Ten Tips for Incorporating Scientific Quality Improvement into Everyday Work

Prof. Don Goldmann, Harvard Medical School
A Webber Training Teleclass

The Science of Improvement is NOT:

- Just PDSA cycles
  - A method for rapid-cycle testing on the pathway to implementation of new ideas of evidence-based practices
  - Critical for improvement, but not a method in itself
- “Breakthrough Series” Collaboratives
  - A method for shared learning among organizations to accelerate improvement
  - Works best to speed adoption of evidence-based practices, not complex, multifaceted interventions

The Science of Improvement

Terminology Chaos and Confusion

- Science of Improvement
- Implementation science
- Health care delivery science
- Health systems strengthening
- Health services research

Key Attributes of Improvement Science

- Clear, measurable aims, framework
- Clear description of the ideas (content) and how these ideas are expected to impact results
  - Conceptual or logic model, driver diagram
- Clear description of the execution strategy
  - What will be done to ensure adoption of the content
- Respect for the complexity of systems
- Learning from variation and heterogeneity
- Application of behavioral science
- Use of time-ordered data

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Rigorous (Even Publishable) QI Is Possible Almost Anywhere

SQUIRE Guidelines
http://squire-statement.org/

Personal Experience

If They Can Do It in Bogotá…
Reducing Post-Caesarian Infections

Meta-Analysis the Effect of Antibiotic Prophylaxis on Infection Rates after Cesarean Section

Meta-Analysis the Effect of Antibiotic Prophylaxis on Infection Rates after Cesarean Section

Priority Matrix


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What Would You Choose to Work on First?

1. Antibiotic Prophylaxis
2. Host/Antenatal Factors
3. Peripartum Events?
4. Skin Prep
5. Surgical Technique

Utilization and Timing of Antibiotic Prophylaxis for Cesarean Section

<table>
<thead>
<tr>
<th></th>
<th>% receiving prophylaxis</th>
<th>% receiving prophylaxis ≤1 hour after delivery</th>
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<tbody>
<tr>
<td>Hospital A</td>
<td>70%</td>
<td>31%</td>
</tr>
<tr>
<td>Hospital B</td>
<td>32%</td>
<td>70%</td>
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</tbody>
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Hospital A: Existing System

Hospital A: Revised System

Utilization and Timing of Perioperative Antibiotic Prophylaxis & Surgical Site Infections After Cesarean Section

Fancy statistical analysis is not necessary for most QI evaluation – as long as the data are analyzed in a time-ordered fashion

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Effect of Standard Antibiotic Order Form on Duration of Prophylaxis

Impact of Precautions Compliance on Risk of Respiratory Syncytial Virus Infection

Intervventional Study to Evaluate the Impact of an Alcohol-based Hand Gel on Hand Hygiene Compliance

- Phase I: Baseline period
- Phase II: Introduction of alcohol gel
- Phase III: Alcohol rub + QI
- Phase IV: Maintenance

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Effective QI?
- Satisfied with gel 45%
- Gel helped with compliance 42%
- Sticky, uncomfortable feeling 53%
- Conveniently located 57%
- Posters effective 32%
- Knew there was opinion leader 24%
- Received performance feedback 68%

Monitoring Patient Safety
- Voluntary event reporting
- Morbidity and mortality conferences/reports
- Chart auditing
  - IHI Global Trigger Tool
- Automated data mining
  - Patient Safety Indicators (AHRQ PSIs)
  - Automated trigger tools
- Random Safety Audit

Random Safety Audit
- Translated from industry (banking and random process audits via Paul Plesk)
- Real time by the front line
- Data and feedback virtually immediate
  - Reliability of key safety processes evident immediately
  - Motivating, enabling, reinforcing: builds self-efficacy and social norms (key elements of behavioral change theory)
- Combines audit and feedback with iterative PDSAs
  - Even better than "what can I try by next Tuesday"

Random Safety Audit
- Systematically monitors a subset of error-prone points in the system that have the potential to harm patients
- Items selected randomly to be addressed either on
  - On multi-disciplinary rounds (provider input required)
  - Any time during day (provider input not needed)
- Deck can be "packed"
- 20 items developed by expert consensus for testing in NICU (21st item added later)
- 4X6 “cards” include yes/no data form; trivia question on back

Staff Perceptions
Random Safety Audit
- 84% of staff participated in rounds on which audit performed
- 100% agreed or strongly agreed that this improved quality and safety
- 95% agreed/strongly agreed that it increased knowledge of clinical guidelines and safety goals
- 9% agree with statement “asking a safety question of rounds took up too much time”

Ten Tips
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<table>
<thead>
<tr>
<th>Tip 1</th>
<th>Tip 2</th>
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| • Select projects that really will make a difference to providers and patients  
  - Focus on clinically relevant projects that substantially improve those processes of care that are tightly linked to the outcomes of interest to providers and patients  
  - Think of a headline the CEO or CMO would want to feature on the organization’s website | • Set bold, clear, measurable aims and a specific timeline for achieving them  
  - Think of fundamental advances that will measurably impact care and outcomes and engage clinical staff |

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<tr>
<th>Tip 3</th>
<th>Tip 4</th>
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| • Assemble a multi-disciplinary team including providers, stakeholders, and methodologists, tailored to the specific aim of the project  
  - Be agnostic with respect to disciplines and titles when assigning roles and rewards  
  - If publication is anticipated, define roles and authorships very early on  
  - Giving appropriate first authorships to non-MDs does not jeopardize publication in leading journals | • Be creative in recruiting experts  
  - Behavioral scientists, sociologists, economists, epidemiologists, statisticians, qualitative researchers, and other experts often are looking for opportunities to partner with clinical researchers, especially if there is a prospect of co-authorship |

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| • Adopt the most rigorous study design possible without disrupting routine work unduly  
  - Incorporate data collection into usual activities of professional staff (e.g. infection control, clinical pharmacists) | • Do everything possible not to sacrifice data quality and completeness  
  - Develop simple data collection tools that also simplify and increase reliability of daily work  
  - Checklists and standardized order sets are especially useful |

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Tip 7
• Take advantage of emerging certification requirements for clinical staff and make improvement academically viable
  – MOC requirements can be satisfied by improvement activities (eg: Vermont Oxford’s NICQ collaborative)
  – Morph “good citizen” work, such as CPG development and evaluation, into publications and other CV-worthy work products

Tip 8
• Do not assume that substantial external grant funding is required to perform credible quality improvement work
  – Leverage institutional resources
  – Encourage development of institutional small grant awards for quality improvement
  – Consider support from payers, industry, and professional societies
  – Look for “free” hands, such as graduate students

Tip 9
• Pay careful attention to the ethics of quality improvement work, but try to craft projects that are unlikely to require formal IRB approval
  – Remember
    – Poorly designed projects are unlikely to yield useful knowledge and arguably are not ethical
    – Patients have a right to expect that unexpected consequences will be considered and monitored

Tip 10
• Anticipate publication
  – Apply the SQUIRE guidelines
  – Right a “dummy” abstract and construct “dummy” tables and figures
  – Be clear about authorships
  – Make the most of “negative” studies

Davidoff et al., Qual Saf Health Care 2008;17 (Suppl 1):13-19