Topic 7

Using quality-improvement methods to improve care
Learning objectives

The objectives of this topic are to:

- Describe the basic principles of quality improvement
- Introduce students to the methods and tools for improving the quality of health care
Knowledge requirements

- The science of improvement
- Change concepts
- Improvement principles
- Role of measurement in improvement
Performance requirement

- Identify the opportunities for using safety science to analyse errors
- Appreciate the range of improvement methods available for reducing harm to patients
- Apply at least one improvement tool in a particular clinical context
- Participate in an improvement activity (if possible)
The science of improvement

- Appreciation of a system
- Understanding of variation
- Theory of knowledge
- Psychology

Source: Langley GL
Change concepts …

… are general ideas, with proven merit and sound scientific or logical foundation that can stimulate specific ideas for changes that lead to improvement.

Source: Nolan TW, 1996
The model for improvement

What are we trying to accomplish?

How we will know that a change is an improvement?

What change can we make that will result in an improvement?

The quality improvement model: the PDSA cycle

- 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?
The PDSA cycle

- **ACT**: Determines what changes are to be made
- **PLAN**: Change or test
- **STUDY**: Summarizes what was learned
- **DO**: Carry out the plan

<table>
<thead>
<tr>
<th></th>
<th>Measurement for research</th>
<th>Measurement 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>
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<tr>
<td><strong>Biases</strong></td>
<td>Control for as many biases as possible</td>
<td>Stabilize the biases from test to test</td>
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<tr>
<td><strong>Data</strong></td>
<td>Gather as much data as possible, &quot;just in case&quot;</td>
<td>Gather &quot;just enough&quot; data to learn and complete another cycle</td>
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<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; accelerate the rate of improvement</td>
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Three types of measures

- Outcome measures
- Process measures
- Balancing measures
Three examples of improvement methods

- Clinical Practice Improvement methodology (CPI)
- Root Cause Analysis (RCA)
- Failure Mode Effect Analysis (FMEA)
The improvement process

1. Plan a change
2. Do it in a small test
3. Study its effects
4. Act on the result
5. Ongoing monitoring


SPC – statistical process control
Interventions phase

Identify appropriate interventions
Implement changes identified in the diagnostic phase
Undertake one or more PDSA cycles

Decide on interventions

Undertake one or more PDSA cycles

How to use the PDSA Cycle

- Use 'plan-do-study-act' cycles to conduct small-scale tests of change
  - Plan a change
  - Do it in a small test
  - Study its effects
  - Act on what learned

- Team uses and links small PDSA cycles for broader implementation

PDSA cycle - single test

Hunches, theories and ideas

Changes that result in improvement

PDSA cycle – multiple tests

NSW Department of Health (2002). Easy Guide to Clinical Practice Improvement
1. Measure impact of changes/interventions
2. Record the results
3. Revise the interventions
4. Monitor impact

**Impact and implementation phase**

- Annotated run chart
- SPC charts
- Other graphs

Sustaining and improvement phase

Once an intervention has been introduced, the intervention and any improvements need to be sustained.

This may involve:
- **Standardization** of existing systems and processes
- **Documentation** of policies, procedures, protocols and guidelines
- **Measurement** and review of interventions to ensure that change becomes past of “standard” practice
- **Training and education** of staff

**NSW Department of Health (2002). Easy Guide to Clinical Practice Improvement**
Flowchart of process

Something amiss
- Visit to general practitioner
- Investigations
- Referral to surgeon
- Referral to hospital
- Hospital admission
- Return to life

Post-anaesthetic care
- Operating theatre
- Pre-op ward
- Admitted to hospital
- Preoperative clinic
- Admissions office

Surgical ward
- Allied health
- Pain team
- Surgical team
- Discharge planner

Community health/Peripheral hospital
- Home
Cause and effect diagram

Social issues
- home support
- little family support

Staff attitudes
- length of stay
- mobility of patient
- pain control
- nutrition
- expect longer stay
- poor understanding of procedure
- little knowledge of support services
- locus of control

Complications
- poor pain control
- wound complications
- weak/malnourished
- infection
- general practitioner
- community health
- family
- colon-care nurse

Procedure
- Adequate nutrition of patient
- mobilization
- nil by mouth
- surgery
- pain control

Patient perception
- Accelerated Recovery Colectomy Surgery (ARCS), North Coast Area Health Service, Australia

Post discharge support
- Patient Safety Curriculum Guide
Pareto chart

Run chart

Average Length of Stay (days) per month

Made change here
Strategies for sustaining improvement

- Document and report each patient Length of Stay (LOS)
- Measure and calculate monthly average LOS
- Place run chart in operating theatre, update run chart monthly
- Bimonthly team meetings to report positives and negatives
- Continuously refine the clinical pathways
- Report outcomes to clinical governance unit
- Spread
  - all surgeons
  - left hemicolecotmy
  - all colectomy surgery
  - throughout North Coast Area Health Service