A Roadmap For Closing The Gap Between "Paper to Bedside": "Implementing Strategies to Prevent Infections in Acute Care Settings"

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Adoption of Scientific Advances Often Delayed

"Every great invention is slow to be accepted, often denounced or considered foolish"

Ayn Rand

"foolish"

"impossible"

"impractical"
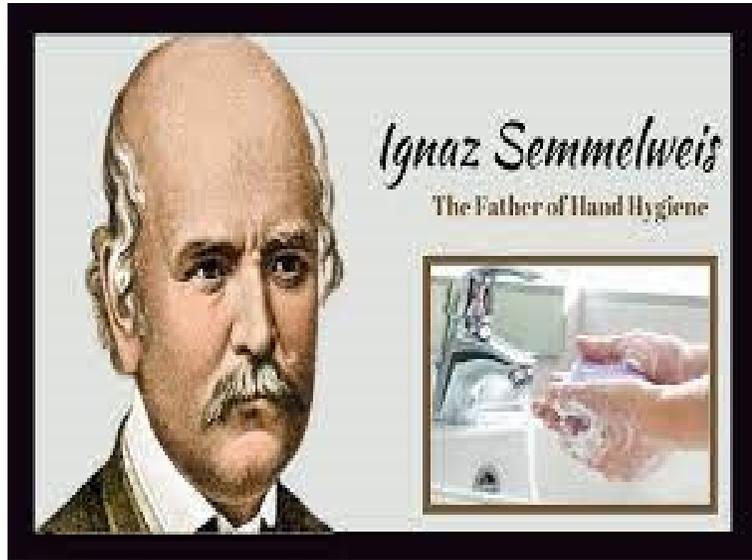
Gap is reportedly 17 years from discovery to broad implementation 🙁

Exhibit A

Semmelweis had conclusive evidence data which should have led to standard practice of hand hygiene

What were the causes of his failure?

- Delay in publication

- Offending those who challenged his findings

- Lack of a conceptual framework

Saint et. al.; ICHE 2010

What else contributes to the implementation gap?

- Lapses in communication between researchers and practitioners

- poor financing   **$**

- Lack of public awareness

- Non- supportive political atmosphere

Contents of Each SHEA Compendium Section (2008, 2014, 2022)

SHEA/IDSA/APIC Practice Recommendations

I. Prevention strategies (essential-adopted by all; additional- consider if HAI rates not controlled after essential practices are implemented; unresolved- panel agrees there is a lack of pertinent evidence and unclear balance between benefits and harm.)

II. Performance measures

III. Approaches to implementation

Derived from:

- Synthesis of systematic literature review
- Evaluation of the evidence (classified as high, moderate, or low)
- Practical and implementation-based considerations
- Expert consensus

"Implementing Strategies to Prevent Infections in Acute Care Settings"

Implementing strategies to prevent infections in acute-care settings

Part of: ICHE Compendium 2022

Published online by Cambridge University Press: **11 July 2023**

Kavita K. Trivedi, Joshua K. Schaffzin, Valerie M. Deloney, Kathy Aureden, Ruth Carrico, Sylvia Garcia-Houchins, J. Hudson Garrett Jr, Janet Glowicz, Grace M. Lee, Lisa L. Maragakis, Julia Moody, Ann Marie Pettis, Sanjay Saint, Marin L. Schweizer, Deborah S. Yokoe and Sean Berenholtz

Show author detai

Infection Control & Hospital Epidemiology

Article contents

SHEA, APIC, IDSA AHA, TJC

Practical tools to implement best practices
Addresses the "knowing- doing gap"

What is the document based on?

Based on published articles about **implementation** identified through:

- Literature review for each HAI-prevention Compendium section

- Expert opinion and consensus

- Practical experience

- Published research and resources retrieved by the authors

Review and Approval

- The 5 compendium partner organizations
- Relevant professional organizations
- CDC

Approval came from:

- SHEA Guidelines Committee
- IDSA Standards and Practice Guidelines Committees
- American Hospital Association (AHA)
- The Joint Commission
- The boards of each of the 5 partners

Implementation Science

- "The scientific study of methods to promote systematic uptake of research findings and evidence-based practices into routine practice."

Eccles & Mittman (2006)

- A relatively young field Initially developed for industry, adopted by healthcare to improve patient outcomes

- Deliberate, systematic and sustained use of evidence-based practices

- Identifies generalizable methods and frameworks

Why Add Implementation Chapter?

Guidelines with implementation tools are more likely to be put into practice, which presumably leads to desirable outcomes.

Murthy et. al; Cochrane Database Syst Rev; 2012

Okelo et. al; Pediatrics 2013

Education is necessary but not adequate for meaningful, sustainable change.

Regulatory bodies require that evidence-based practice is implemented and followed.

Adoption vs. Implementation

- **Adopting** a practice is not the same as **implementing** it

- Absence of information about how to implement an evidence based practice ➡️ gap between discovery and wide-spread adoption

- Therefore "**implementation information** and **resources** should be a **standard element** of all **practice guidelines** and guidance documents"

Commentary; Schaffzin et al
ICHE;2022

What vs. How

- The **"What"** is evidence from randomized clinical trials

- The **"HOW"** is implementation science (strategies, tools, resources) demonstrated to be effective in incorporating evidence based interventions into routine clinical practice

Implementation Components Necessary

- **Technical:** readily available hand sanitizers, bladder scanners; automatic urinary catheter stop orders in EMR

- **Socio-adaptive** (behavioral): changing organizational culture or norms of clinical practice, engaging clinicians with the HAI prevention initiative, creating an environment of psychological safety
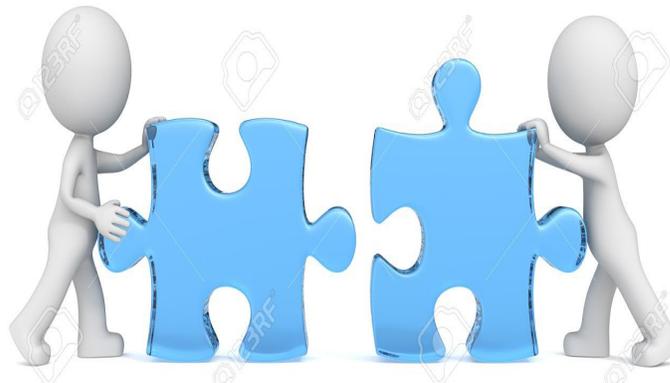
Local Context is Critical

- Operational support (C-suite)

- Informatics resources

- Familiarity and experience

- Willingness to change

- Staff buy-in to safety culture

Implementation Frameworks and ==Published Improvements==

- ★ • The 4 "E"s : HAI Prevention: ⬇ mortality and cost savings

- • The Behavior Change Wheel (BCW): hand hygiene, antibiotic prescribing

- ★ • Comprehensive Unit-Based Safety Program (CUSP): CLABSI, CAUTI, antibiotic prescribing.

- • European and Mixed Methods: CLABSI, hand hygiene

- • Getting to Outcomes (GTO): sexual health promotion, emergency preparedness

Models Included cont.

- Model for Improvement: PPE use, HAI prevention, public health process evaluation

- Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM): antimicrobial stewardship in ICU, vaccine promotion, STI practice guidelines

- Replicating Effective Practices (REP): HIV prevention, public health, healthcare

- Theoretical Domains: health maintenance (diabetes, weight control in pregnancy)

4 "Es"

- **Engage, Educate, Execute, Evaluate**
- Pronovost et.al. developed in 2008, most pervasive model in US healthcare
- Useful for large-scale, multi-site projects
- Demonstrated in SHEA CAUTI compendium
- Does not include strategies to address multi-level barriers that hinder putting knowledge into practice.
- 4 "Es" + efforts to improve teamwork and safety culture have been associated with reduction in HAIs.
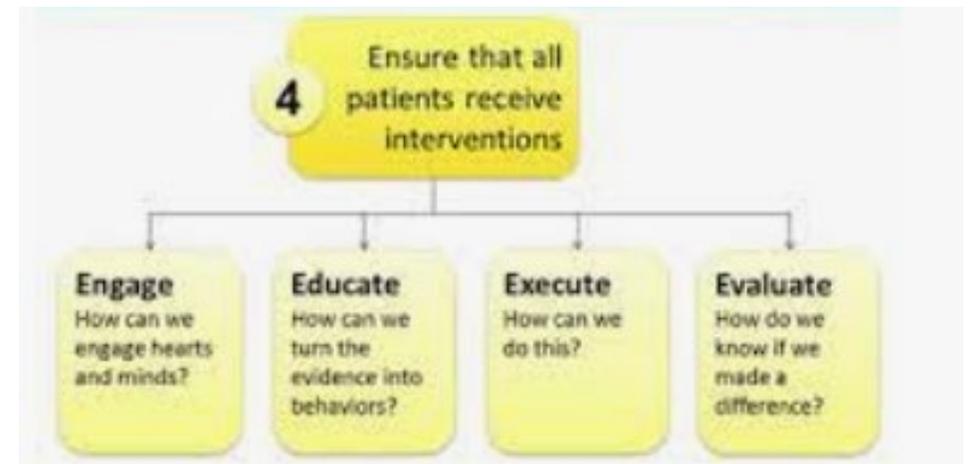
CAUTI Compendium and the 4E's

- **ENGAGE:** multidisciplinary team, champions identified, peer networking, involve patients and family

- **EDUCATE:** all stakeholders with a variety of materials and methods

- **EXECUTE:** standardize care processes, daily assessments, bladder bundle, nurse driven protocol, EMR alerts, bedside commodes

- **EVALUATE:** process, outcome and balancing measures with routine and frequent reporting to stakeholders

Identify Barriers and Possible Solutions
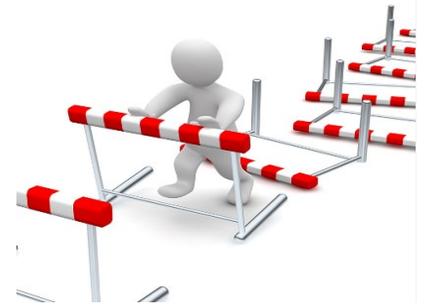
"The Guide to Patient Safety for Healthcare Associated Infections"

Conducted 21 **survey visits** and 400 **stakeholder interviews** across US

Surveys identified **common themes** regarding barriers encountered:

- absence of physician champions

- nurses and physicians resistance to change in practice

- managers' lack of dedicated time to devote to HAI prevention initiatives

CAUTI GPS: Online Tool

CAUTI Guide to Patient Safety   (excerpt)

10-13 yes/no questions to identify local context for HAI prevention followed by automated feedback with possible solutions

CLABSI, CDI and MRSA tools added

Hospital_____   Unit_____

1. **Do you have a well-functioning team (or work group) focusing on CAUTI prevention?**
   ☐ Yes   ☐ No

   If you answered 'No' to the question above, review guidance and resources on having a well-functioning team.

2. **Do you have a team leader with dedicated time to coordinate your CAUTI prevention activities?**
   ☐ Yes   ☐ No

   If you answered 'No' to the question above, review guidance and resources on having a CAUTI team leader.

3. **Do you have an effective nurse champion for your CAUTI prevention activities?**
   ☐ Yes   ☐ No

   If you answered 'No' to the question above, review guidance and resources on nurse champions.

4. **Do bedside nurses assess, at least daily, whether their catheterized patients still need a urinary catheter?**
   ☐ Yes   ☐ No

   If you answered 'No' to the question above, review guidance and resources on having a daily assessment.

5. **Do bedside nurses take initiative to ensure the indwelling urinary catheter is removed when the catheter is no longer needed (e.g., by contacting the physician or removing the catheter per protocol)?**
   ☐ Yes   ☐ No

Saint et. al.

CUSP

- Dr. Pronovost's team at Johns Hopkins developed and validated model in ICU setting in 2005. **(decreased CLABSIs in ICU)**

- AHRQ (Agency for Healthcare Research and Quality) provided funding towards development and maintains an updated version of this framework on their website.

- CUSP in the **ambulatory setting** ("AHRQ Safety Program for Improving Antibiotic Use"). Goal was to **reduce antibiotics** used in primary care.

- Success in preventing CAUTIs on hospital med-surg floors and in nursing homes

- Not all CUSP based interventions have had success.

Elements of CUSP

- <mark>Culture</mark> of safety assessment
- Science of safety education
- <mark>Staff identification</mark> of safety concerns
- ★ Senior executive adoption of a unit
- Improvement implemented from expressed concerns
- Documentation and analysis of efforts
- ★ Sharing of results
- <mark>Culture</mark> reassessment
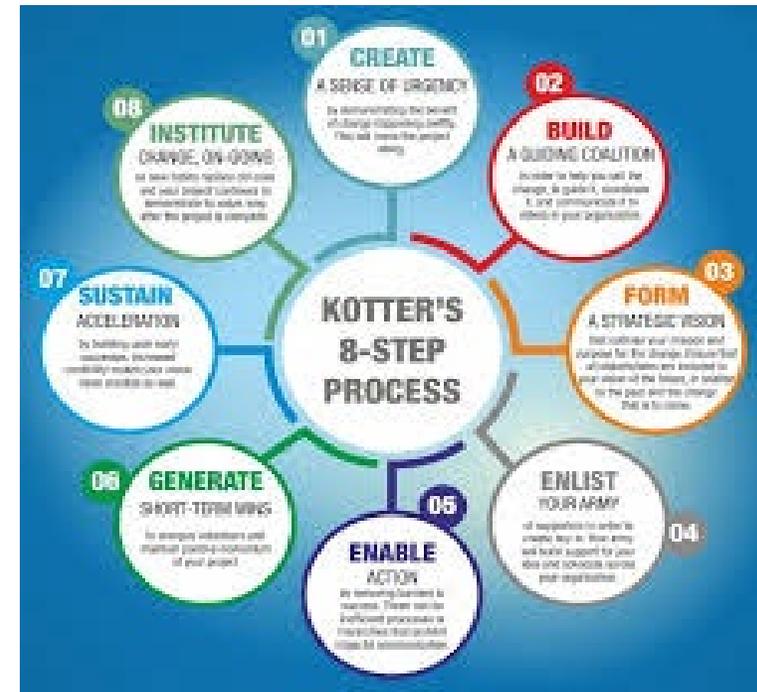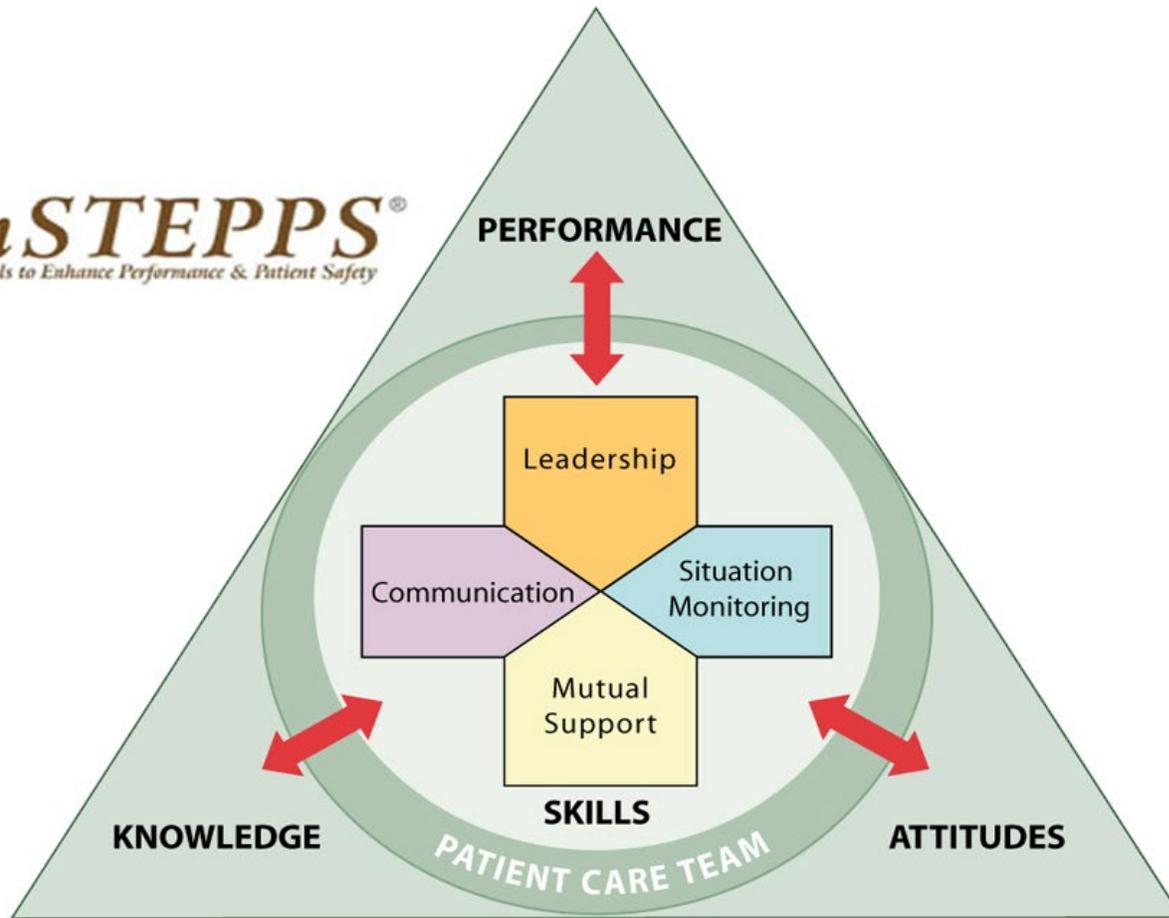
Performance Measures

- **Process** measures- action reliability to reach desired goal
  e.g. bundle adherence, compliance with hand hygiene, vaccine receipt

- **Outcome** measures- ultimate goal
  e.g. HAI rate, improving antimicrobial susceptibility patterns

- **Balancing** measures- undesired outcome of change implemented

  e.g. safety events, surgical cancellation, surgical flow, reintubation, absences due to vaccine, skin issues from increased hand hygiene

Measurement

Data are <u>essential</u> to implementation to:

- establish baselines
- identify opportunities
- measure progress
- justify use of resources to C-suite leaders

Whatever method is chosen must do the following:

- be appropriate for the question that needs to be answered
- adhere to the method's rules for data collection and analysis

Methods for Measurement

Table 2. Methods for Measurement

Method	Input Data	Output	Frameworks and Examples	Notes
Statistical Process Control	Events per period	Mean or median event rate/ occurrence	Model for Improvement Lean/Six Sigma	Based on identifying deviations from a baseline value, requires construction of event definition, access to data (eg, patient days, vascular catheter days, etc)
Qualitative	Interviews, focus-group transcripts, testimonials	Themes related to beliefs, practices, perceptions	Theoretical Domains Replicating Effective Practices	Can help guide project target/focus Can test and postintervention effectiveness Open-ended allows probing but more labor intensive to analyze
Surveys	Answers to questions on an existing or de novo survey	Descriptive data (practices) Association testing	Behavior Change Wheel/COM-B Theoretical Domains	Subject to pitfalls and bias
Delphi	Degree of agreement with statements or practices	Multiple rounds of ranking and feedback of results until consensus reached	Bright STAR, used for quality improvement/ implementation	An organized method to reach consensus for practices for which high quality evidence lacks
Mixed Methods	Qualitative and quantitative or survey data			

Example

- Reduce ventilator associated pneumonia **(outcome)**

- Increase early ex-tubation **(process)**

- Need to ensure a rise in reintubations or unplanned intubations is *not occurring* **(balancing measures)**

Additional Resources

- **Websites**

  IHI (Institute for Healthcare Improvement); AHRQ , WHO etc.

- **Online databases of models and frameworks:**

  consolidated framework for Implementation research **(CFIR)**

  RE-AIM and PRISM (Practical Implementation Sustainability Model)

- **Consultants**

  consider hiring an external consultant periodically seek input from

 colleagues through professional forums e.g. MySHEA, APIC's Talk Digest

- **Courses**

  develop inhouse expertise: **NIH self study** modules (8 modules- 25 min. Each, **IHI Open School** (online course), certificate of implementation science at certain universities e.g. **UCSF**

Final Thoughts

Implementation must be :

- Purposeful

- Systematic

- Based on **local context**

- **Sharing others' experience** with implementation of HAI reduction strategies (e.g. CLABSI, CAUTI, SSI) can help **guide** facilities to **choose a framework.**

- Sustainability is the "holy grail" of prevention
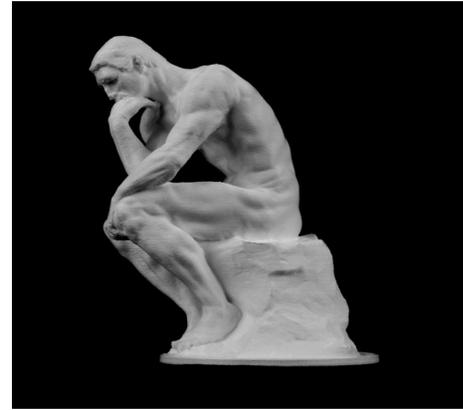
What does sustainability look like?

- Less intensity required than with initial efforts
- Maintaining gains or improving at a slower rate, allowing resources to be directed to other initiatives
- Interventions are incorporated into the standard workflow
- Champions remain in place to monitor and re-engage if needed
- Fits with the organization's mission and culture
- Benefits to staff and patients are easily perceived

Implementation is a Team Sport

Involve all stakeholders

Input from **all** leads to: collaboration

ownership

commitment

creativity

enthusiasm

END GAME

- **Improve care** and **health** of populations

- **Decrease** healthcare **costs**

- Generate more **robust research** on how to reliably and sustainably put recommendations into practice

- Create a systematic approach to implementation, adoption, evaluation and effectiveness of strategies to prevent health care associated infections

- **Safer environment** for patients and staff