Bridging the Gap Between Knowing and Doing – Implementation of Evidence-Based IPC Practices

Patricia Ching Tai Yin
RN, CPHQ
WHO CC
SPH, HKU
Hong Kong SAR China

“Knowing–doing” gap, a term used to describe why practices in healthcare may diverge from those recommended according to evidence.

Trivedi KK, Schaffzin JK, Deloney VM, et al. Implementing strategies to prevent infections in acute-care settings. Infect Control Hosp Epidemiol 2023. 44: 1232–1246, doi: 10.1017/ice.2023.103

Reasons for bridging the gap

- **Improved performance and outcomes:** Bridging the gap ensures professionals have the most current knowledge and skills to perform efficiently and effectively in their roles.
- **Translation of research into practice:** It's essential for making sure the latest research findings are used in real-world situations, rather than old, unscientific traditions.
- **Adaptability to change:** The gap must be bridged to help professionals meet the challenges of ever-changing needs and environments, such as the increasing burden of care.
- **Informed decision-making:** It helps practitioners make better-informed decisions by integrating theoretical knowledge with practical experience, instead of relying solely on intuition or outdated methods.
- **Enhanced professional development:** It leads to better training for professionals, ensuring they can apply new knowledge and address demands in diverse settings.

Implementation science - “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice.”

Eccles and Mittman Implement Sci 2006;1:1.

Various terms have been used to describe the field of **implementation science**, including the ‘theory-practice gap,’ ‘knowledge transfer,’ and ‘knowledge utilization.’

Saint S, Howell JD, Krein SL. Implementation science: how to jumpstart infection prevention. Infect Control Hosp Epidemiol 2010;31 suppl 1: S14–S17.

Implementation science

- To identify effective interventions that is a necessary first step for transferring them into real-world settings requires an intentional process.
- To evaluate contextual determinants of behavior to design more successful, customized interventions.

Education and training have proven necessary but insufficient for improvement and behaviour change.

Improvement science

A related field, focuses on the local context and provides guidance regarding how to perform trials of new practices rapidly and iteratively to improve care.

Leeman J, Rohweder C, Lee M, et al. Aligning implementation science with improvement practice: a call to action. Implement Sci Commun 2021;2:99.

Implementation science + Improvement science

These two fields, while having distinct models and terminology, can be aligned and complement each other to improve healthcare services.

Strategies for implementation

Determinants

- Promoting factors are called ‘facilitators’ and hindering factors are ‘barriers.’

- An individual may be a strong, engaged leader (a facilitator) or an unengaged obstructor (barrier).

Strategies for implementation

Determinants

Measurement

Data are essential for implementation to establish baselines, identify opportunities, measure progress, and justify use of resources to organizational leaders.

Measurement

1. **Outcome measure**: The ultimate goal of a project, such as reduced surgical site infections or improving antimicrobial susceptibility patterns.
2. **Process measure**: The action taken to reach the desired outcome, such as adherence to a prevention bundle or compliance with hand hygiene standards.
3. **Balancing measure**: An undesired outcome that could be caused by changing a system, such as increased staff absences due to dry skin from a hand hygiene product or due to side effects from a required vaccine.

Characteristics of successfully sustained interventions:

- are incorporated into the standard workflow
- have effective champions to shepherd the effort and re-engage when necessary
- can be modified over time, fit with an organization's mission and procedures
- provide easily perceived benefits to staff members and/or patients
- and are supported by partner organizations

Demonstrating successfully sustained implementation should include evidence of

(1) sustainment, that is, sustained use of an evidence-based intervention (process measure)
(2) sustainability, that is, sustained benefits of an evidence-based intervention (outcome measure).

Moullin JC, Sklar M, Green A, et al. Advancing the pragmatic measurement of sustainment: a narrative review of measures. Implement Sci Commun 2020;1:76.

Implementation of Evidence-Based IPC Practices

“Most nosocomial infections that are preventable

….. are caused by inappropriate patient-care practices”

Robert Haley in SENIC study, 1985

衛生防護中心
Centre for Health Protection

Recommendations on Prevention of Intravascular Catheter Associated Bloodstream Infection

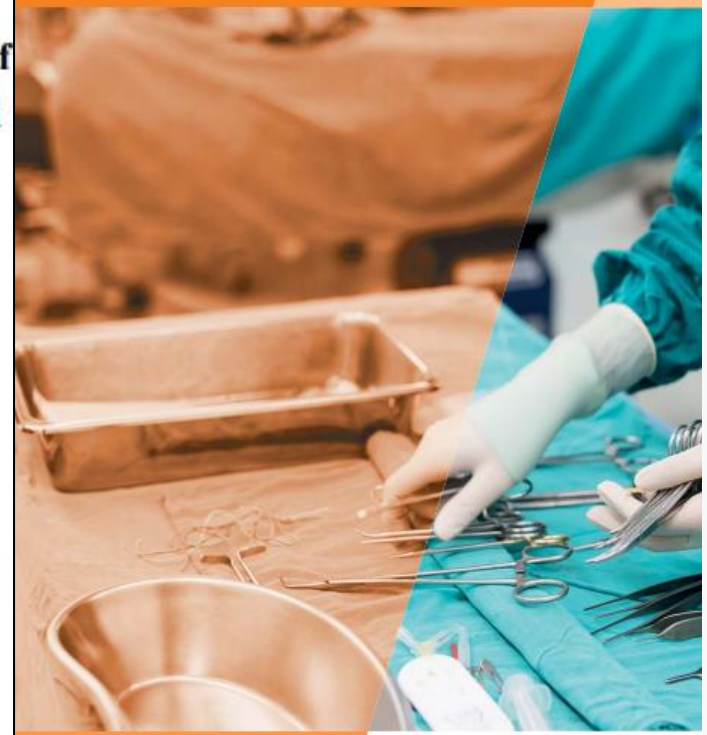
Version 3.0

Scientific Committee on Infection Control, and
Infection Control Branch, Centre for Health
Protection, Department of Health

December 2024

The Centre for Health Protection is a professional arm of the Department of Health for disease prevention and control

Decontamination and Reprocessing of Medical Devices for Health-care Facilities



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Infection Control & Hospital Epidemiology (2022), **43**, 553–569
doi:10.1017/ice.2022.87

SHEA

SHEA/IDSA/APIC Practice Recommendation

Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update

Niccolò Buetti MD, MSc, PhD[1,2,a], Jonas Marschall MD, MSc[3,4,a], Marci Drees MD, MS[5,6], Mohamad G. Fakih MD, MPH[7], Lynn Hadaway MEd, RN, NPD-BC, CRNI[8], Lisa L. Maragakis MD, MPH[9], Elizabeth Monsees PhD, MBA, RN, CIC[10,11], Shannon Novosad MD MPH[12], Naomi P. O'Grady MD[13], Mark E. Rupp MD[14], Joshua Wolf MBBS, PhD, FRACP[15,16], Deborah Yokoe MD, MPH[17] and Leonard A. Mermel DO, ScM[18,19]

[1]Infection Control Programme, University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland, [2]University of Paris, Paris, France, [3]Department of Infectious Diseases, Bern University Hospital and University of Bern, Bern, Switzerland, [4]Division of Infectious Diseases, Department of Medicine, Washington University School of Medicine, St. Louis, Missouri, United States, [5]ChristianaCare, Wilmington, Delaware, United States, [6]Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, Pennsylvania, United States, [7]Ascension Healthcare and Wayne State University School of Medicine, Detroit, Michigan, United States, [8]Lynn Hadaway Associates, Milner, Georgia, United States, [9]Johns Hopkins University School of Medicine, Baltimore, Maryland, United States, [10]Children's Mercy Hospital, Kansas City, Missouri, United States, [11]University of Missouri-Kansas City School of Medicine, Kansas City, Missouri, United States,, [12]Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, United States, [13]National Institutes of Health, Bethesda, Maryland, United States, [14]University of Nebraska Medical Center, Omaha, Nebraska, United States, [15]Department of Infectious Diseases, St. Jude Children's Research Hospital, Memphis, Tennessee, United States, [16]Department of Pediatrics, University of Tennessee Health Science Center, Memphis, Tennessee, United States, [17]University of California-San Francisco, San Francisco, California, United States, [18]Warren Alpert Medical School of Brown University, Providence, Rhode Island, United States and [19]Rhode Island Hospital, Providence, Rhode Island, United States

Purpose

Previously published guidelines provide comprehensive recommendations for detecting and preventing healthcare-associated infections (HAIs). The intent of this document is to highlight practical recommendations in a concise format designed to assist acute-care hospitals in implementing and prioritizing their central line-associated bloodstream infection (CLABSI) prevention efforts. This document updates the *Strategies to Prevent Central Line-Associated Bloodstream Infections in Acute-Care Hospitals* published in 2014.[1] This expert guidance document is sponsored by the Society for Healthcare Epidemiology of America (SHEA). It is the product of a collaborative effort led by SHEA, the Infectious Diseases Society of America (IDSA), the Association for Professionals in Infection Control and Epidemiology (APIC), the American Hospital Association (AHA), and The Joint Commission, with major contributions from representatives of a number of organizations and societies with content expertise.

Summary of major changes

This section lists major changes from the *Strategies to Prevent Central Line-Associated Bloodstream Infections in Acute-Care Hospitals: 2014 Update*,[1] including recommendations that have been added, removed, or altered. Recommendations are categorized as essential practices that should be adopted by all acute-care hospitals (in 2014 these were "basic practices," renamed to highlight their importance as foundational for hospitals' HAI prevention programs) or additional approaches that can be considered for use in locations and/or populations within hospitals when CLABSIs are not controlled after implementation of essential practices (in 2014 these were "special approaches"). See Table 1 for a complete summary of the recommendations contained in this document.

Essential practices

- The subclavian vein is considered the preferable site for central venous catheter (CVC) insertion in the intensive care setting to reduce infectious complications. Previously, the primary recommendation was to avoid the femoral vein for access. Although this remains valid, it has been replaced by a positively formulated recommendation regarding the subclavian site.
- The recommendation to use ultrasound guidance for catheter insertion is backed by better evidence than was available previously; however, the procedure itself may jeopardize the strict observation of sterile technique.
- The use of chlorhexidine-containing dressings is now considered an "essential practice"; in the past, it was listed under special approaches that should only be employed if CLABSI rates remain high despite the implementation of basic practices.
- Routine replacement of administration sets not used for blood, blood products, or lipid formulations can be performed at

Author for correspondence: Dr. Leonard A. Mermel, E-mail: lmermel@lifespan.org
*Authors of equal contribution.

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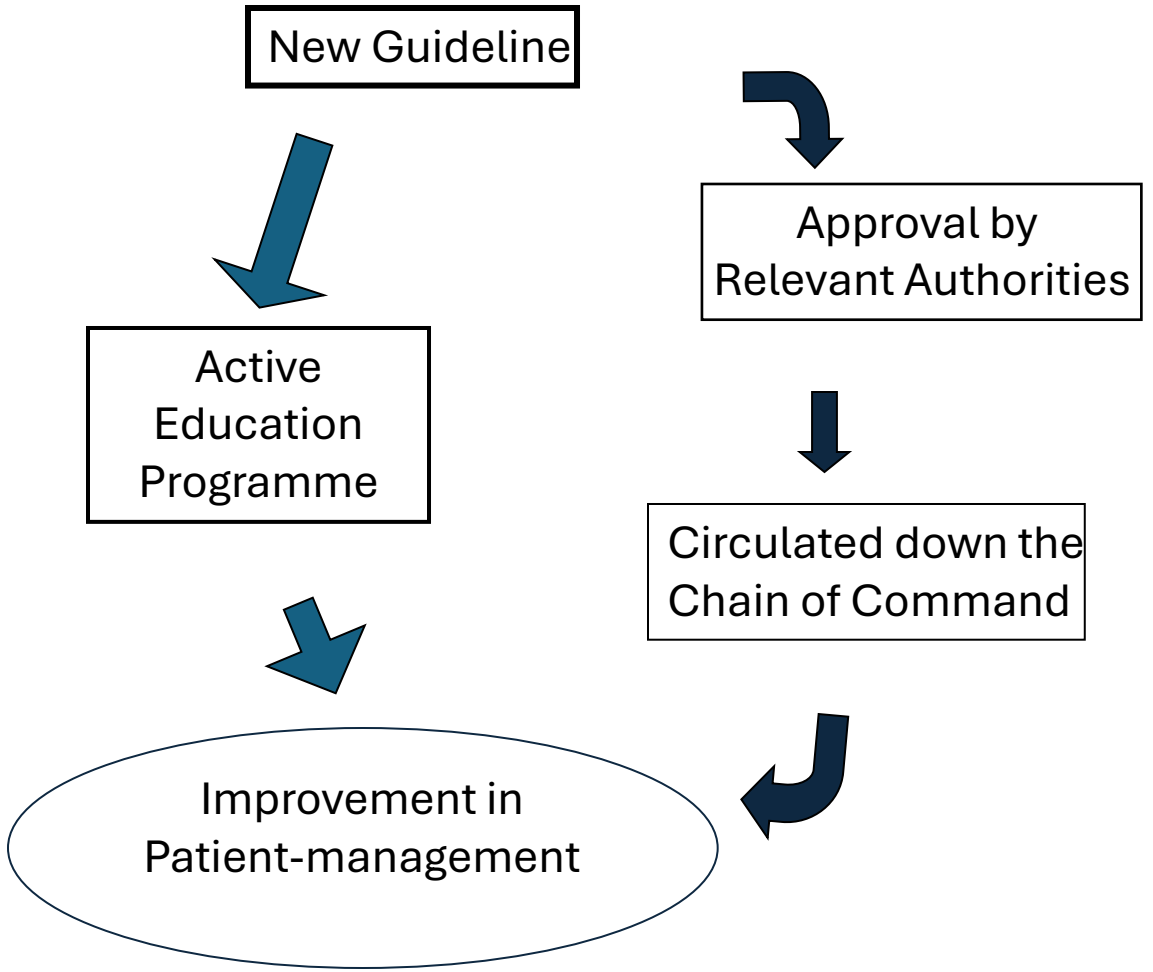
We know how to prevent the infection.....
but we cannot implement infection control guideline

Bridging the Gap Between What We Know and What We Do

Implementation of a New Policy or Guideline



Selection of strategies

- Ask stakeholders
- Look into the literature
- Make sure the selected strategy is addressing previously identified barriers
- One activity can contain more strategies (bundle), thus can address different barriers
- One barrier can be tackled using different strategies

https://cfirguide.org/tools/

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Key message

- Carefully plan your implementation
- Identify barriers & facilitators
- Plan implementation in close collaboration with stakeholders
- Choose strategies that fit barriers & facilitators and stakeholder groups
- Tailor these strategies to local context

Implementation of Guidelines

- the Hong Kong Experience

Steps in Protocol Implementation

1. Formulate guidelines according to hospital needs.
2. Categorize recommendations into the 4 types.
3. Obtain necessary resources.
4. Conduct research for staff resistance practices.
5. Measure baseline rate for demonstrating change.
6. Formulate and execute education program .
7. Evaluate and monitor progress with staff feedback.

Developed through a formal process that incorporates the best scientific evidence of effectiveness with expert opinion

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All recommendations are categorized into :

1. Established practice
   A hospital policy or a standard practice

2. Non-established practice (easy implementation)
   Easily implemented by usual educational program

3. Non-established practice (lack of resources)
   Difficult implementation due to lack of resources.

4.Non-established practice (staff resistance)
   Difficult implementation due to high staff resistance.

Study in 10 Hospitals on 5 CDC Guidelines

Correlation between estimate of establish practices (EP) and ward practice

Estimate to EP by SNO in 10 Hospitals	Frequency score in Hospital (x)
> 90%	3.68
< 30%	2.17

Seto WH, Ching T, Chu YB, Ong SG. Brief report: a scheme to review infection control guidelines for the purpose of implem- entation in the hospital. Infect Control Hosp Epidemiol. 1990;11:255-257

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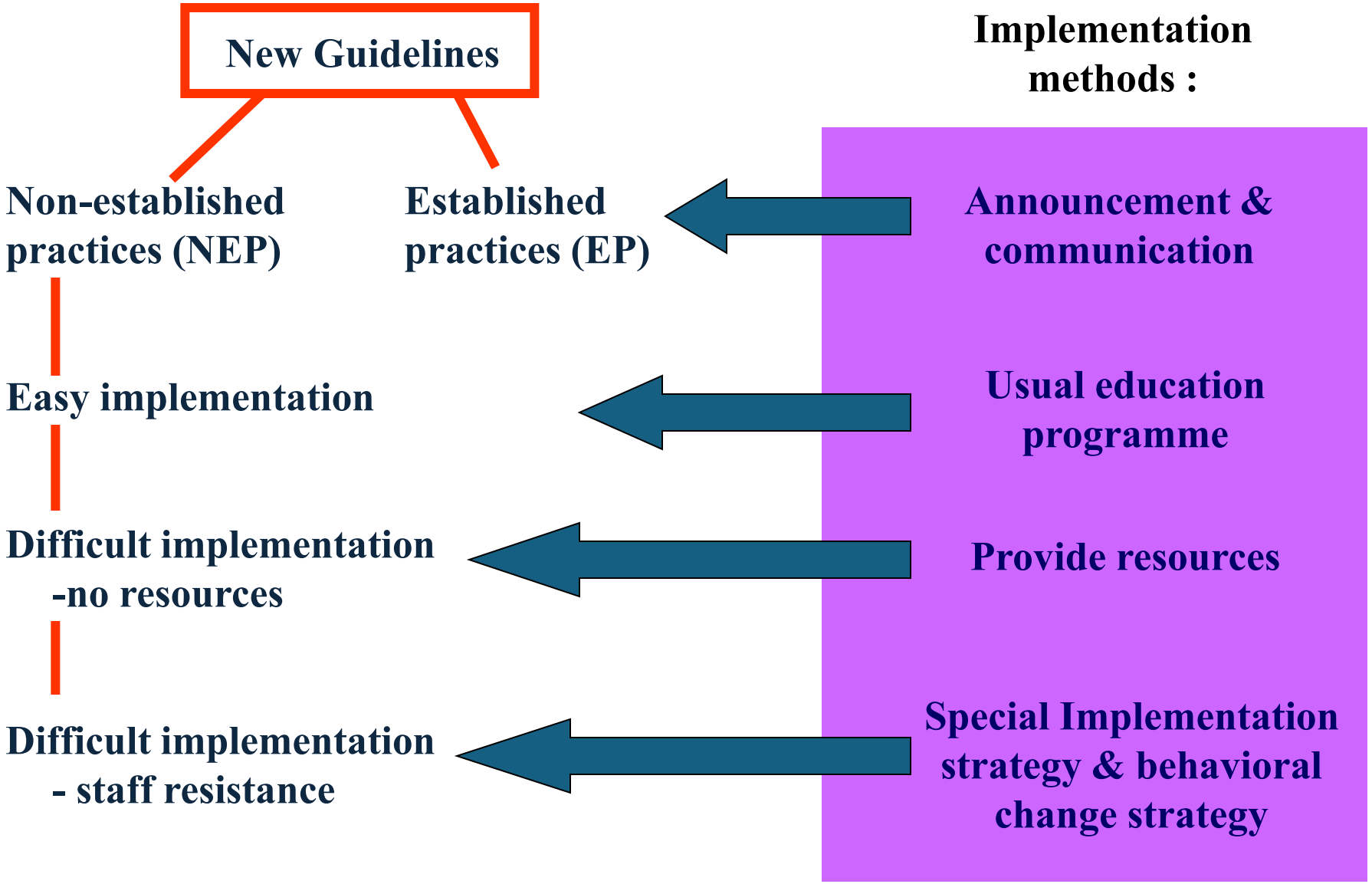
Scheme for implementation of new guidelines



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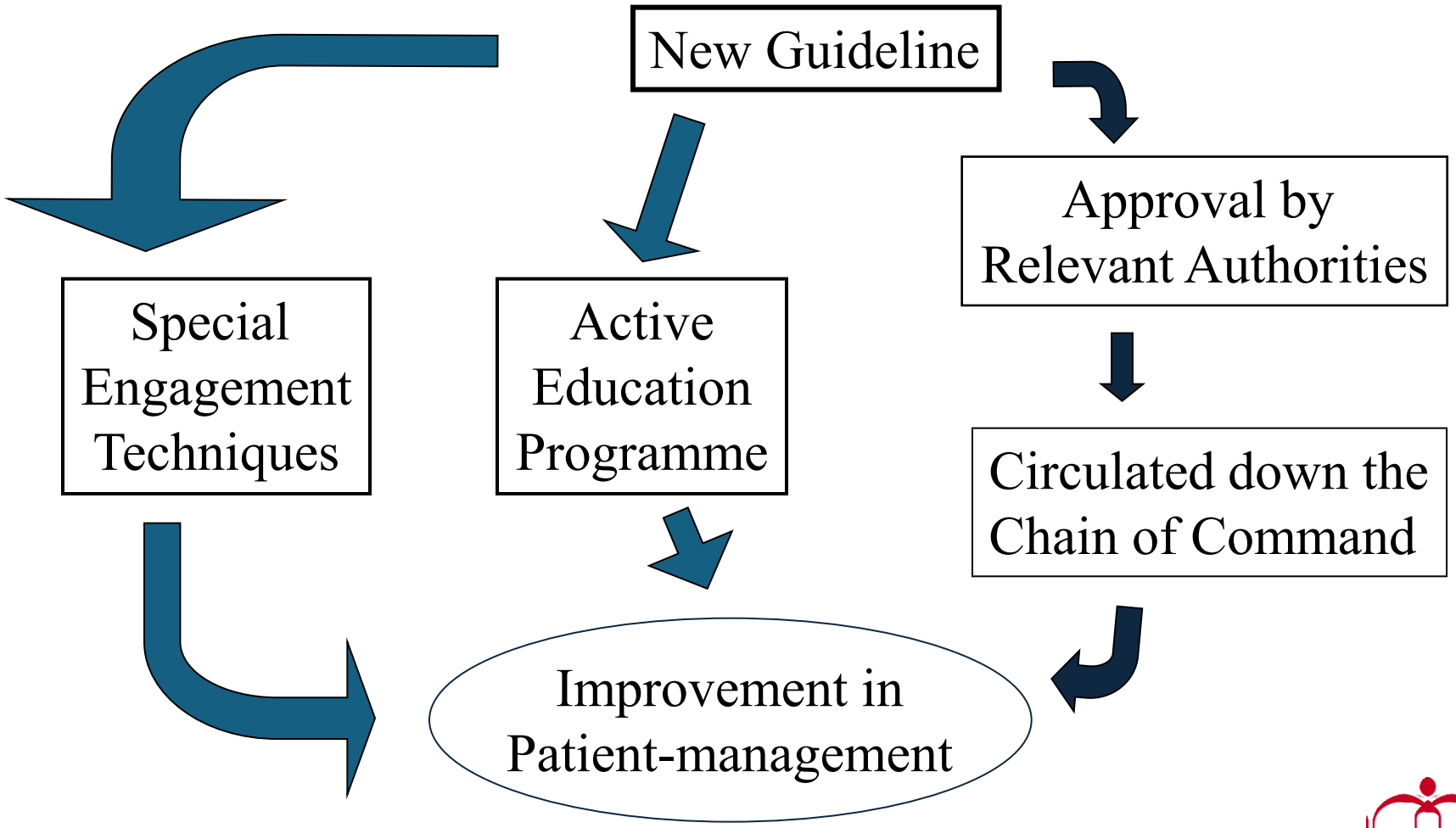
Implementation of a New Guideline



Some behavioral change strategies

- Opinion leaders
- Interest survey
- Identification of the non-agreeable
- Participatory decision making (building consensus)
- Influencing tactics

Consumer Behavior is the study of

how and why consumer buy and consume

Opinion Leaders (OL)

Opinion leaders are members within a social group with significant social influence over others.

Engel et al

OL – Celebrities in Advertisement

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Engel et al

OL In the Clinical Setting

Nurse Managers

Physician Champions

OL in Healthcare

ICIAN
MPION

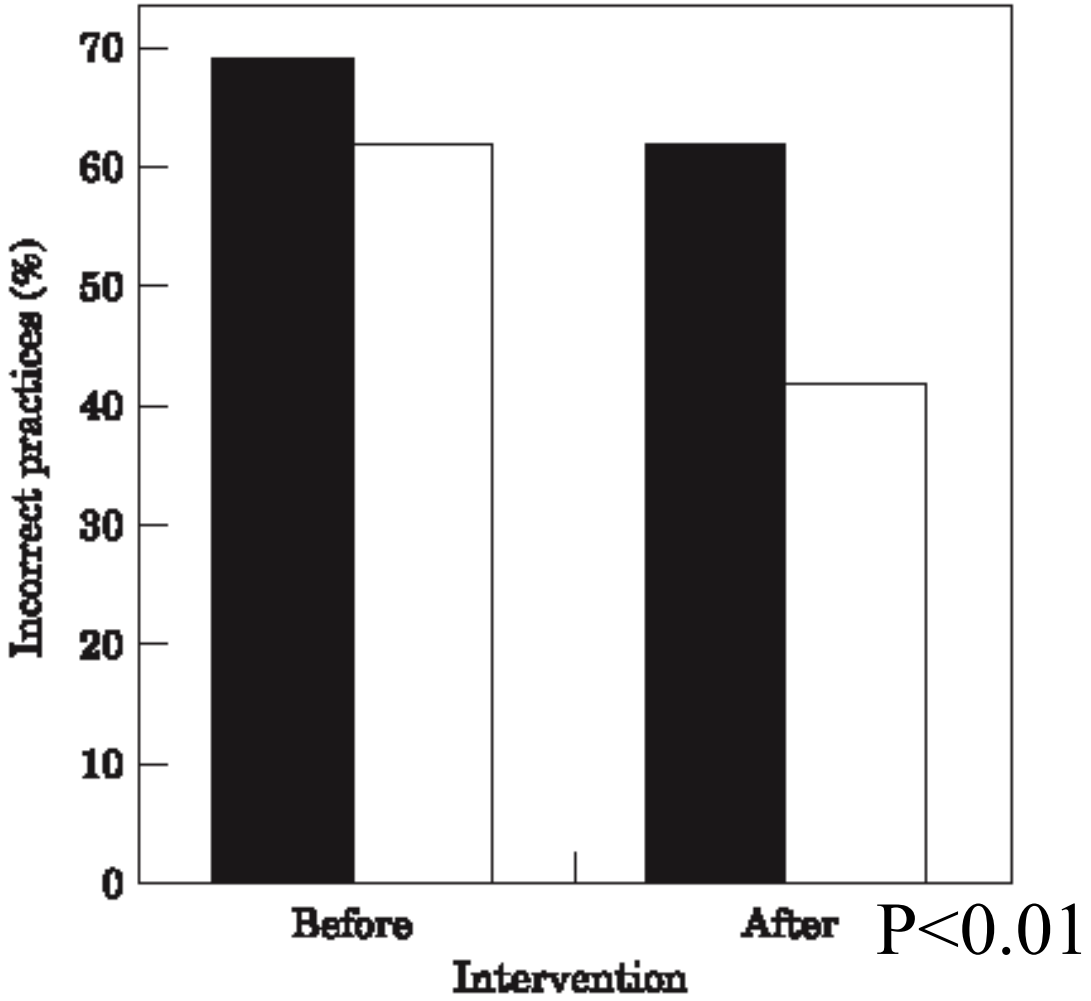
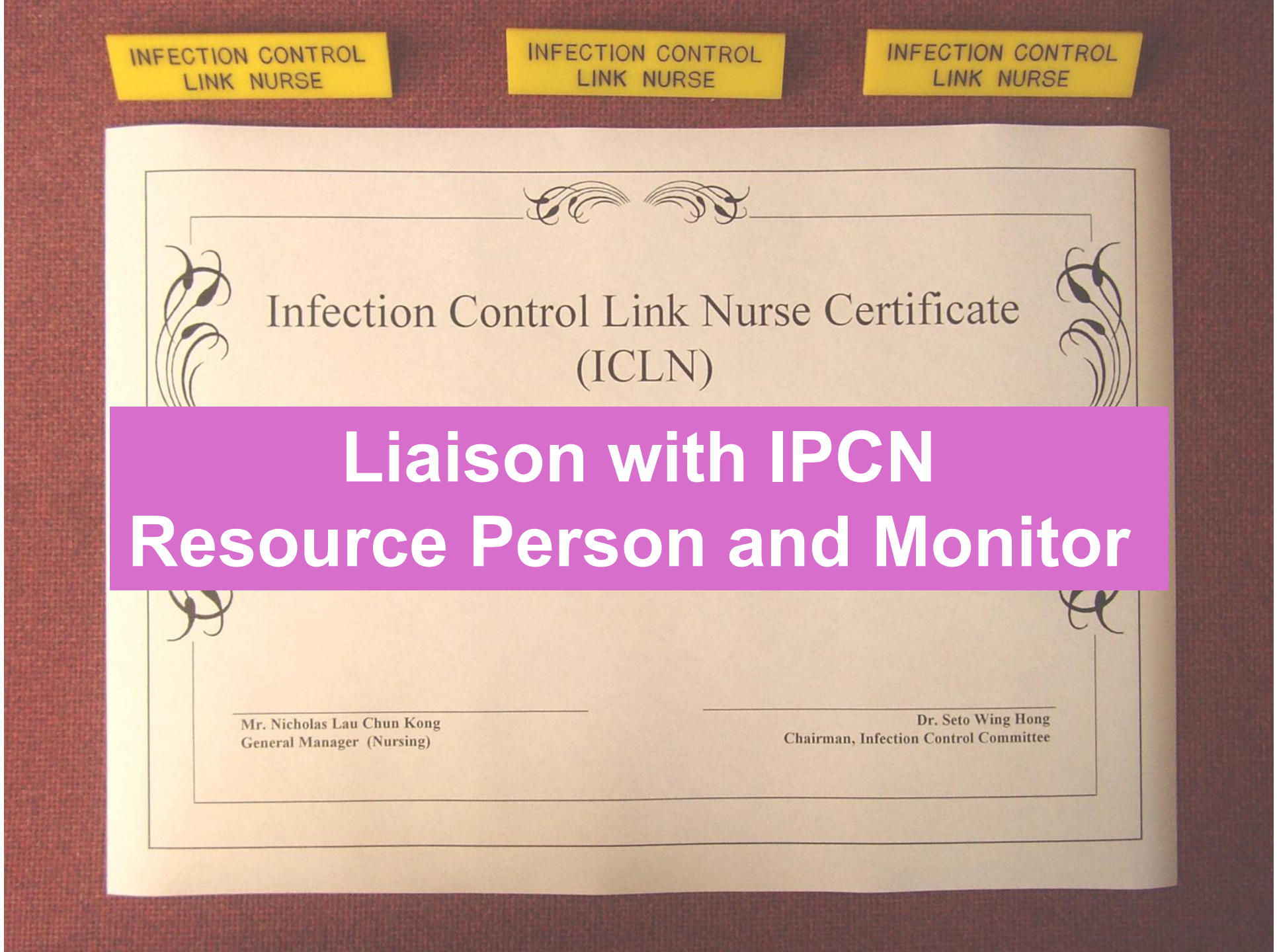


Figure 4 Direct observation of urinary care practices before and after education programmes involving or not involving opinion leaders; adapted from reference.[12] (■) Lecture only; (□) opinion leader and lecture.

Appointment of ICLN (OL)

- Senior ward nurses who are interested in infection control.
- A total of 60 ICLNs were nominated.
- ICLNs received a 2-days training course on infection control.
- They were awarded with a certificate and badge on passing the post course assessment.



Liaison with IPCN
Resource Person and Monitor

Effect of 60 Link Nurses Participation

	UP guideline in wards	Overfill sharps boxes	Cap-device on injection trolleys	Cap-device on bld-taking trolleys	Gloves on bld-taking trolleys
Pre ICLN					
11/ 98	**83.3**	**51.2$_a$**	**33.3$_a$**	**57.4$_a$**	**46.3$_a$**
Post ICLN (%)					
3/ 99	**82.4**	**8.8$_b$**	**82.8$_b$**	**83$_b$**	**75$_b$**

a & b differs significantly with p<0.01

Discontinuation of Recapping in 208 Nurses 5 weeks after introduction of sharp boxes

Groups	Nurses with no recapping (%) All Nurses	Agreeable	non-agreeable
A. Simple announcement	21%	30%	15%
B. Passive method (Poster)	66%	85%	21%*
C. Active (Lecture) & passive methods (poster)	85%	89%*	83%

Difference between rows are all significant ($p<0.05$) except for numbers with asterisk

Participatory Decision-making (PDM)

Influence exerted by the employee from assuming an active role in a decision-making process.

Vroom and Jago 1988.

Types of PDM

- No participation – decision only by manager
- Information – specific request by manager
- Individual opinion – consulted by the manager
- Group opinion – contributed in a group discussion
- Full PDM – consensus of entire group

% of correct IV PCPs for study groups

- before and after implementation

	Before	After
1. No Participation	13.5	46.4_a
2. Request Information	19.6	43.2_a
3. Personal Opinion	26.6	59.5_a
4. Group Discussion	14.9	76.0_b
5. Full PDM (R)	14.1	74.2_b

Different subscript differ significantly ($p<0.05$).

Key message – the do’s

- Carefully plan your implementation
- Identify barriers & facilitators
- Plan implementation in close collaboration with stakeholders
- Choose strategies that fit barriers & facilitators and stakeholder groups
- Tailor these strategies to local context

Common pitfalls – the don’ts

train and pray

rely on people without competence or power

one size fits all

*It Seemed Like A Good Idea At The Time
*= Not well thought through

Dump everything together

Infection Control & Hospital Epidemiology (2023), **44**, 1232–1246
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SHEA

SHEA/IDSA/APIC Practice Recommendation

Implementing strategies to prevent infections in acute-care settings

Kavita K. Trivedi MD[1,a], Joshua K. Schaffzin MD, PhD[2,a], Valerie M. Deloney MBA[3], Kathy Aureden MS, MT, CIC[4], Ruth Carrico PhD, DNP, CIC[5], Sylvia Garcia-Houchins MBA, RN, CIC[6], J. Hudson Garrett Jr PhD, MSN, MPH, MBA, CIC[5], Janet Glowicz PhD, RN, CIC[7], Grace M. Lee MD, MPH[8], Lisa L. Maragakis MD, MPH[9], Julia Moody MS, CIC[10], Ann Marie Pettis RN, BSN, CIC[11], Sanjay Saint MD, MPH[12], Marin L. Schweizer PhD[13], Deborah S. Yokoe MD, MPH[14] and Sean Berenholtz MD, MHS[10]

Table 3. Implementation Frameworks

Framework	Published Experience	Resources
4Es	**Settings** • Healthcare facilities • Large-scale projects including multiple sites **Infection prevention and control** • HAI Prevention (including mortality reduction and cost savings)	• 4Es framework[30] • HAI reduction[32–34] • Mortality reduction[35] • Cost savings[36]
Behavior Change Wheel	**Settings** • Community-based practice • Healthcare facilities **Healthy behaviors** • Smoking cessation • Obesity prevention • Increased physical activity **Infection prevention and control** • Hand hygiene adherence • Antibiotic prescribing[179]	• Behavior Change Wheel: A Guide to Designing Interventions • Stand More at Work (SMART Work)[41]
CUSP	**Settings** • Intensive care units • Ambulatory centers **Improvements** • Antibiotic prescribing • CLABSI prevention • CAUTI prevention	• CUSP Implementation Toolkit • AHA/HRET: Eliminating CAUTI (Stop CAUTI) • AHRQ Toolkit to Improve Safety in Ambulatory Surgery Centers
European Mixed Methods	**Settings** • European institutions of varied healthcare systems and cultures **Improvements** • CLABSI prevention • Hand hygiene	• PROHIBIT: Description and Materials
Getting to Outcomes (GTO)	**Settings** • Community programs and services **Improvements** • Sexual health promotion • Dual disorder treatment program in veterans • Community emergency preparedness	• RAND Guide for Emergency Preparedness (illustrated overview of GTO methodology)

Framework	Published Experience	Resources
Model for Improvement	**Settings** • Healthcare (inpatient, perioperative, ambulatory), public health **Interventions** • PPE use • HAI prevention • Public health process evaluation	• Institute for Healthcare Improvement • The Improvement Guide • Deming's System of Profound Knowledge
Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM)	**Settings** • Healthcare • Public health • Community programs • Sexual health **Evaluation** • Antimicrobial stewardship in ICU • Clinical practice guidelines for STIs • Promotion of vaccination • Implementation of contact tracing	• RE-AIM.org • Understanding and applying the RE-AIM framework: Clarifications and resources[80]
Replicating Effective Practices (REP)	**Settings** • Healthcare • Public health • HIV prevention • Interventions that have produced positive results are reframed for local relevance	• CDC Compendium of HIV Prevention Interventions with Evidence of Effectiveness (see Section C, Intervention Checklist)[86]
Theoretical Domains	**Settings** • Healthcare (inpatient, perioperative, ambulatory) • Community (individual and community-based behaviors) **Health maintenance** • Diabetes management in primary care • Pregnancy weight management **HCP practice** • ICU blood transfusion • Selective GI tract decontamination • Preoperative testing • Spine imaging • Hand hygiene	• A guide to using the Theoretical Domains Framework of behavior change to investigate implementation problems[89] • Developing theory-informed behavior change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework[96] • Choosing Wisely De-Implementation Framework

“Spending time listening and exploring your context, including local factors such as operational support, informatics resources, familiarity and experience, willingness to change, and safety, is of tremendous value and will guide you to success,” Schaffzin said. “People are rarely eager to change. It’s ok to be discouraged, but don’t give up.”

Joshua Schaffzin, MD, a pediatric infectious disease physician and a senior author of *Implementing Strategies to Prevent Infections in Acute Care Settings*

Implementation is …

getting others

to join in

Thank You