INTRODUCTION TO QUALITY IMPROVEMENT TOOLS: CHANGING PROCESSES TO IMPROVE OUTCOMES

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Quality Improvement Methodology

Late 1990s: Major transformation

- Measuring mistakes → process redesign

- Traditional outcomes research tools
  - Before and after
  - Intervention and control groups
  - Rigorous statistical analysis

- Emphasis on rapid assessment, dynamic implementation, & simpler techniques to measure progress in closing quality gaps

- Far less academic and more results-oriented
From Industry: Lean Methodology

- Within healthcare services the core idea is to maximize **patient value** while minimizing waste.

- Lean approach changes the focus of management from optimizing separate technologies, assets, and vertical departments to optimizing the **flow** of products and services through entire system.

- Map out processes and identify value and non-value added steps, and eliminate waste.
Lean – Some Key Principles

- Base decisions on long-term philosophy at the expense of short-term financial goals

- Create continuous flow to bring problems to the surface

- Level out the work load

- Standardized tasks and processes are the foundation for continuous improvement and employee empowerment
Some Tools of Quality Improvement: 
Process Mapping & PDSA

“Every process is perfectly designed to get the results it gets”

- Paul Batalden

- The Three Questions:
  - 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 an improvement?
Whenever there is a health outcome for a patient, there is a process. Our challenge lies in seeing it.
What is Process Mapping? (aka: Value Stream mapping)

It’s a tool used to identify value and reduce waste (muda)

Muda?

Muda is the Japanese word for waste. But not waste defined in a traditional way. Waste is anything that does not provide value to the patient, for example: waiting, travel, misdiagnosis, stock-outs
How does Process Mapping help?

- Problem Identification
- Generating Solutions
- Test
- Disseminate
Benefits of Process Mapping

- Puts a spotlight on waste
- Streamlines work processes
- Defines and standardizes the steps and sequence
- Promotes deep understanding
- Builds consensus
- Key tool for continuous quality improvement

Process Mapping can help us reach our goals of improving health outcomes by improving quality through increased communication between health facility managers and staff.
Look for areas for improvement

- Is the process standardized, or are the people doing the work in different ways? Eg. Prenatal care

- Are steps repeated or out of sequence?

- Are there steps that do not add value to the output?

- Are there steps where errors occur frequently?
To Make A Process Map

Five Steps For Process Mapping

1. Decide which care process to map.

2. Collect information and create a map.

3. Analyze the current process map with local managers and staff.

4. Create future process map and work towards it by implementing tests of change.

5. Continuous small-scale improvement over time.
Step 1: Decide which service process to map

An example from Mozambique

We chose to map the flow of patients who had been identified as HIV+ and were referred to the HIV/AIDS treatment clinic for assessment. We followed these patients through their care pathway as they received care and treatment for the HIV/AIDS infection.
Step 2: Collect information & create a current process map

“The process as it currently exists”

Starting when the HIV positive patient comes to the clinic and the patient is registered by the receptionist we followed the path that each patient takes. We talked to the staff responsible at each point. Detailed note taking is necessary.

Next, we draw the map—first by hand and then on the computer.
Example of a hand drawn map
Process Mapping the Initial Workflow

1. HIV Positive Patient comes to Clinic
2. Registration Process with Receptionist
3. Enrollment Process with RN
4. Patient scheduled to see MD
5. Patient leaves Clinic
6. Patient returns to clinic for appointment
7. Patient registers
8. Patient seen by Physician

Intervention:
• Counselling
• CD4 testing ordered

Lab open?
Yes
• Patient has access to ARVs?
   Yes
   • Pt has access to ARVs?
   No
   • Intervention:
     • Counselling
     • CD4 test not ordered
   No
   • Intervention:
     • Counselling
     • CD4 testing ordered

Blood for CD4 count drawn
Yes
• Patient scheduled for CD4 count
No
• Patient leaves Clinic

Patient returns to lab for appointment
Patient leaves Clinic

Patient seen by Physician
CD4 count reviewed with patient, and significance explained.
Treatment plan is developed.
Step 3: Assess the current process map with local managers and frontline health professionals

Assessing the current process map with the goal of improving patient flow by looking for steps that:

i) Definitely add value
ii) Add no value, but are unavoidable
iii) Add no value, but are avoidable

(Source: Womack and Jones)

After making a process map, the next day we return to the health center and discussed it with health workers to ensure its accuracy. Together we consider how the map could be used to make improvements to the system.
Process Mapping: Potential Areas for Improvement

HIV Positive Patient comes to Clinic

Registration Process with Receptionist

Enrollment Process with RN

Patient scheduled to see MD

Patient Leaves Clinic

Patient returns to clinic for appointment

Patient registers

Lab open?

Yes

Blood for CD4 count drawn

Patient schedules appointment to review results of CD4 count

Patient leaves clinic

No

Patient seen by Physician

Pt has access to ARVs?

Yes

Intervention:
• Counselling
• CD4 testing ordered

No

Intervention:
• Counselling
• CD4 test not ordered

Patient registered for CD4 count

Patient seen by Physician

CD4 count reviewed with patient, and significance explained.

Treatment plan is developed.

Patient leaves clinic

Patient returns to lab for appointment

Patient sees Physician

Treatment plan is developed.

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Step 4: Future Map & Tests of Change

Create future process map and work towards it by implementing tests of change. (“Plan-Do-Study-Act” or PDSA cycles)

Use the map and the data as a guide to figure out where change can be most effective. Track changes in indicators to determine the effects of the change as the process moves forward.
The PDSA Cycle—Testing Change in a Real World Setting

- **Plan:**
  - Design workflow changes;
  - Identify tools to support the new workflow;
  - Decide what to measure & how

- **Do:** Implement plan

- **Study:** Look at what was measured; figure out what it means

- **Act:** Fix the things didn’t work the first time and retest until it works right
Step 5: One PDSA Cycle isn’t enough (continuous quality improvement)

The cycles are linked for continuous improvement


**The Plan-Do-Study-Act cycle was developed by W. Edwards Deming (Deming WE. The New Economics for Industry, Government, Education.).
Process Mapping/PDSA Steps

Current State

Future State

Next Future State

Original State

- Approximately 500 HIV positive patients newly enrolled each month and increasing
- Only 10% were having their CD4 counts done within 1 month of enrollment
- A registry existed to track patients
- Resources to buy reagents for CD4 testing were scarce
- Only those patients with $ for drugs were tested for the level of the virus in their blood
PDSA Cycle in Beira, Mozambique

- What were we trying to accomplish?
  - All HIV positive patients would have a CD4 count within 1 month of presenting to the clinic

- How would we know that a change was an improvement?
  - The percent of patients with CD4 count would rise from 10% and approach 100%

- What changes could we make that would result in an improvement?
  - Remove barriers to testing
  - Remove non-value added steps from the workflow
Steady enrollment growth

Adults enrolled each month

Feb-03 May-03 Aug-03 Nov-03 Feb-04 May-04 Aug-04 Nov-04 Feb-05 May-05 Aug-05 Nov-05 Feb-06 May-06
HIV Positive Patient comes to Clinic

Registration Process with Receptionist

Enrollment Process with RN

Patient scheduled to see MD

Patient Leaves Clinic

Patient returns to clinic for appointment

Patient registers

Patient schedules appointment to review results of CD4 count

Blood for CD4 count drawn

Lab open?

Yes

Intervention:
- Counselling
- CD4 testing ordered

No

Patient scheduled for CD4 count

Yes

Patient seen by Physician

No

Pt has access to ARVs?

Yes

Intervention:
- Counselling
- CD4 test not ordered

No

Patient returns to lab for appointment

Patient Leaves Clinic

Patient returns to clinic for appointment

Patient registers

Patient seen by Physician

CD4 count reviewed with patient, and significance explained.

Treatment plan is developed.
Outcome of a process perfectly designed get 10% CD4 Testing

% with CD4 virus test within 30 days within enrollment
HIV Positive Patient comes to Clinic → Registration Process with Receptionist → Enrolment Process with RN → Patient scheduled to see MD → Patient Leaves Clinic

Lab open? (Yes) → Blood for CD4 count drawn → Patient schedules appointment to review results of CD4 count

Lab open? (No) → Value Added Step: Patient seen by Physician

Patient seen by Physician → CD4 count reviewed with patient, and significance explained → Treatment plan is developed

Patient returns to clinic for appointment → Patient registers → Patient seen by Physician
Major System Barrier to CD4 Testing: Drugs!

HIV Positive Patient comes to Clinic

Registration Process with Receptionist

Enrollment Process with RN

Patient scheduled to see MD

Patient Leaves Clinic

Patient returns to clinic for appointment

Patient registers

Intervention:
  • Counselling
  • CD4 testing ordered

Pt has access to ARVs?

Lab open?

Yes

Blood for CD4 count drawn

No

Patient scheduled for CD4 count

Patient leaves clinic

Patient to lab for appointment

Yes

Patient leaves clinic

Patients to clinic for appointment

Patient sees by Physician

Treatment plan is developed.

CD4 count reviewed with patient, and significance explained.

Patient comes to clinic

Enrollment Process with RN

Patient scheduled to see MD

Patient leaves clinic

Patient registers

Counselling

CD4 testing ordered

Lab open?

Yes

Blood for CD4 count drawn

No

Patient scheduled for CD4 count

Patient leaves clinic

Patient returns to clinic for appointment

Patient registers

Patient sees by Physician

Treatment plan is developed.

CD4 count reviewed with patient, and significance explained.
Outcome after ART barrier is removed

% with CD4 <= 30 days within enrollment

Task shift CD4 ordering to nurses

1. HIV Positive Patient comes to Clinic
2. Registration Process with Receptionist
3. Enrollment Process with RN
4. Patient scheduled to see MD
5. RN orders CD4 Count
   - Lab open?
     - No: Patient scheduled for CD4 count
     - Yes: Blood for CD4 count drawn
6. Blood for CD4 count drawn
   - Patient leaves clinic
   - Patient returns to lab for appointment
   - Patient registered
   - Patient seen by Physician
   - Patient registers
   - Patient returns to clinic for appointment

Intervention:
- Counselling
- CD4 count reviewed with patient, significance explained.

Value Added Step

Non-Value Added Step

Non-Value Added Step

Non-Value Added Step

Non-Value Added Step

Non-Value Added Step

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Value Added Step
Outcome after CD4 count order is “automatic”

% with CD4 <= 30 days within enrollment
What would Toyota do?

HIV Positive Patient comes to Clinic

Registration Process with Receptionist includes order for CD4 count

Rapid CD4 Drawn On-Site

Enrollment Process with RN

Patient seen by Physician

Intervention:
- Counselling
- CD4 count reviewed with patient, significance explained.

Result of CD4 returns

Treatment plan is developed.
QUESTIONS?

OR course, MOH, Dili, Timor Leste, 11/2010