


Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
Broadcast live from APIC 2016 conference (www.apic.org)

Broadcast live from **APIC 2016**
APIC 43rd Annual Conference
June 11-13 · Charlotte, NC

**Bridging the Gap
Between Research and Practice
in Long-Term Care:
An Innovative Model for Success**

Sharon Bradley RN, CIC
Senior Infection Prevention Analyst
Pennsylvania Patient Safety Authority

Nothing to disclose


An independent agency of the Commonwealth of Pennsylvania
© 2016 Pennsylvania Patient Safety Authority

www.webbertraining.com June 13, 2016

Objectives

- Recall multifocal methods of assessment to measure integration of best practices into infection control program and structure
- Detect opportunities for improvement to implement infection control best practices at leadership, physician, clinical, and support staff levels
- Select approaches to translate assessment results into a structured framework that incorporates infection control strategies into clinical practice

Burden of Healthcare-Associated Infections (HAI) in Long-Term Care Facilities (LTCF)

- 1.2 - 3.8 million annual HAI
- 150,000 additional hospitalizations
- 380,000 additional deaths



(US HHS: "Long-Term")

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

What Does the Research Tell Us?



- 2000-2007: study of infection control deficiency citations
 - 60,000 LTCFs nationwide
 - On average, 15% cited for infection control deficiency
- 2005: survey of 37 LTCFs
 - Significant variability in implementation of infection control methods

(Castle et al.; Mody et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

What Does the Research Tell Us?

- Few peer-reviewed publications examine infection control in LTCF
- No studies have critically evaluated efficacy of infection control programs in LTCF
- Need for increased emphasis and research
- Focus on identifying barriers to implementing infection control best practices in LTCF

(Castle et al.; Mody et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016



Research Questions



- In which infection prevention domains do nursing homes perform well or need improvement ?
- In which implementation categories are there differences between facilities or units with high or low HAI rates?
- What elements of best practice are most lacking in areas of low performance?

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Where to Start?

- Measure integration of best practices into infection control program and structure
- Utilize multifocal methods of assessment



Assessment Tools

Identify barriers and determine compliance with infection control practices

- Interview
- Medical record review
- Simulation
- Clinical observation
- Checklists
- Process measuring worksheets

Assessment Module Design



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

Assessment Module Design

- Standardized measurement tool
 - Implementation of evidence-based infection control practices
 - Secondary implementation categories
 - Scoring system to identify the level of implementation
 - Specific targets for improvement

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
Broadcast live from APIC 2016 conference (www.apic.org)

Where Is the Evidence?

Guidelines for Environmental Infection Control in Health-Care Facilities


Recommendations of CDC and Practice Advisory

2007 Guideline for Isolation Precautions Preventing Transmission of Infectious Agents in Healthcare Settings

N MPH CIC; Marguerite Jackson, PhD; Infection Control Practices Advisory

gratefully acknowledge Dr. Larry Strausbaugh in the preparation of this guideline.


Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee. *Guideline for Isolation Precautions: Preventing the Spread of Infectious Agents in Health-Care Settings*. *MMWR*. 2007;56(10):276-284.



Recommendations and Reports October 25, 2002 / Vol. 51 / No. RR-16

Guideline for Hand Hygiene in Health-Care Settings

Recommendations of the Healthcare Infection Control Practices Advisory Committee



GUIDELINE FOR PREVENTION OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 2009

Carolyn V. Gould, MD, MSc¹; Catherine A. Umscheid, MD, MSc²; Alexander K. Agarwal, MD, MPH³; Charles A. Jones, BSW, MEd⁴; Charles A. Pogue, MD⁵; and the Healthcare Infection Control Practices Advisory Committee (HICPAC)⁶

¹ Centers for Disease Control and Prevention, Atlanta, GA

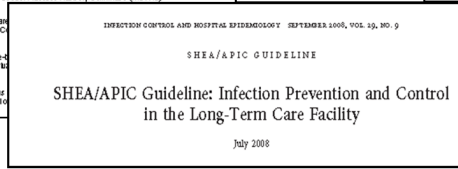
² Center for Health Systems Research and Analysis, University of Pennsylvania, Philadelphia, PA

³ Department of Biostatistics, University of California, San Diego, La Jolla, CA

⁴ Department of Health Services, University of California, San Francisco, CA

⁵ Department of Health Services, University of California, San Francisco, CA

⁶ Healthcare Infection Control Practices Advisory Committee (HICPAC)



INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY / SEPTEMBER 2008, VOL. 59, NO. 9

SHEA/APIC GUIDELINE

SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility

July 2008

Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006

John O. Sickel, MD; Emily Reinhardt, RN MPH CIC; Marguerite Jackson, PhD; Linda C. Clancy, RN MD; the Healthcare Infection Control Practices Advisory Committee

Acknowledgment:
 The authors and HICPAC gratefully acknowledge Dr. Larry Strausbaugh for his many contributions and valued guidance in the preparation of this guideline.

APIC 2016 June 11-13 Charlotte, NC #APIC2016

Seven Assessment Domains

- Hand hygiene compliance
- Environmental control
- Outbreak control
- Prevention of:
 - Urinary tract infections (UTIs)
 - Respiratory tract infections (RTIs)
 - Gastrointestinal (GI) and multidrug-resistant organism infections (MDROs)
 - Skin and soft-tissue infections (SSTIs)

(Bradley et al.)

APIC 2016 June 11-13 Charlotte, NC #APIC2016

A Webber Training Teleclass
 www.webbertraining.com

Implementation Category

Infection Control Program Structure

Infection Prevention Plan and Goals	Policies and Procedures	Education
--	--------------------------------	------------------

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC13#APIC2016

Implementation Category


Infection Control Program Function

Standard Documentation	Process and Outcome Monitoring	Assigned Accountability
-------------------------------	---------------------------------------	--------------------------------

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC14#APIC2016


Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
Broadcast live from APIC 2016 conference (www.apic.org)



Long Term Care Best Practice Assessment Practice Assessment

4) 100% Implemented 3) Partial implementation 2) Implementation considered 1) Unknown 0) Not implemented N/A) Not applicable

	Best Practice	IC Plan / Goals	Policy and Procedures	Education process	Standard Documentation	Monitoring of process and outcomes	Accountability assigned
1	HAND HYGIENE ^{1,3}						
1	Clinical staff demonstrates understanding of hand hygiene rationale, indications & methods.						
2	Alcohol-based hand rub and gloves are available at the point of care						
3	Gloves are changed between residents & between clean and dirty activities on the same resident.						
4	Hand washing with soap and water is performed when hands are visibly soiled						
5	Hand hygiene is performed before and after resident care						
6	The facility has an individualized program to monitor hand hygiene compliance						
7	Residents and families are knowledgeable about hand hygiene						
	Category sub-total						

(Bradley et al.)



 June 11-13
 Charlotte, NC


Long Term Care Best Practice Assessment (Demonstration)

4) 100% Implemented 3) Partial implementation 2) Implementation considered 1) Unknown 0) Not implemented N/A) Not applicable

	Best Practice	IC Plan / Goals	Policy and Procedures	Education process	Standard Documentation	Monitoring of process and outcomes	Accountability assigned
1	HAND HYGIENE ^{1,3}						
1	Clinical staff demonstrates understanding of hand hygiene rationale, indications & methods.	3	4	4	0	0	4
2	Alcohol-based hand rub and gloves are available at the point of care	3	4	4	0	0	3
3	Gloves are changed between residents & between clean and dirty activities on the same resident.	3	4	4	0	0	3
4	Hand washing with soap and water is performed when hands are visibly soiled	3	4	4	0	0	3
5	Hand hygiene is performed before and after resident care	3	4	4	0	0	3
6	The facility has an individualized program to monitor hand hygiene compliance	20	25	25	5	2	22
7	Residents and families are knowledgeable about hand hygiene	3	3	3	3	0	4
	Category sub-total						

(Bradley et al.)


 June 11-13
 Charlotte, NC

A Webber Training Teleclass
www.webbertraining.com

Detect Opportunity for Improvement



- Clinical observation tool
- Pre and post-intervention self-assessment
- Overall performance of unit/facility/group
- Multidisciplinary-level barriers

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

DOMAIN	Education		Documentation		Monitoring	
	A WING	B WING	PRE-PI *	POST-PI *	YEAR 2013	YEAR 2014
* PI: Process Improvement						
Hand hygiene	73%	76%	77%	85%	84%	83%
Environmental control	88%	74%	96%	98%	85%	98%
Urinary tract infection	75%	32%	79%	86%	89%	80%
Respiratory tract infection	79%	52%	85%	92%	91%	89%
Gastrointestinal/multi-drug-resistant organism Infections	78%	78%	90%	90%	91%	90%
Skin and soft-tissue infection	84%	30%	95%	95%	98%	96%
Outbreak control	71%	84%	84%	84%	80%	87%

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

18

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Detect Opportunity for Improvement

- Leadership
- Physicians
- Clinicians
- Support staff



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

19

#APIC2016

PA Patient Safety Authority Outreach Project 2010-2012

- Comparison of implemented infection prevention best practices
- Model and assessment tool utilized
- 20 nursing homes visited
 - 10 LTCFs with high HAI rates
 - 10 LTCFs with low HAI rates



(Bradley et al.)

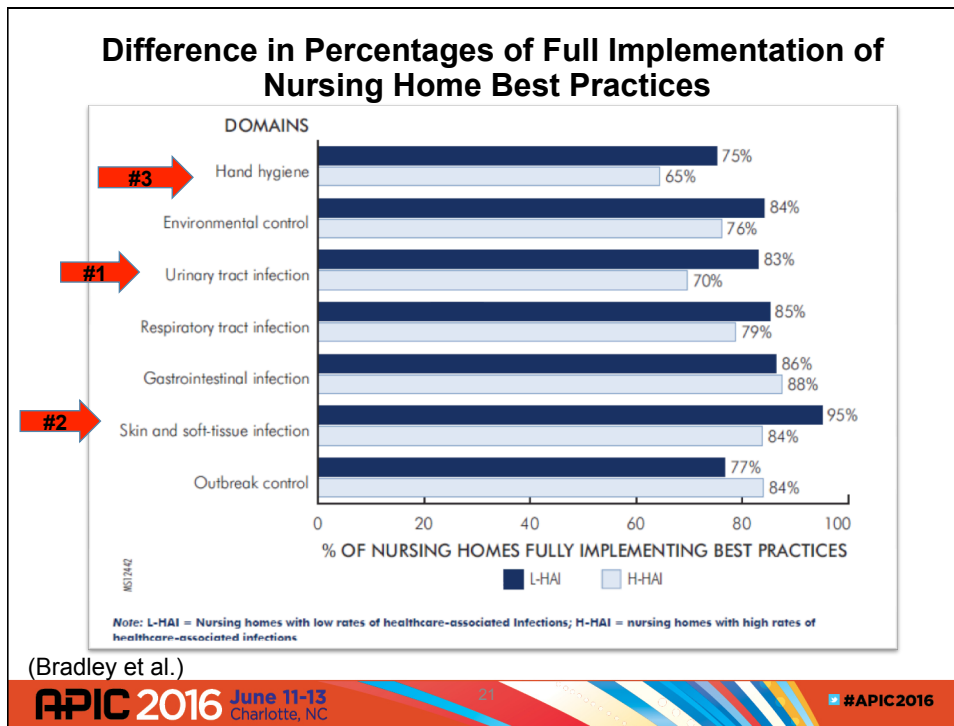
APIC 2016 June 11-13
Charlotte, NC

20

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
 Sharon Bradley, Pennsylvania Patient Safety Authority
 Broadcast live from APIC 2016 conference (www.apic.org)



Implementation of Structure Categories

DOMAIN	Plan		Policy/ goals		Education	
	L-HAI	H-HAI	L-HAI	H-HAI	L-HAI	H-HAI
Hand hygiene	73%	76%	84%	77%	84%	83%
Environmental control	88%	74%	98%	96%	85%	98%
Urinary tract infection	75%	32%	86%	79%	89%	80%
Respiratory tract infection	79%	52%	91%	85%	91%	89%
Gastrointestinal/multidrug-resistant organism Infections	78%	78%	91%	90%	91%	90%
Skin and soft-tissue infection	84%	30%	95%	95%	98%	96%
Outbreak control	71%	84%	84%	84%	80%	87%

L-HAI = Nursing homes with low HAI rates H-HAI = Nursing homes with high HAI rates
 Yellow cells- higher % of implementation; Bolded cells- 10% higher implementation

(Bradley et al.)

APIC 2016 June 11-13 Charlotte, NC #APIC2016

A Webber Training Teleclass
www.webbertraining.com

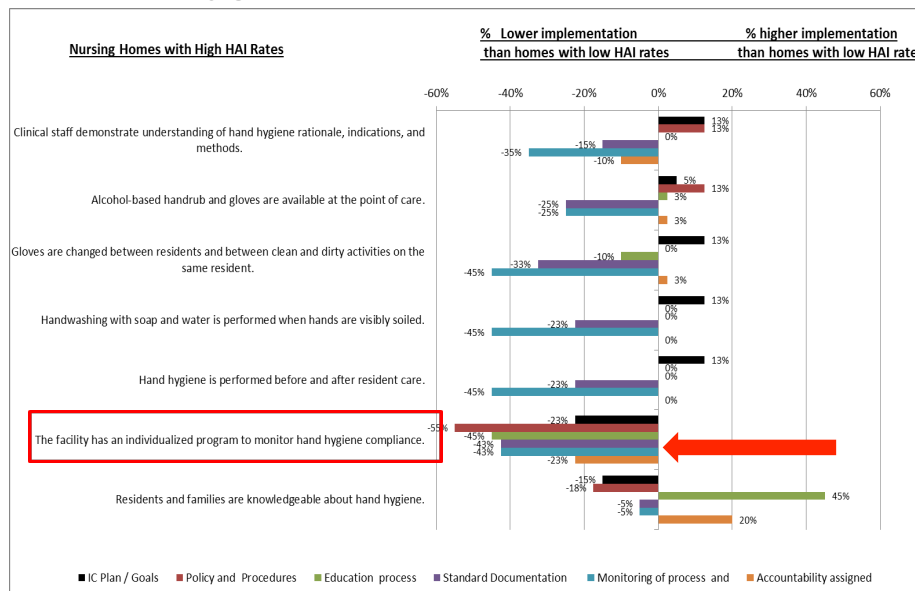
Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
 Broadcast live from APIC 2016 conference (www.apic.org)

Implementation of Function Categories

DOMAIN	Documentation		Monitoring		Accountability	
	L-HAI	H-HAI	L-HAI	H-HAI	L-HAI	H-HAI
Hand hygiene	61%	37%	66%	31%	84%	83%
Environmental control	65%	28%	70%	63%	100%	98%
Urinary tract infection	82%	72%	76%	70%	90%	84%
Respiratory tract infection	84%	74%	71%	79%	95%	94%
Gastrointestinal/ multidrug-resistant organism Infections	91%	88%	78%	85%	91%	95%
Skin and soft-tissue Infection	97%	95%	97%	90%	98%	96%
Outbreak control	80%	86%	64%	74%	80%	87%

(Bradley et al.) L-HAI = Nursing homes with low HAI rates H-HAI = Nursing homes with high HAI rates
 Yellow cells- higher % of implementation; Bolded cells- 10% higher implementation

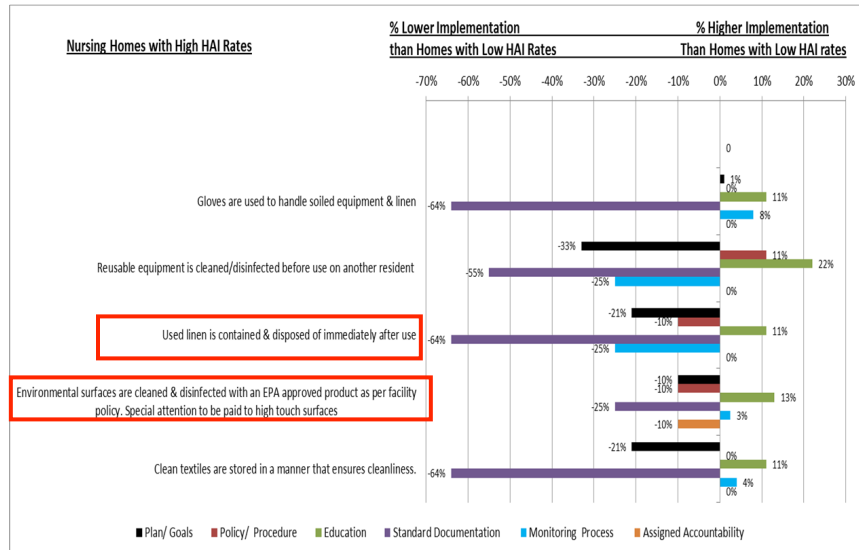
Hand Hygiene Best-Practice Implementation



A Webber Training Teleclass
www.webbertraining.com

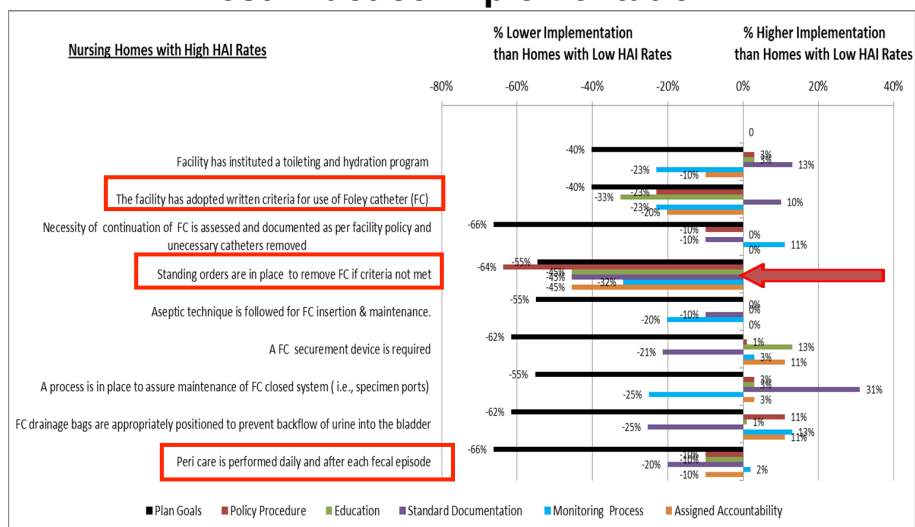
Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
Broadcast live from APIC 2016 conference (www.apic.org)

Environmental Control Best-Practice Implementation



(Bradley et al.)

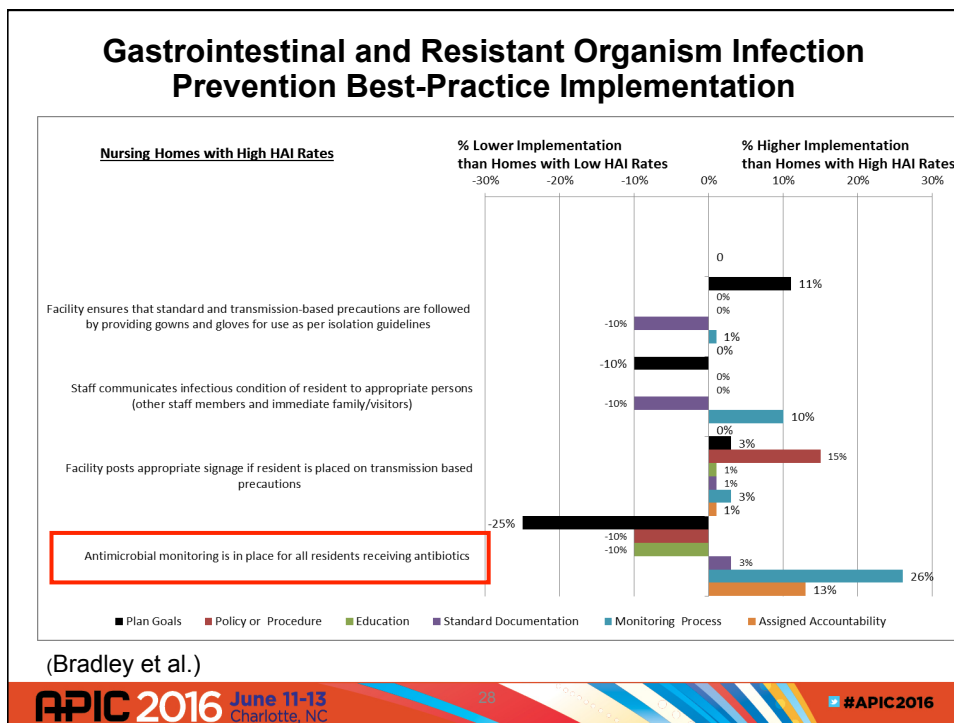
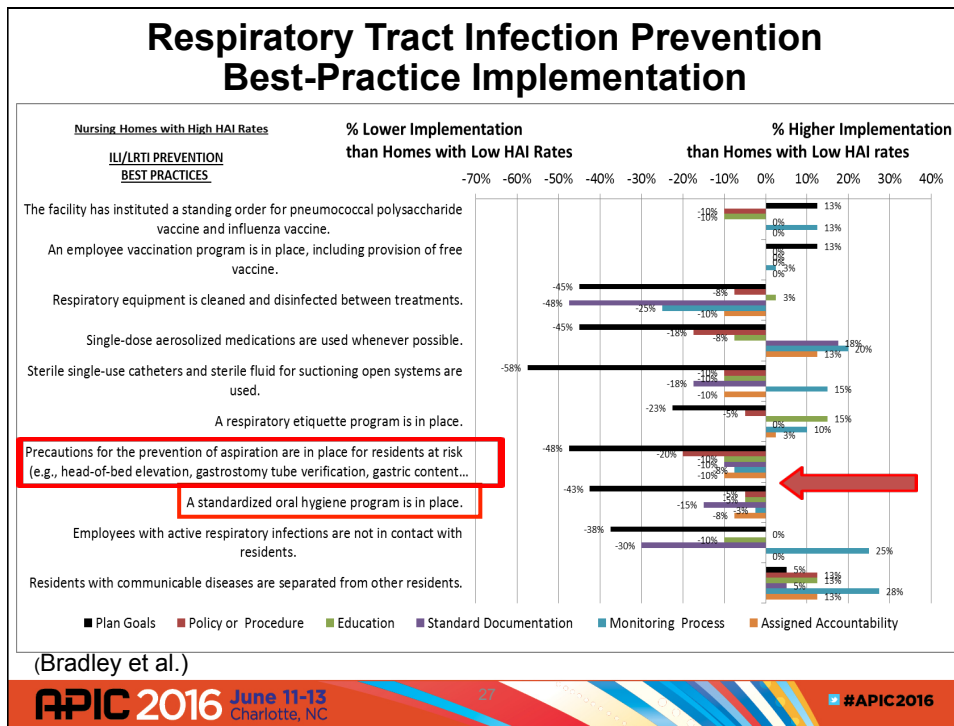
Urinary Tract Infection Prevention Best-Practice Implementation



(Bradley et al.)

A Webber Training Teleclass
www.webbertraining.com

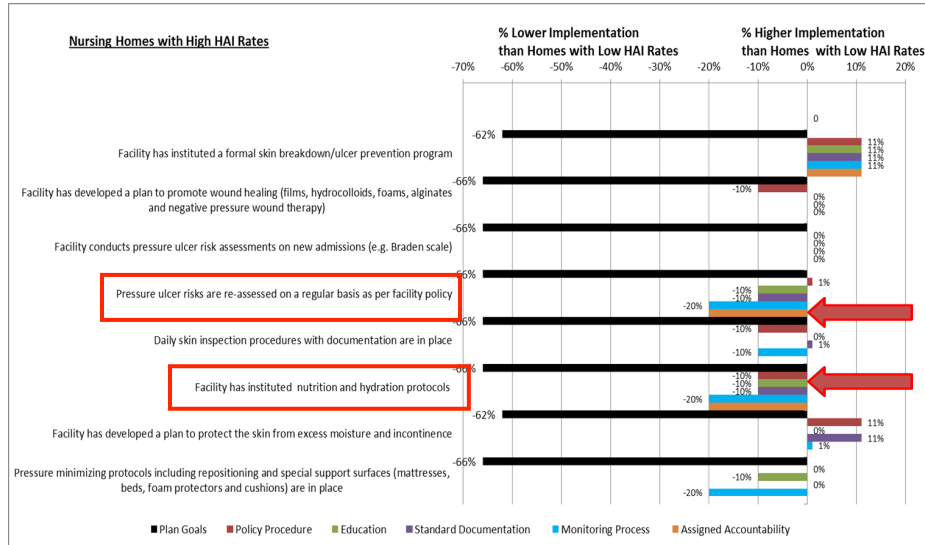
Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
 Broadcast live from APIC 2016 conference (www.apic.org)



A Webber Training Teleclass
www.webbertraining.com

Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
 Broadcast live from APIC 2016 conference (www.apic.org)

Skin and Soft-Tissue Infection Prevention Best Practice Implementation



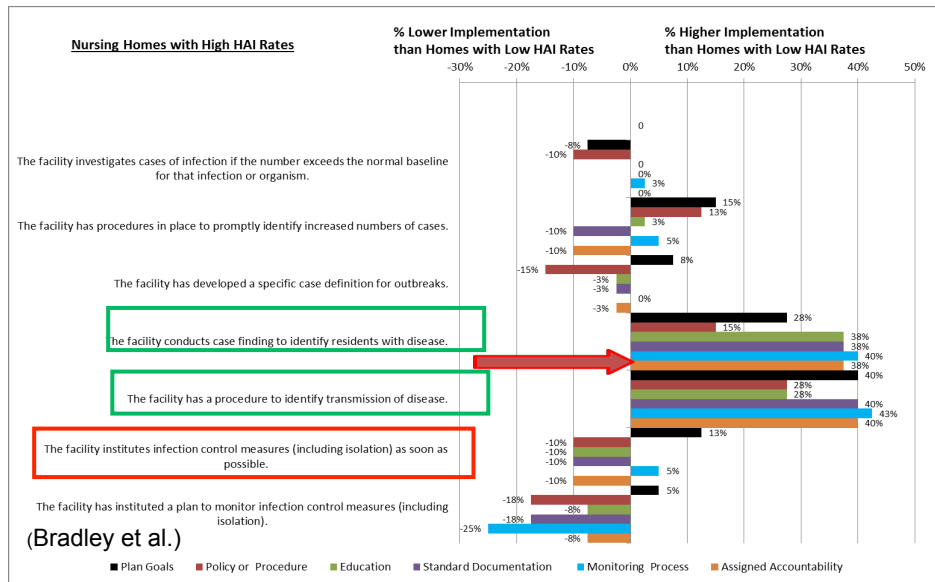
(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

29

#APIC2016

Outbreak Control Best Practice Implementation



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

30

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Practice Barriers Identified

- Unavailability of hand sanitizers
- Antimicrobial monitoring by pharmacy only
- Lack of aspiration prevention strategies
- Routine Foley changing/irrigation
- Physician refusal to remove Foley
- Limited separation of clean/dirty workspace
- Lack of family/resident education



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

31

#APIC2016

Organizational Barriers Identified

- Lack of trained infection preventionist (IP)
- IP has multiple roles/campuses
- High acuity, low staffing, limited consultation
- Reactive versus proactive response
- Lack of administrative support
- Lack of root-cause analysis (RCA)
- Absence of structured documentation process
- Inadequate communication protocols



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

32

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

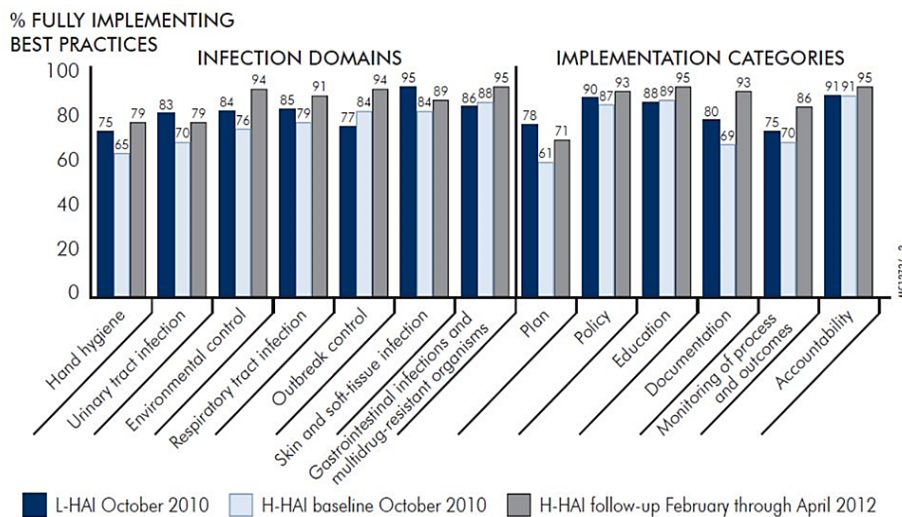
High-HAI NH Follow-Up

- Pre to post intervention quarters:
 - Improved in all domains and implementation categories
 - 16% significant decrease in mean overall HAI rate (P value <0.05)
 - 8:10 improved infection rates
 - 18.8% combined decrease in number of HAIs
 - 9% decrease in overall costs for GI infections, RTIs, SSTIs, and symptomatic UTIs



(Feil et al.)

Implementation Improvement



(Feil et al.)

Barriers to Practice Adoption

The diagram consists of four interlocking puzzle pieces arranged in a 2x2 grid. The top-left piece is yellow and labeled 'AWARENESS'. The top-right piece is blue and labeled 'ACCOUNTABILITY'. The bottom-left piece is red and labeled 'ABILITY'. The bottom-right piece is orange and labeled 'ACTION'. Each piece is surrounded by text explaining its role in practice adoption.

Awareness of performance gaps before practice adoption

ACCOUNTABILITY Leadership directly responsible for closing gaps

Resource investment and capacity to make changes

ABILITY

ACTION Define targets to close performance gaps

(Denham: Patient Safety)

APIC 2016 June 11-13 Charlotte, NC #APIC2016

Bridging the Gap

The photograph shows a long suspension bridge stretching across a wide river. The bridge has two large towers and cables supporting the deck. In the background, a city skyline with many buildings is visible under a clear sky. The water in the river is dark and reflects the light.

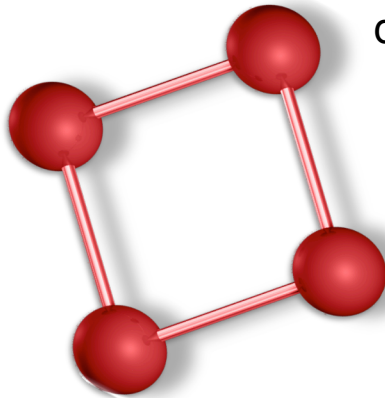
- Translate assessment results into a structured framework
- Incorporate infection control strategies into clinical practice

APIC 2016 June 11-13 Charlotte, NC #APIC2016

A Webber Training Teleclass
www.webbertraining.com

Structured Framework

Provides a snapshot of level of current barriers and defects:



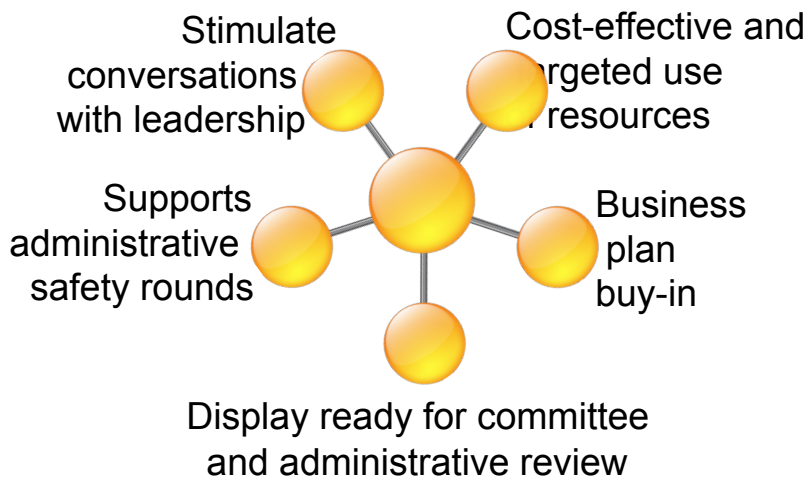
- Domain
- Implementation category
- Implementation level
- Specific best practice

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

Structured Framework



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Approaches to Integrate Strategies into Clinical Practice

- Increase awareness
 - Engage
 - Educate
- Oversee compliance
 - Execute
 - Evaluate



(US Department of Health and Human Services: CUSP Toolkit)

APIC 2016 June 11-13
Charlotte, NC

#APIC2016

“Bundled” Infection Practices

IV INFLUENZA LIKE ILLNESS / LOWER RESPIRATORY TRACT INFECTION

- 1 The facility has instituted a standing order process for pneumococcal polysaccharide vaccine and influenza vaccine.
- 2 An employee vaccination program is in place, including provision of free vaccine.
- 3 Respiratory equipment is cleaned and disinfected between treatments.
- 4 Single-dose aerosolized medications are used whenever possible.
- 5 Sterile single-use catheters and sterile fluid for suctioning open systems are used.
- 6 A respiratory etiquette program is in place.
- 7 Precautions for the prevention of aspiration are in place for residents at risk (e.g., head-of-bed elevation, gastrostomy tube verification, gastric content aspiration, feeding protocols).
- 8 A standardized oral hygiene program is in place.
- 9 Employees with active respiratory infections are not in contact with residents.
- 10 Residents with communicable diseases are separated from other residents.

(Bradley et al.; CDC; CMS)

APIC 2016 June 11-13
Charlotte, NC

40

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Complements Quality Assurance Performance Improvement Work

- Fresh perspective on effectiveness of (QAPI) strategies
- Identify and learn from defects
- Data for monitoring or evaluation tools
- Enhance annual infection control risk assessment
- Demonstrate compliance with regulations
- Less time commitment than a failure mode and effects analysis (FMEA)

(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

44

#APIC2016

Facilitators for Success

- Supportive/engaged leaders
- Education, checklists, monitoring
- Multidisciplinary teamwork
- Root Cause Analysis for adverse events
- Administrative partnership units
- Accessibility of supplies at point of care
- Sharing process outcome data with staff



(Bradley et al.)

APIC 2016 June 11-13
Charlotte, NC

42

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success

Sharon Bradley, Pennsylvania Patient Safety Authority

Broadcast live from APIC 2016 conference (www.apic.org)

References

- Feil M, Bradley S. Infection control challenges: Pennsylvania nursing homes are making a difference through implementation of best practice. *Pa Patient Saf Advis* [online] 2012 Jun 1 [cited 2013 Jun 3].
- Mody L, Langa KM, Saint S, et al. Preventing infections in nursing homes: a survey of infection control practices in southeast Michigan. *Am J Infect Control* Oct;33(8):489-92.
- Pennsylvania Patient Safety Authority. 2013 annual report [online] [cited 2014 Sept 5]. <http://patientsafetyauthority.org/PatientSafetyAuthority/Pages/AnnualReports.aspx>.
- Smith PW, Bennett G, Bradley S, et al. SHEA/APIC guideline: infection prevention and control in the long-term care facility, July 2008. *Infect Control Hosp Epidemiol* 2008 Sep;29(9):785-814.
- US Department of Health and Human Services (HHS):
 - Long-term care facilities. Chapter 10. In: National action plan to prevent healthcare-associated infections: roadmap to elimination [online]. [cited 2013 Apr 24]. http://www.hhs.gov/ash/initiatives/ha/ia/actionplan/lfc_facilities508.pdf
 - Using the 4 E's for technical and adaptive work. Slide 4. In: CUSP Toolkit [online]. [cited 2013 Apr 24]. <http://www.ahrq.gov/legacy/cusptoolkit/3engagexec/engagexecslides.htm>.

APIC 2016 June 11-13
Charlotte, NC

43

#APIC2016

References

- Bradley S, Segal P, Finley E. Impact of implementation of evidence-based best practices on nursing home infections. *Pa Patient Saf Advis* [online] 2012 Sep [cited 2013 Apr 24]. [http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2012/Sep;9\(3\)/Pages/89.aspx](http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2012/Sep;9(3)/Pages/89.aspx).
- Castle NG, Wagner LM, Ferguson-Rome JC, et al. Nursing home deficiency citations for infection control. *Am J Infect Control* 2011 May;39(4):263-9.
- Centers for Disease Control and Prevention (CDC): Guideline for preventing health-care--associated pneumonia, 2003 [online]. [cited 2013 Apr 24]. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm>.
- Centers for Medicare and Medicaid Services (CMS). Revisions to appendix PP—"Interpretive Guidelines for Long-Term Care Facilities," Tag F441" [transmittal 55 online]. 2009 Dec 2 [cited 2013 Apr 24]. <http://www.cms.hhs.gov/transmittals/downloads/R55SOMA.pdf>.
- Denham CR. Patient safety practices: leaders can turn barriers into accelerators. *J Patient Saf* 2005;1:41-55.

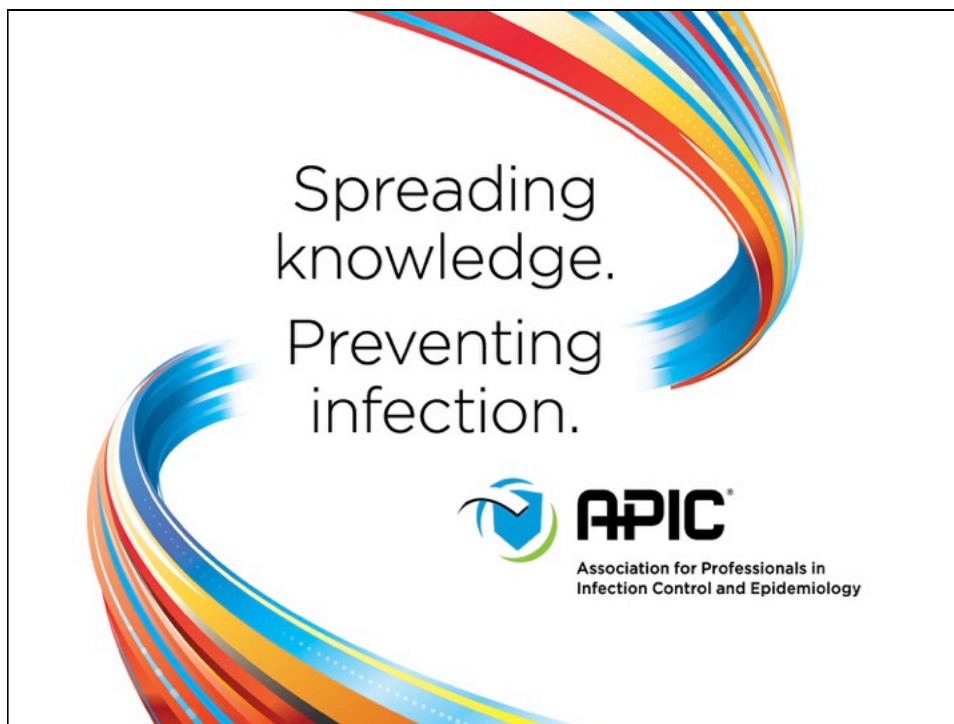
APIC 2016 June 11-13
Charlotte, NC

44

#APIC2016

A Webber Training Teleclass
www.webbertraining.com

Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
Broadcast live from APIC 2016 conference (www.apic.org)



Coming Soon

June 16 **STRATEGIES TO REDUCE SKIN INJURY IN CRITICALLY ILL PATIENTS**
Kathleen M. Vollman, Advanced Nursing LLC

June 23 **EXPLORING THE ROLE OF ENVIRONMENTAL SURFACES IN OCCUPATIONAL INFECTION PREVENTION**
Dr. Amber Mitchell, International Safety Center, and Barbara DeBaun, Cynosure Health

June 29 *(South Pacific Teleclass)*
SHARPS INJURY PREVENTION
Dr. Terry Grimmond, Grimmond & Associates Ltd., New Zealand

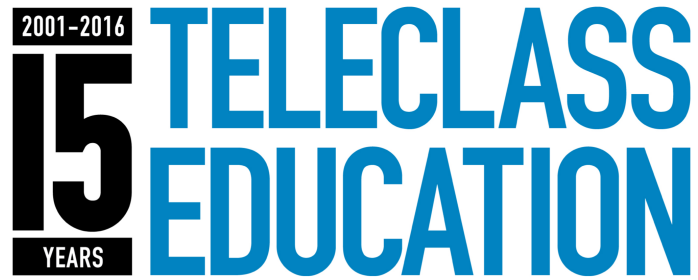
July 14 **RESULTS OF QUALITATIVE RESEARCH ON IMPLEMENTATION OF INFECTION CONTROL BEST PRACTICES IN EUROPEAN HOSPITALS**
Dr. Hugo Sax, University Hospital Zurich, Switzerland

July 21 **BEHAVIOURAL AND ORGANIZATIONAL DETERMINANTS OF SUCCESSFUL INFECTION PREVENTION AND CONTROL INTERVENTIONS**
Dr. Enrique Castro-Sánchez, Imperial College London, England

www.webbertraining.com/schedule1.php

A Webber Training Teleclass
www.webbertraining.com

Bridging the Gap Between Research and Practice in Long-Term Care: An Innovative Model for Success
Sharon Bradley, Pennsylvania Patient Safety Authority
Broadcast live from APIC 2016 conference (www.apic.org)



THANKS FOR YOUR SUPPORT

A Webber Training Teleclass
www.webbertraining.com