Introducing the core of quality improvement methods

Problem solving

- Various tools we have discussed can help identify problems
- Once they have been identified, a clear definition is required
  - This looks at the root causes
  - Not the symptoms
  - Does not include blame—this only complicates and fits the definition of muda or waste
Root cause analysis

- Requires reliable problem solving methods
- Problem solving is not a single sharply defined process
- Can be adapted for different types of activities
- The root cause analysis uses a variety of tools to—
  - Separating causes from symptoms
  - Look for the underlying causes
  - Set priorities for selection of problems to solve
  - Put into place a systematic approach for solving them
  - Monitor the progress
- All this hopefully in a participatory process
Problem solving methods

- Problem solving use a cyclic process

Problem identified
Solution tried
Feedback loop
Action taken

Dermatological problem solving cycle

Itch
Scratch
Feedback loop
Action taken
Management problem solving cycle

Feedback loop

need

action

Shewhart (1931)

- The Shewhart Plan-Do-Check-Act cycle (1931)
Shewhart (1931)

- The Shewhart Plan-Do-Check-Act cycle (1931)

More recently: PDSA

Problem solving—different levels

- Individual problem solving approach
  - One person “owns” the problems
  - Root causes straightforward
  - *Hospital file clerk creates new tracking system for lost files*

- Rapid Team based problem solving
  - Department problem
  - Potential for quick resolution is good
  - *Reduced outpatient waiting time*
Problem solving levels - 2

- System Team Problem Solving
  - More complex problems—involving entire systems
  - Multiple groups involved
  - Solution is not readily evident, will take time to solve
  - *Reducing inappropriate antibiotic use*

- Process improvement
  - Organization-wide approach
  - Long-term activities may be required
  - *Reducing neonatal deaths in all provincial hospitals*

Problem solving wedge

- Individual problem solving
- Rapid team problem solving
- System team problem solving
- System-wide process improvement

- Problem complexity
- Resources required
Applying this to solving problems with quality

- Problem solving must start with a mission or a vision
- Commitment from leadership is always needed
- Support for solving problems-administrative and resources
- Selecting the reference points
  - Goals or standards-benchmarks for what is to be achieved
  - Immunization coverage levels
  - Guidelines—what the final product is to look like?
  - Treatment of illnesses: Quality Audit
  - Methods—How the goal will be achieved?
  - How will the end result continue functioning?

Some problems are complex

- May need to break down into individual problems
  - Tackle these as individual problems
  - Tackle these in sequence
- Avoid too complex problems
- Avoid simple problems or those with obvious solutions—wasting your time
- Problem identification can be—
  - What should be happening at this stage?
  - What actually is happening now?
- If solved, the solution will have an important impact
Problem selection

<table>
<thead>
<tr>
<th>High risk</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>High Volume</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
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Problem solving—2 stages

1. Preparatory stage involves–
   - Selecting the problem—which are the priorities?
   - Defining the problem—determine the root cause (tools)
   - Clear aims for a quality improvement activity to solve a specific problem—usually requires innovative thinking
   - Establishing measures
   - Selecting the changes
2. PDSA cycle tests the ideas generated for problem solving
Identify the problem

- Why tackle this problem?—usually two reasons
  1. Failure of a process to perform adequately
     - From the perspective of whom?
     - What do we know from the data?
  2. Process is doing OK—but it could be a lot better
     - How to determine how much better could be achieved?—the role of benchmarking
**Identifying the problem**

- The first step is usually establishing the team—the right people—this is not a committee
  - A clinical or program leader—brings authority
  - Technical people—know the process
  - The day-to-day manager who will see that it happens
  - A project sponsor—senior executive authority
    - Link to other parts of the organization; not day-to-day

**Example** Poor outpatient clinic performance
- **Clinical leader:** Doctor or nurse-in-charge
- **Technical expertise:** doctor, nurse, clinical officer working in the OPD
- **Day-to-day leadership:** frontline health worker
- **Sponsor:** clinic or hospital director
  - Link to other parts of the organization; not day-to-day
Setting aims—some common aims

- **Improve safety**: Avoid injuries to patients from the care that is intended to help them.
- **Increase effectiveness**: Match care to science; avoid overuse of ineffective care and underuse of effective care.
- **Patient-Centered**: Honor the individual and respect choice.
- **Services timely**: Reduce waiting for both patients and those who give care.
- **Improve efficiency**: Reduce waste.
- **Equitable**: Close racial and ethnic gaps in health status.

Improve access to CEmOC

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Improve compliance with NCD treatments

Long waiting time at clinics and lab a common complaint

Reduce number of missed appointments
Other categories of aims

Population Health
- Individual Health
- Healthy Behaviors
- Workforce Wellbeing

Experience of Care
- Access
- Prevention
- Safety
- Appropriateness
- Patient-Centeredness

Per Capita Cost of Care
- Affordability
- Equity
- Societal Footprint

Sometimes called the Triple Aims of health care improvement

In setting aims...
- Efforts are needed to find the root causes of problems
- Identify the factors responsible for the performance gap—gap analysis measures
- Pinpoint where the weak areas are in the process
- Create a clear problem statement
  - Does not contain blame
  - Does not contain prescribed solutions
2. Analysis of the problem

- The team can use the various tools to look at the root causes and performance gaps
- Analytic tools such as the fishbone diagram, affinity diagrams, systems diagrams
- Statistical tools such run charts and pareto diagrams
- Much of the information can be acquired with easy-to-use tools

3. Select the solutions to be tested

- Based on the analysis, what are some plausible solutions?
  - Easy to test and analyze outcomes
  - Are realistic for the specific organization
  - Quick to study, not requiring extensive analysis
  - Outcome quick to implement if found successful
  - Likely to be acceptable to those implementing
3. Decide the measures

- Three categories of measures for the proposed testing
  - 1. Outcome measures
    - Ex: average HgbA1C for patients in the diabetes clinic
  - 2. Process measures
    - Ex: proportion of diabetics with HgbA1C measured twice in the past year
  - 3. Balancing measures
    - Are changes in one part of the system causing problems in another part? Can lab do all the HgbA1C tests needed?

### Research or Management?

<table>
<thead>
<tr>
<th></th>
<th>Goals for Research</th>
<th>Goals for Learning and Process Improvement</th>
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<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>To discover new knowledge</td>
<td>To bring new knowledge into daily practice</td>
</tr>
<tr>
<td><strong>Tests</strong></td>
<td>One large &quot;blind&quot; test</td>
<td>Many sequential, observable tests</td>
</tr>
<tr>
<td><strong>Biases</strong></td>
<td>Control for as many biases as possible</td>
<td>Stabilize the biases from test to test</td>
</tr>
<tr>
<td><strong>Data</strong></td>
<td>Gather as much data as possible, look for unexpected associations</td>
<td>Gather &quot;just enough&quot; data to learn and complete another cycle</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>Can take long periods of time to obtain results</td>
<td>&quot;Small tests of significant changes&quot; accelerates the rate of improvement</td>
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Testing the proposed changes

- The PLAN—DO—CHECK—ACT process

Thinking about this as cycle
Refine the change on learning
What modifications are needed?
Have other problems surfaced?
Plan for the next test

Act

What is the objective?
What is the expected outcome?
How will the change be tested?
What measures will be used?

Plan

Study

What has been achieved?
Analysis of the data
Do results meet expectations?
Study and reflect on the results

Do

Test new idea on a small scale
Observe its implementation
Document unexpected events
Note resistance to implementing

Thinking about this as cycle

• “Urgent” and “Important” problems can get confused
• Failure to address underlying problems and long term issues result in an excess of “urgent” problems

Plan for the right problem—
• The problem is important and is seen to be important
• Support for change can be assured
• There are risks associated with not addressing it
• You are the “owner” of this problem
• There are clear guidelines which apply
  • Nationally accepted or locally created
Develop strategy to implement the proposed solutions
- Clear measurable objectives
- Decide methods
- Adequate resources
- Timelines
- Budget

Study the outcome - check your results
- What change do the data show?
- Did the trial meet objectives and expectations?
- Yes we did – now get ready for another quality problem
- Not quite – then plan a new approach for the same problem

Study the outcomes
- Was the tested intervention successful?
- Did indicators chosen best measure progress?
- Were all the steps in solutions followed?
- Were the resources consumed realistic?
Thinking about this as cycle

Plan

Do

Act

Keep it going
- Examine the solution and its implementation
- Can it be further improved?
- Can it be further simplified?
- Standardize the approach
- Can the same solution be used elsewhere?
- Share your success with others

Problem solving cycles

Time to complete one PDSA cycle is known as the ‘cycle time’
Problem solving cycles

Continuous Quality Improvement

What does this all mean?

- Problem solving methods are focused on finding root causes
  …and then fixing them
- Testing the approach using small steps can help decide if the proposed interventions could be successful on a larger scale.
What does this all mean?

- Problems cannot be solved without **knowledge** about their nature
- A sequence needs to be followed, so steps not overlooked
  - Along the way various tools are used
- Data tell us how much things where we are and what has changed
- Not all quality problems are solved in a single cycles
  - Repeated cycles may be necessary to reach top quality