Texas Hospital Association Foundation

NUGGETS OF KNOWLEDGE

Presented by Infection Control Consultants of New Mexico

ICCNM
Infection Control Consultants of New Mexico

Welcome

IC Nuggets of Knowledge Series are monthly one-hour learning sessions using a web-based format to share information, network, and opportunity to address questions and concerns with ICCNM Consultants

When: 1:00 to 2:00 pm

2nd Thursday of the month

If you have feedback on this learning opportunity or have suggestions for future learning opportunities, feel free to reach out to me at any time!

- ncostilla@tha.org

Introductions

- Infection Control Consultants of NM (ICCNM Consulting)
- New Mexico based consulting company
- Consultants are certified in Infection Control (CIC)
- Presenters for this series
  - Kerry Flint, PhD
  - Terri Kangas-Feller
  - Barbara Mooney

- www.iccnm.org

Healthcare Associated Infections

Session Outline

- Describe the impact of a pandemic on HAI.
- Identify tools to support front-line staff combat HAI.
- Discuss how we refocus on HAI in the current environment.

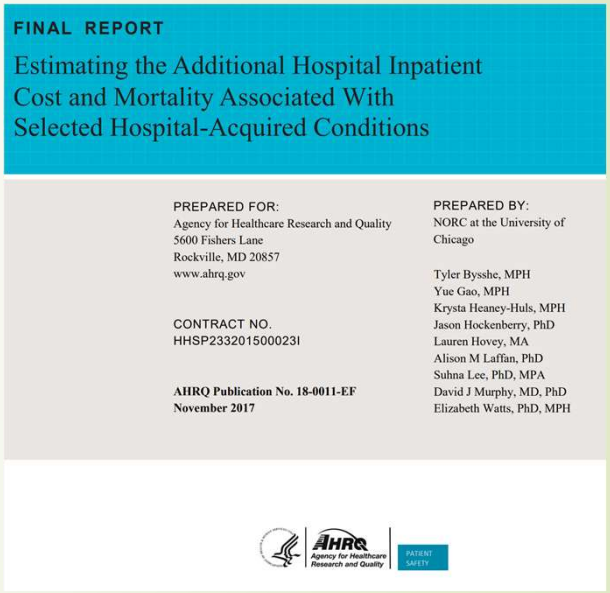
The Problem

- Each day, approximately **one in 31 U.S. patients** contracts at least one infection in association with his or her hospital care, underscoring the need for improvements in patient care practices in U.S. healthcare facilities.

  CDC HAI Data

Estimating the Cost

- CLABSI
  - Additional cost $48,108 (95% CI: $27,232 to $68,983)
  - Excess mortality 0.15
- CAUTI
  - Additional Cost $13,793 (95% CI: $5,019 to $22,568)
  - Excess mortality 0.036
- VAP
  - Additional Cost $47,238 (95% CI: $21,890 to $72,587),
  - Excess mortality 0.14
- CDI
  - Additional Cost$17,260 (95% CI: $9,341 to $25,180),
  - Excess mortality, 0.044



FINAL REPORT

Estimating the Additional Hospital Inpatient Cost and Mortality Associated With Selected Hospital-Acquired Conditions

PREPARED FOR:
Agency for Healthcare Research and Quality
5600 Fishers Lane
Rockville, MD 20857
www.ahrq.gov

CONTRACT NO.
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AHRQ Agency for Healthcare Research and Quality | PATIENT SAFETY

Estimating the Additional Hospital Inpatient Cost and Mortality Associated With Selected Hospital-Acquired Conditions | Agency for Healthcare Research and Quality (ahrq.gov)

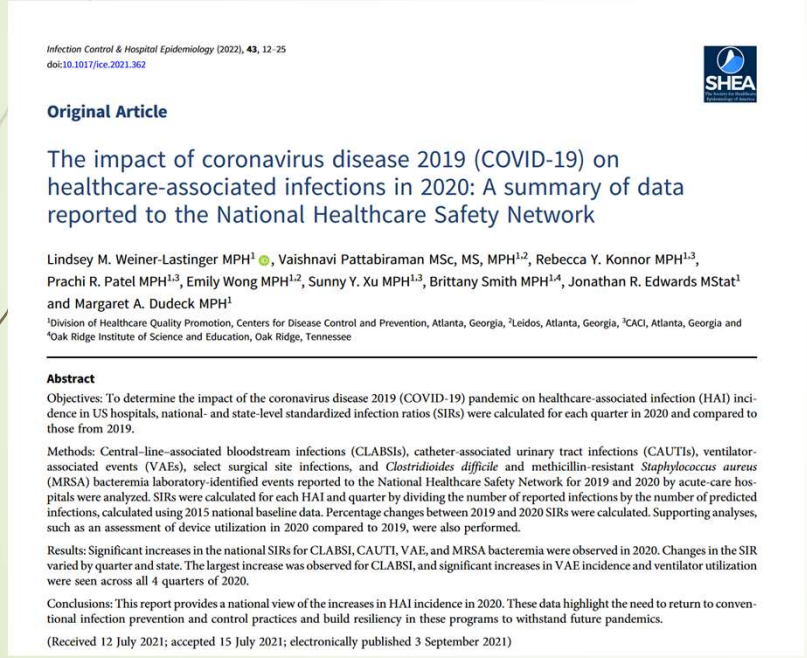
Polling Question

- #1

Reporting Data

- Impact of COVID-19 Pandemic
  - CMS implemented the extraordinary circumstance exception policy
  - Excused reporting via NHAN for 2019 Q4 through 2020 Q2
  - Approx 86% hospitals reported 2020 Q1 and Q2 data for CLABSI, CAUTI, MRSA bacteremia or CDI
  - VAP and SSI reporting greatest decline
  - Reporting improved in second half of 2022

Impact of COVID-19



Infection Control & Hospital Epidemiology (2022), **43**, 12–25
doi:10.1017/ice.2021.362

Original Article

The impact of coronavirus disease 2019 (COVID-19) on healthcare-associated infections in 2020: A summary of data reported to the National Healthcare Safety Network

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Abstract

Objectives: To determine the impact of the coronavirus disease 2019 (COVID-19) pandemic on healthcare-associated infection (HAI) incidence in US hospitals, national- and state-level standardized infection ratios (SIRs) were calculated for each quarter in 2020 and compared to those from 2019.

Methods: Central–line–associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), ventilator-associated events (VAEs), select surgical site infections, and *Clostridioides difficile* and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia laboratory-identified events reported to the National Healthcare Safety Network for 2019 and 2020 by acute-care hospitals were analyzed. SIRs were calculated for each HAI and quarter by dividing the number of reported infections by the number of predicted infections, calculated using 2015 national baseline data. Percentage changes between 2019 and 2020 SIRs were calculated. Supporting analyses, such as an assessment of device utilization in 2020 compared to 2019, were also performed.

Results: Significant increases in the national SIRs for CLABSI, CAUTI, VAE, and MRSA bacteremia were observed in 2020. Changes in the SIR varied by quarter and state. The largest increase was observed for CLABSI, and significant increases in VAE incidence and ventilator utilization were seen across all 4 quarters of 2020.

Conclusions: This report provides a national view of the increases in HAI incidence in 2020. These data highlight the need to return to conventional infection prevention and control practices and build resiliency in these programs to withstand future pandemics.

(Received 12 July 2021; accepted 15 July 2021; electronically published 3 September 2021)

Results: Significant increases in the national SIRs for CLABSI, CAUTI, VAE, and MRSA bacteremia were observed in 2020. Changes in the SIR varied by quarter and state. The largest increase was observed for CLABSI, and significant increases in VAE incidence and ventilator utilization were seen across all 4 quarters of 2020

Current State - CDC

Between 2019 & 2020

Reductions

- 11% decrease in hospital onset *C. difficile* infections
- 5% decrease in SSI, for 10 select procedures
  - Surgical Care Improvement Project (SCIP) procedures. About 9% decrease in abdominal hysterectomy SSIs
- About 5% decrease in colon surgery SSIs

Increases

- 24% increase in CLABSI
  - Largest increase in ICU (50%)
- 35% increase in VAE
  - About 34% increase observed in ICU
  - About 60% increase observed in ward
- no significant change in CAUTI outside ICU
  - 10% increase observed in ICU

SIR

	2020 Q1	2020 Q2	2020 Q3	2020 Q4
CLABSI	↓ −11.8%	↑ 27.9%	↑ 46.4%	↑ 47.0%
CAUTI	↓ −21.3%	No Change[1]	↑ 12.7%	↑ 18.8%
VAE	↑ 11.3%	↑ 33.7%	↑ 29.0%	↑ 44.8%
SSI: Colon surgery	↓ −9.1%	No Change[1]	↓ −6.9%	↓ −8.3%
SSI: Abdominal hysterectomy	↓ −16.0%	No Change[1]	No Change[1]	↓ −13.1%
Laboratory-identified MRSA bacteremia	↓ −7.2%	↑ 12.2%	↑ 22.5%	↑ 33.8%
Laboratory-identified CDI	↓ −17.5%	↓ −10.3%	↓ −8.8%	↓ −5.5%

Texas Data

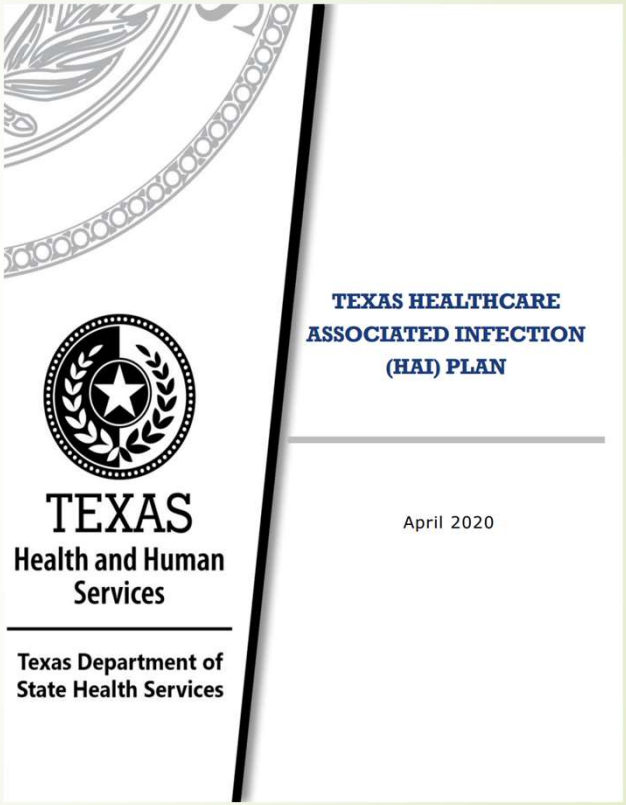
Table 6. 2020 Q2 and Q3 Central-Line–Associated Bloodstream Infection (CLABSI)[a] Standardized Infection Ratios (SIRs) for Acute-Care Hospitals Compared to 2019 for Select States

	2020 Q2 vs 2019 Q2							2020 Q3 vs 2019 Q3						
State[b]	No. of Hospitals[c]	2020 Q2 No. of CLABSIs	2020 Q2 No. of Predicted CLABSIs	2020 Q2 SIR	2019 Q2 SIR	% Change[d] in SIR	95% CI Around SIR % Change	No. of Hospitals[c]	2020 Q3 No. of CLABSIs	2020 Q3 No. of Predicted CLABSIs	2020 Q3 SIR	2019 Q3 SIR	% Change[d] in SIR	95% CI Around SIR % Change
Arizona	59	80	82.63	0.97	0.39	148.7[e]	(64.6–275.6)	59	105	92.20	1.14	0.46	147.8[e]	(72.5–269.2)
California	300	309	358.57	0.86	0.61	41.0[e]	(18.5–66.6)	323	536	436.18	1.23	0.70	75.7[e]	(51.9–102.8)
Florida	189	166	241.80	0.69	0.72	−4.2	(−22.0 to 18.1)	207	381	312.59	1.22	0.62	96.8[e]	(65.7–137.0)
Georgia	100	131	155.77	0.84	0.59	42.4[e]	(9.4–86.5)	103	238	172.12	1.38	0.68	102.9[e]	(61.7–156.6)
Illinois	111	129	126.73	1.02	0.69	47.8[e]	(12.4–91.9)	129	111	166.12	0.67	0.68	−1.5	(−23.9 to 28.7)
Louisiana	65	47	39.87	1.18	0.69	71.0[e]	(7.9–174.3)	85	101	69.75	1.45	0.89	62.9[e]	(18.4–125.6)
Massachusetts	59	109	87.77	1.24	0.62	100.0[e]	(45.1–181.7)	65	81	95.71	0.85	0.63	34.9	(−3.9 to 86.7)
Michigan	76	119	91.17	1.31	0.75	74.7[e]	(29.6–136.3)	94	111	130.22	0.85	0.64	32.8[e]	(0.1–77.2)
New Jersey	28	37	32.93	1.12	0.81	38.3	(−18.1 to 137.8)	67	76	88.38	0.86	0.54	59.3[e]	(10.7–127.9)
New York	100	73	121.75	0.60	0.61	−1.6	(−29.4 to 34.9)	168	249	285.50	0.87	0.77	13.0	(−5.3 to 35.6)
Pennsylvania	156	222	215.55	1.03	0.77	33.8[e]	(10.4–64.3)	155	197	234.26	0.84	0.80	5.0	(−13.7 to 29.2)
Texas	302	242	305.15	0.80	0.73	9.6	(−8.4 to 31.1)	322	487	395.20	1.23	0.73	68.5[e]	(45.8–97.8)

Note. CI, confidence interval; CDC, Centers for Disease Control and Prevention; NHSN, National Healthcare Safety Network; ICU, intensive care unit.
[a]SIRs were calculated using data from adult and pediatric ICUs, neonatal ICUs, and adult and pediatric medical, surgical, and medical–surgical wards.
[b]Quarterly CLABSI SIRs are available for all eligible states and quarters in the Supplementary Tables (online). The states shown in this table were identified by the CDC as having a high number of hospitalized COVID-19 patients between April 1, 2020, and July 14, 2020.[1]
[c]Hospitals reporting complete CLABSI surveillance data to the NHSN for the same location for both quarters in the comparison.
[d]% change was calculated as follows: [(2020 SIR − 2019 SIR) ÷ 2019 SIR] × 100.
[e]Statistical significance based on 2-tailed $P \leq .05$, reflected in the relative % change in magnitude.

TX HAI Plan

- 2019 ~
  - 640 acute care hospitals,
  - 523 ambulatory surgery centers,
  - 216 free standing emergency medical centers.
- Increased AB stewardship Capacity
- Healthcare Safety Advisory Committee
- Surveillance and Response



Polling Question

- #2

CLABSI

Central Line Associated Blood Stream Infections

Outcome Burden

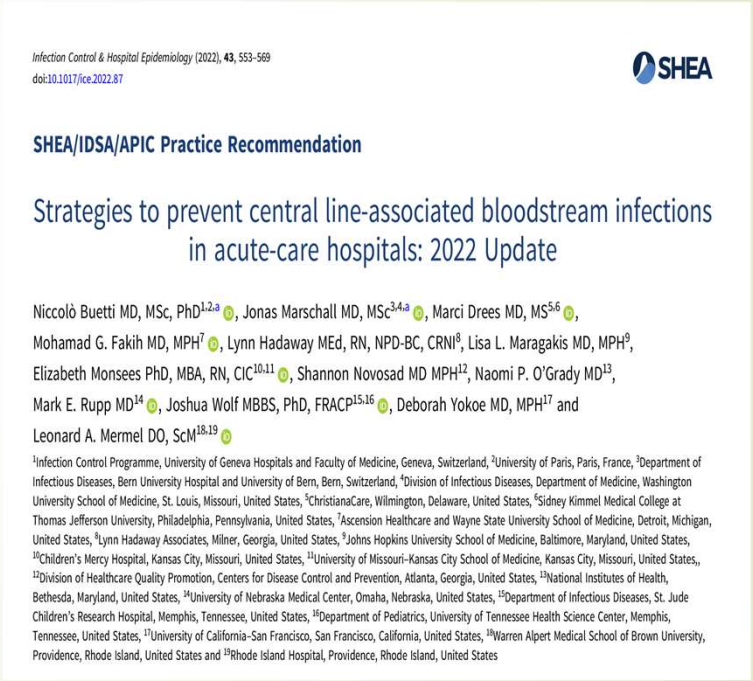
- Increased LOS
- Increased cost of care
  - $48,000 higher cost than those without CLABSI (2015 cost)
- Increased morbidity and mortality

Risk Factors

- ICU
  - Frequent insertion of multiple catheters
  - Catheters specific to ICU population
  - Frequent access
  - Long duration
- Hemodialysis
- Oncology (immune compromised)
- Intraoperative patients
- Prolonged hospitalization pre-catheterization
- Prolonged duration
- Microbial colonization
- Multiple lumens
- Concurrent catheters
- Neutropenia
- BMI >40
- Prematurity
- Nurse-patient ratios
- PN
- Substandard catheter care
- Blood transfusion in children

CLABSI Prevention Strategies

- Essential Practices
  - Should be adopted by all ACH
  - Considered foundational prevention actions
  - Previously referred to as *basic practices*
- Additional Approaches
  - Specific locations/populations
  - Uncontrolled CLASBI events after implementation of Essential Practices



Infection Control & Hospital Epidemiology (2022), **43**, 553–569
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SHEA

SHEA/IDSA/APIC Practice Recommendation

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

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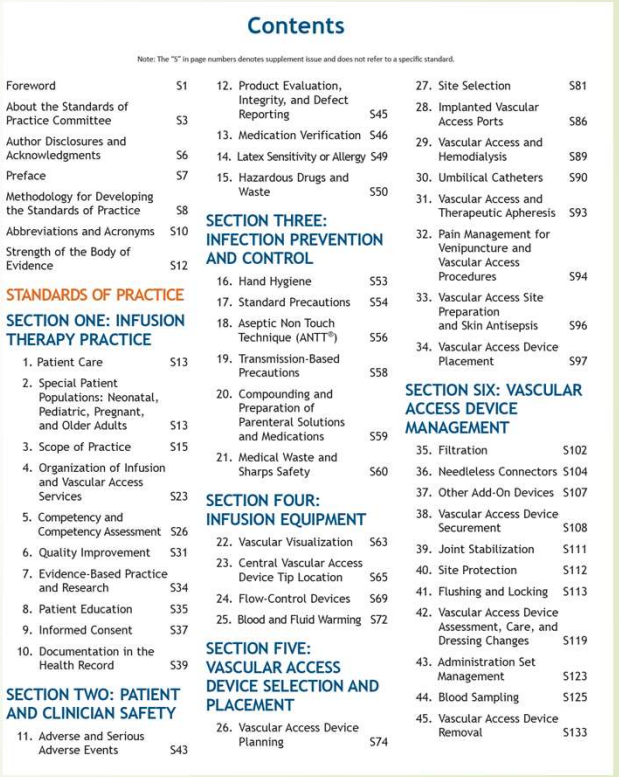
SHEA Essential Practices

Essential Practices
Before insertion
1. Provide easy access to an evidence-based list of indications for CVC use to minimize unnecessary CVC placement (Quality of Evidence: LOW)
2. Require education and competency assessment of HCP involved in insertion, care, and maintenance of CVCs about CLABSI prevention (Quality of Evidence: MODERATE)[74–78]
3. Bathe ICU patients aged >2 months with a chlorhexidine preparation on a daily basis (Quality of Evidence: HIGH)[86–90]
At insertion
1. In ICU and non-ICU settings, a facility should have a process in place, such as a checklist, to ensure adherence to infection prevention practices at the time of CVC insertion (Quality of Evidence: MODERATE)[101]
2. Perform hand hygiene prior to catheter insertion or manipulation (Quality of Evidence: MODERATE)[102–107]
3. The subclavian site is preferred to reduce infectious complications when the catheter is placed in the ICU setting (Quality of Evidence: HIGH)[33,37,108–110]
4. Use an all-inclusive catheter cart or kit (Quality of Evidence: MODERATE)[118]
5. Use ultrasound guidance for catheter insertion (Quality of Evidence: HIGH)[119,120]
6. Use maximum sterile barrier precautions during CVC insertion (Quality of Evidence: MODERATE)[123–128]
7. Use an alcoholic chlorhexidine antiseptic for skin preparation (Quality of Evidence: HIGH)[42,129–134]
After insertion
1. Ensure appropriate nurse-to-patient ratio and limit use of float nurses in ICUs (Quality of Evidence: HIGH)[34,35]
2. Use chlorhexidine-containing dressings for CVCs in patients over 2 months of age (Quality of Evidence: HIGH)[45,135–142]
3. For non-tunneled CVCs in adults and children, change transparent dressings and perform site care with a chlorhexidine-based antiseptic at least every 7 days or immediately if the dressing is soiled, loose, or damp. Change gauze dressings every 2 days or earlier if the dressing is soiled, loose, or damp (Quality of Evidence: MODERATE)[145–148]
4. Disinfect catheter hubs, needleless connectors, and injection ports before accessing the catheter (Quality of Evidence: MODERATE)[150–154]
5. Remove nonessential catheters (Quality of Evidence: MODERATE)
6. Routine replacement of administration sets not used for blood, blood products, or lipid formulations can be performed at intervals up to 7 days (Quality of Evidence: HIGH)[164]
7. Perform surveillance for CLABSI in ICU and non-ICU settings (Quality of Evidence: HIGH)[13,165,166]

INS Standards – 8th edition Revised 2021

- Section 3: Infection Prevention & Control (Standards 53-60)
  - Hand Hygiene
  - Standard Precautions
  - Aseptic Non Touch Technique
  - Transmission Based Precautions
  - Compounding and Preparation of Parental Solutions and Medications
  - Medical Waste and Sharps Safety
- New filtration recommendations (Impacts Standard 35 and 63)



Contents

Note: The "S" in page numbers denotes supplement issue and does not refer to a specific standard.

CAUTI

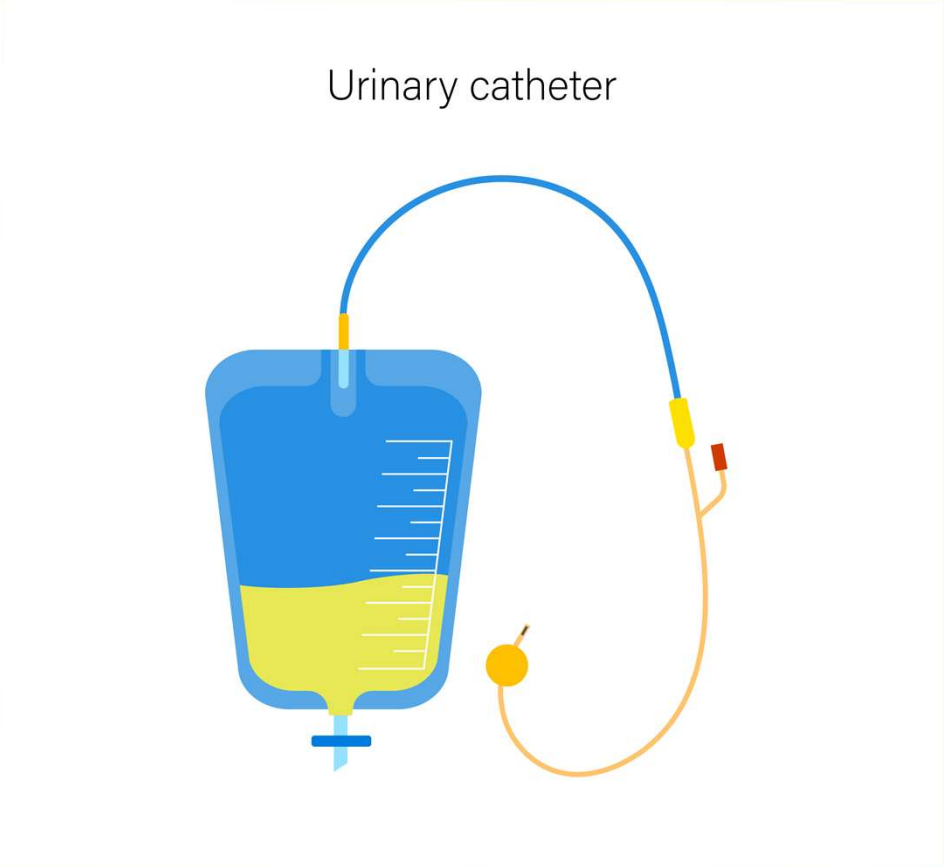
Catheter-associated urinary tract infections

Outcome Burden

- Associated costs $115 to 1.8 billion annually
- Most common cause of secondary BSI

CAUTI Risk Factors

- Duration
- Immunosuppression
- Female gender
- Neurological disease
- Care and maintenance

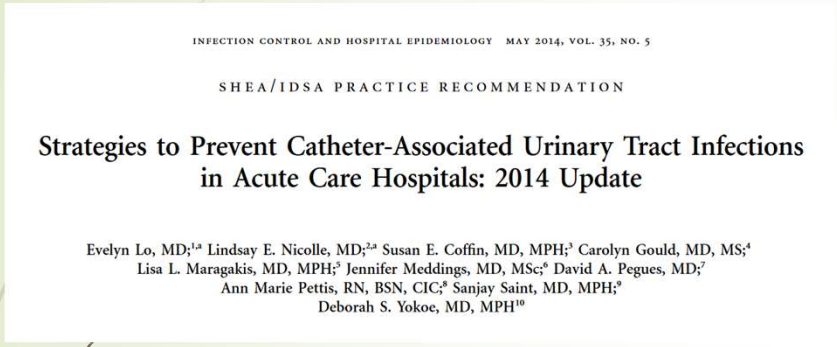


RCA Findings

- The most common contributing factors for CAUTI were comorbidities, lapses in catheter care protocols, active infection, fecal incontinence and duration of IUC.
- The duration of IUC was identified as a contributing factor for 16.5% of the CAUTI cases,
- Almost 25% of the cases reviewed the clinical teams and infection preventionists stated that the catheters could have been removed earlier.

Letica-Kriegel et al (2019)

CAUTI Prevention Strategies

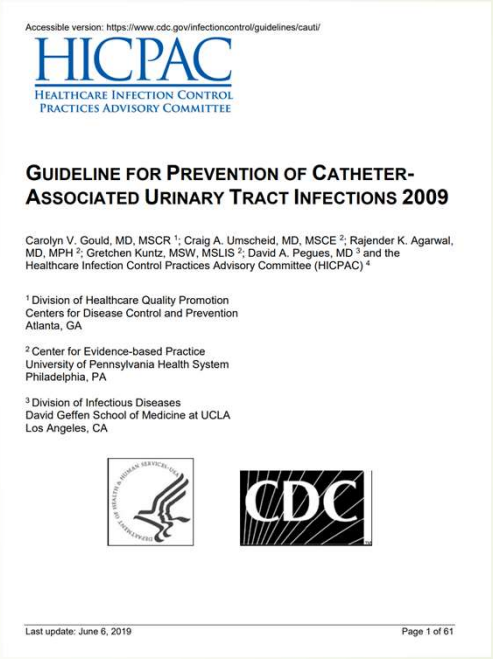


INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MAY 2014, VOL. 35, NO. 5

SHEA/IDSA PRACTICE RECOMMENDATION

Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals: 2014 Update

Evelyn Lo, MD;[1,a] Lindsay E. Nicolle, MD;[2,a] Susan E. Coffin, MD, MPH;[3] Carolyn Gould, MD, MS;[4] Lisa L. Maragakis, MD, MPH;[5] Jennifer Meddings, MD, MSc;[6] David A. Pegues, MD;[7] Ann Marie Pettis, RN, BSN, CIC;[8] Sanjay Saint, MD, MPH;[9] Deborah S. Yokoe, MD, MPH[10]



Accessible version: https://www.cdc.gov/infectioncontrol/guidelines/cauti/

HICPAC

HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE

GUIDELINE FOR PREVENTION OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 2009

Carolyn V. Gould, MD, MSCR [1]; Craig A. Umscheid, MD, MSCE [2]; Rajender K. Agarwal, MD, MPH [2]; Gretchen Kuntz, MSW, MSLIS [2]; David A. Pegues, MD [3] and the Healthcare Infection Control Practices Advisory Committee (HICPAC) [4]

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Los Angeles, CA

CDC

Last update: June 6, 2019 Page 1 of 61

[Guideline for Prevention of Catheter-Associated Urinary Tract Infections (2009) (cdc.gov)]

Indications for Urethral Catheter Use

HICPAC
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE

Table 2.

A. Examples of Appropriate Indications for Indwelling Urethral Catheter Use [1-4]

- Patient has acute urinary retention or bladder outlet obstruction.
- Need for accurate measurements of urinary output in critically ill patients.
- Perioperative use for selected surgical procedures:
  - Patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract.
  - Anticipated prolonged duration of surgery (catheters inserted for this reason should be removed in PACU).
  - Patients anticipated to receive large-volume infusions or diuretics during surgery.
  - Need for intraoperative monitoring of urinary output.
- To assist in healing of open sacral or perineal wounds in incontinent patients.
- Patient requires prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures).
- To improve comfort for end of life care if needed.

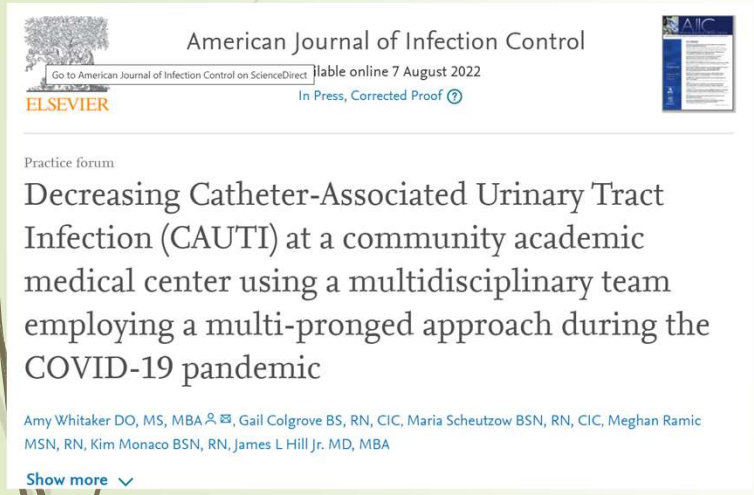
B. Examples of *Inappropriate* Uses of Indwelling Catheters

- As a substitute for nursing care of the patient or resident with incontinence.
- As a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void.
- For prolonged postoperative duration without appropriate indications (e.g., structural repair of urethra or contiguous structures, prolonged effect of epidural anaesthesia, etc.).

Note: The above indications are based primarily on expert consensus.

Guideline for Prevention of Catheter-Associated Urinary Tract Infections (2009) (cdc.gov)

Real World Strategies



American Journal of Infection Control

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lable online 7 August 2022

In Press, Corrected Proof

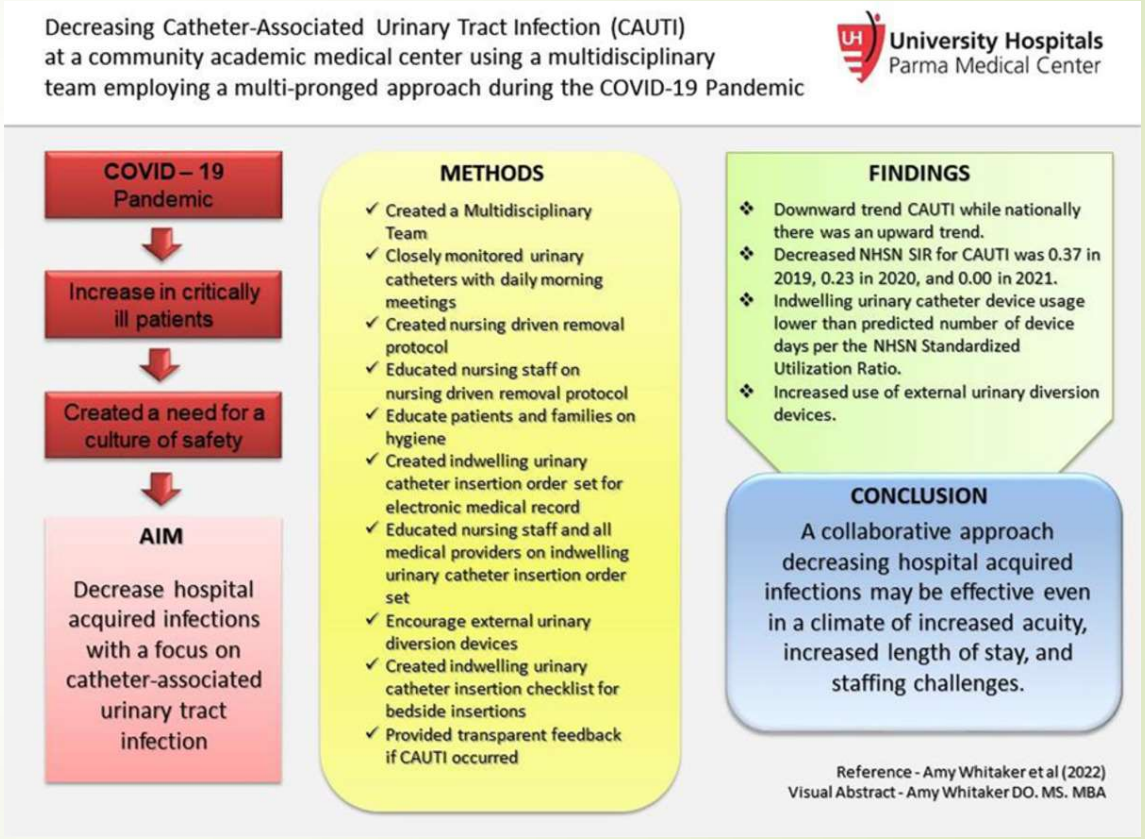
ELSEVIER

Practice forum

Decreasing Catheter-Associated Urinary Tract Infection (CAUTI) at a community academic medical center using a multidisciplinary team employing a multi-pronged approach during the COVID-19 pandemic

Amy Whitaker DO, MS, MBA, Gail Colgrove BS, RN, CIC, Maria Scheutzow BSN, RN, CIC, Meghan Ramic MSN, RN, Kim Monaco BSN, RN, James L Hill Jr. MD, MBA

Show more

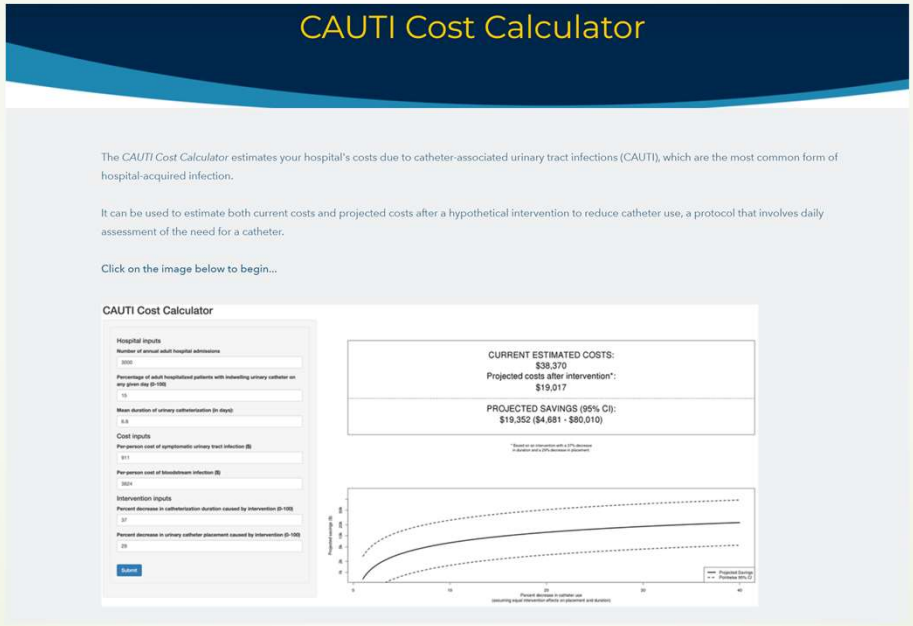


Alternatives to Indwelling Catheters

- Male and female external catheters
- Incontinence products
- Male and female urinals
- Bladder scanners
- Straight catheters

https://www.cdc.gov/infectioncontrol/pdf/strive/CAUTI103-508.pdf

Calculating the Cost



https://www.catheterout.org/cauti-cost-calculator.html

Pneumonia (PNU)

- Pneumonia is most common HAI
  - Affects about 1 in 100 patients
    - up to 1 in 10 patients on mechanical ventilation
  - VAP attributable mortality approx. 10%
  - VAP and VAE Associated with increased:
    - LOS
    - mortality risk
    - Exposure to antimicrobials
    - Cost of care
  - NV-HAP is associated increased hospital stay and substantially higher mortality rates compared to similar patients without NV-HAP.

Prevention Strategies

- Staff Education
- Surveillance
- Prevent transmission
  - Standard precautions
  - Equipment
- Modifying host risk factors
  - Vaccination
- Prevent aspiration

Pneumonia Prevention Strategies

Infection Control & Hospital Epidemiology (2022), **43**, 687–713
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SHEA

SHEA/IDSA/APIC Practice Recommendation

Strategies to prevent ventilator-associated pneumonia, ventilator-associated events, and nonventilator hospital-acquired pneumonia in acute-care hospitals: 2022 Update

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Abstract

The purpose of this document is to highlight practical recommendations to assist acute care hospitals to prioritize and implement strategies to prevent ventilator-associated pneumonia (VAP), ventilator-associated events (VAE), and non-ventilator hospital-acquired pneumonia (NV-HAP) in adults, children, and neonates. This document updates the Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals published in 2014. This expert guidance document is sponsored by the Society for Healthcare Epidemiology (SHEA), and is the product of a collaborative effort led by SHEA, the Infectious Diseases Society of America, the American Hospital Association, the Association for Professionals in Infection Control and Epidemiology, and The Joint Commission, with major contributions from representatives of a number of organizations and societies with content expertise.

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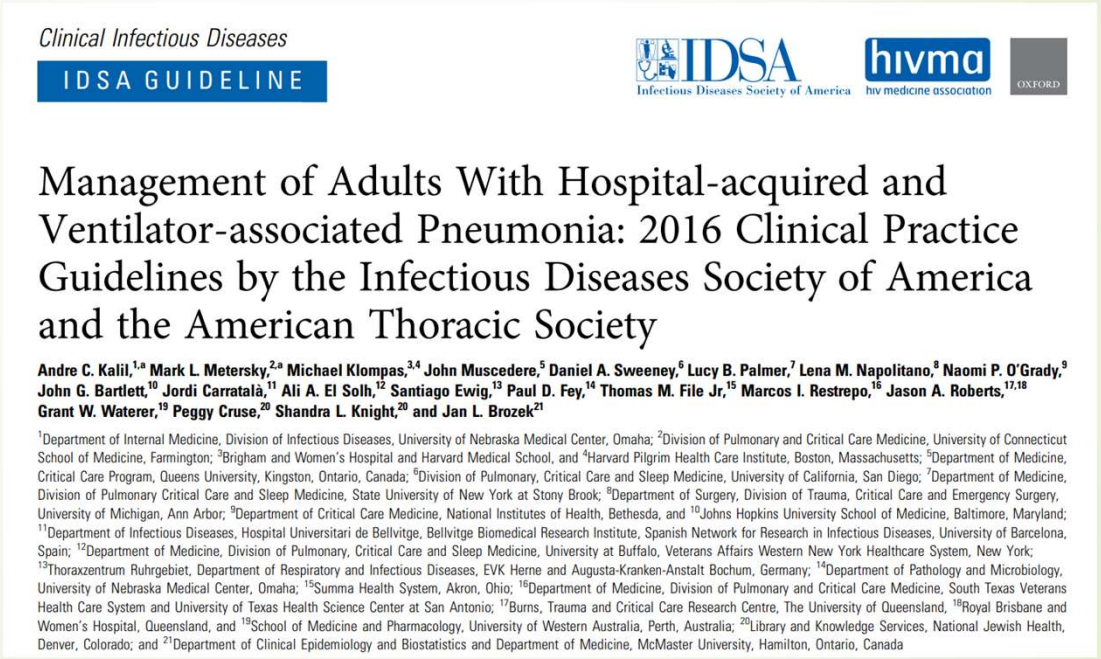
- Provide recommendations for adult, neonatal, and pediatric patients on mechanical ventilation

Summary of Prevention of VAP/VAE Recommendations - Adult

Essential Practices	Additional Approaches	Generally, Not Recommended
• Avoid intubation • Minimize sedation • Physical conditioning • Elevate HOB 30-45 • Provide oral care- brushing • Provide early enteral vs. parenteral nutrition • Limit changing vent circuits	• Use selective oral or digestive decontamination in areas with low prevalence of antibiotic resistance • Utilize ET tubes with subglottic secretion drainage ports • Early tracheostomy • Consider postplyoric rather than gastric in those at risk of aspiration	• Oral care with CHG • Probiotics • Ultrathin polyurethane ET tube cuffs • Tapered CT tube cuffs • Frequent cuff-pressure monitoring • Silver-coated ET Tube • Kinetic beds • Prone Positioning • CHG Bathing • Stress ulcer prophlyaxis • Monitoring residual gastric volumes • Early Parenteral nutrition • Closed ET suctioning systems

IDSA Guidelines



Clinical Infectious Diseases

IDSA GUIDELINE

IDSA Infectious Diseases Society of America · hivma hiv medicine association · OXFORD

Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society

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Preventing NV-HAP

Regular Oral Care

Early mobilization

Early diagnosis and treatment of dysphagia

Implement interventions to prevent viral infections

- Symptom screening, universal masking when viral transmission rates are high, vaccination

Bundles

- Oral hygiene, bed positioning, dysphagia diagnosis and management, mobilizing patients, nasal hygiene, sedation restrictions, incentive spirometry, education

Role of Hand Hygiene

Figure

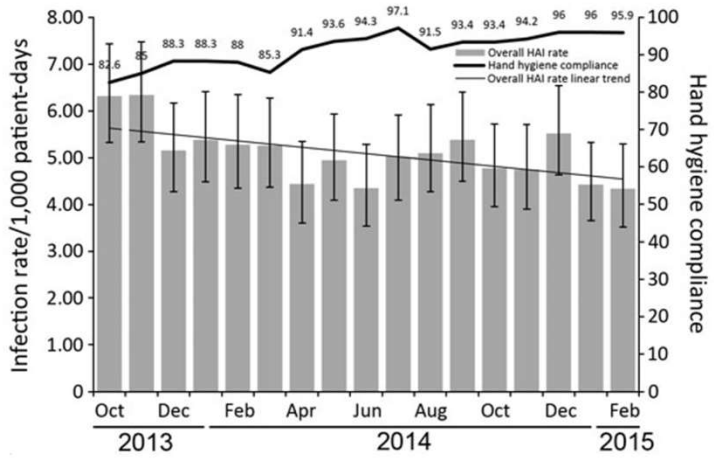

Figure. Overall healthcare-associated infection (HAI) rate and hand hygiene compliance by month, October 2013–February 2015. Numbers above data bar indicate monthly compliance percentages. Error bars indicate 95% CIs.

Sickbert-Bennett EE, DiBiase LM, Willis TM, Wolak ES, Weber DJ, Rutala WA. Reduction of Healthcare-Associated Infections by Exceeding High Compliance with Hand Hygiene Practices. Emerg Infect Dis. 2016;22(9):1628-1630. https://doi.org/10.3201/eid2209.151440

- Higher is better
  - High compliance with hand hygiene necessary
- Don't lose focus
  - Continuous improvement is critical

Polling Question

- #3

Closing Thoughts

- Avoid use of invasive devices where possible
- Clearly identify the rational for the device
- Daily assessment of device necessity
- Also need to consider impact of non-targeted HAI
  - PIV infections
  - UTI
  - PNU

Thanks!

- Discussion
  - How has the pandemic impacted best practices around HAI prevention?
  - What barriers/ or successes have you encountered implementing HAI reduction interventions?

- **CNE:** You will receive an email from me with information on how to get your credit.
- Website: Nuggets of Knowledge
- Next Session: November 10 at 1pm
- Managing the Flow
- THANK YOU!!

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