find a Problem
- Organize a Team
- Clarify Current Knowledge
- Understand Root Causes
- Select an Improvement
- Plan, Do, Check, Act

**DMAIC**
- Define
- Measure
- Analyze
- Improve Control
Select Your Tools

- Aim Statement
- Critical to Quality Characteristics
- Process Map
- Key Measures
- Affinity Diagram
- Interrelationship Digraph
- Tree Diagram
- Prioritization Matrix

Bringing It All Together

- Philosophy
  - Kaizen
  - FOCUS-PDCA
  - DMAIC
- Strategy/Framework
  - Aim Statement
  - Affinity Diagram
- Tools
Self-Assessment Question #1

Which of the following is a key characteristic of the Kaizen process improvement philosophy?

A. Management decision making followed by frontline implementation  
B. Organic idea generation through meditation  
C. Small, aligned, continuous improvement efforts to yield large results  
D. Random idea selection after polling of pharmacy department staff

Sequential Planning Tools

- **Find a Problem**
  - Aim Statement

- **Organize a Team**
  - Critical to Quality Characteristics (CQC)

- **Clarify Current Knowledge**
  - Process Map
  - Key Measures

- **Understand Root Causes**
  - Affinity Diagram
  - Interrelationship Digraph
  - Tree Diagram

- **Select an Improvement**
  - Prioritization Matrix
Today’s Example: Medications in Wrong Location

• One hospital’s inpatient central pharmacy struggled with regular calls from patient care units

• Callers claimed that medications were missing or in the wrong location

• A process improvement project was conducted to assess the issue and select improvements

Hospital Characteristics

• Hospital size:
  • 450-bed academic medical center

• Medication distribution model:
  • Hybrid

• Medication storage strategy after delivery:
  • Medication rooms
  • Locked/unlocked patient-specific bins
  • Medication storage locations that are not patient-specific
Central Pharmacy Delivery Carts

Medication Drawers on Patient Units
Refrigerated Medication Delivery Bins

Aim Statement

• The purpose:
  • Purpose, specificity, and direction

• Key components:
  1. Identification of situation (Process Domain)
  2. Key aspect of situation to change
  3. %/Amount by which to change
  4. Time frame for change to take place
  5. Process for change
  6. Selected change strategy
Aim Statement Example

• Our team will achieve improvement in the Placement of Medication in the Wrong Location Scenario [Process Domain] by DECREASING the percentage of medications incorrectly stored [Key Aspect of Situation to Change] by at least 50% [%/Amount] within 3 months [Timeframe] of implementation focusing on root cause identification [Process for Change] using the Kaizen philosophy and FOCUS-PDCA process improvement framework [Change Strategy].

Critical to Quality Characteristics

• Where shall we not compromise?
  1. Patient safety
  2. Turnaround time
     i. 2 hour routine turnaround time for non-urgent medications
     ii. 30 minute – 1 hour turnaround time for medications needed sooner
     iii. < 30 minute STAT medication goal

• A tool to help with CQC identification: SIPOC
Process Map

**The purpose:**
- The full process, visually detailed, from beginning to end
- How the process actually exists
- Education tool
- Consensus-building tool
- Continued focus as a group

**Process Map Example**
Define Key Measures

- **The purpose:**
  - If you cannot measure it, you cannot manage it

- **The procedure:**
  - Work with key stakeholders to determine what type of measurement is most important based on the process you are attempting to improve

- **Example:**
  - Percentage of medications in the wrong location by patient care unit

Affinity Diagram

- **The purpose:**
  - Full consensus approach to breaking a problem into its relevant parts

- **The procedure:**
  1. Identification of a simple question that participants answer
     - For example: What key issues contribute to medications stored in the wrong location?
  2. Dedicated 5-10 minutes of brainstorming via post-it notes
  3. Sorting of post-it notes into columns that represent similar themes
  4. Each post-it note can be moved to a different column up to two times
  5. After the group achieves consensus, or no more notes can be moved, each column is named in a way that sums up the notes it contains

*No speaking allowed throughout the process*
What key issues contribute to medications stored in the wrong location?
Affinity Diagram Key Themes Example

- Technicians are not adequately performing job duties
- Supervision and reinforcement of job standards is inadequate
- Not all disciplines understand their role in the process
- Storage location nomenclature is not easily understood
- Admission, discharge, and transfer (ADT) process is not well designed
- Use of technology in medication distribution is not optimized
- Distribution workflow is not optimized

Self-Assessment Question #2

What is the purpose of maintaining silence during assembly of the Affinity Diagram?

A. To allow only the team leader the opportunity to speak
B. To equalize influence between outspoken individuals and more timid team members
C. To finally get some peace and quiet among all this discussion
D. To experience the “zen” of Kaizen
Interrelationship Digraph

• **The purpose:**
  - Begin the process of identifying root causes and key issues on which to focus energy

• **The procedure:**
  - Ask the question of how does each theme impact the other?
  - Does it not impact some of them at all?

• **The result:**
  - Identification of root causes on which to focus energy
  - Identification of key issues on which to keep an eye on in the future
Root Causes and Key Issues Identified

- **Major root cause:**
  - Distribution technology was not optimized

- **Key issues:**
  - Admission, discharge, and transfer (ADT) process is not well designed
  - Technicians are not adequately performing job duties

Tree Diagram (5-Whys)

- **The purpose:**
  - Probe for more detail from root cause(s) and key issue(s)

- **The process:**
  - Take each identified key issue and root cause, and ask “Why” five times
    - For example: Why is the technician not performing his/her job duties?

- **The result:**
  - A deeper understanding of each item and how each can be addressed
Prioritization Matrix

**The purpose:**
- Prioritize solutions based on weighted domains and group consensus

**The procedure:**
1. List your solutions after brainstorming
2. Establish relevant domains that reflect pharmacy department and hospital resources and priorities for implementing change
3. Weight each domain using a consistent process and consensus approach
4. Assess each proposed solution against the weighted domains
5. Calculate final score for prioritization of implementation
Prioritization Matrix Example: List Solutions

1. Barcode supported delivery technology
2. Decentralized medication distribution model
3. Locked badge access drawer model for all
4. Patient-specific labeling for every single dose
5. Floor stock vaccine storage
6. User-friendly location naming and labeling
7. Technician training improvements
8. Decentralized technicians
9. Nurses own the medication discharge and transfer process with EHR forcing function added
10. Pharmacy technicians own the medication discharge and transfer process with EHR forcing function added

Prioritization Matrix Example: Weight Domains

1. Long term efficacy
2. Cost
3. Ease of Implementation
4. General feasibility

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<th>Person C</th>
<th>Person D</th>
<th>Total Across Team</th>
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| Totals                        | 1.00     | 1.00     | 1.00     | 1.00     |
### Criteria 1: Long-term Efficacy

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**Check Sum:** 78

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### Total Ranking Scores Across All Criteria

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**Objective:** Reduce medication delivery errors
Implement: Plan, Do, Check, Act

• Who is accountable for each piece of change? – Plan
• By when is each party accountable? – Plan
• Who is affected by the change? – Plan
• Who needs to know about the change? – Plan
• What tools do we need to implement the change consistently? – Do
• How do we ensure standardized data collection? – Check
• How will we solidify the most recent process change? – Act
• What change/revision will we implement next? – Act

Standardized Data Collection Tool

Decision Tree Algorithm
Final Thoughts and Key Ideas

• While some solutions are “obvious” from the beginning, others are not
• These tools are meant to add clarity to decision making and discussion
• Important aspects of change management are baked in
• Kaizen emphasizes revisiting current processes often
• Frontline engagement and process improvement culture is a key outcome

Self-Assessment Question #2

What is the proper order of Sequential Planning Tools when used according to the Kaizen process improvement philosophy?

A. Aim Statement → Process Map → Affinity Diagram → Interrelationship Digraph → Tree Diagram → Prioritization Matrix
B. Aim Statement → Tree Diagram → Prioritization Matrix → Interrelationship Digraph → Affinity Diagram → Process Map
C. Aim Statement → Process Map → Interrelationship Digraph → Prioritization Matrix → Process Map → Tree Diagram
D. Prioritization Matrix Only
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