The Hidden Risk: The Role of Incontinence and IAD in Infection Prevention

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Learning objectives

- Understand the limitations of traditional infection prevention approaches and the need for systems-based design
- Evaluate prevention approaches for CAUTI and C. diff, including key drivers of risk
- Analyze the relationship between IAD, incontinence, and HAIs, including its role in contributing to CAUTI risk and C. diff transmission
- Identify upstream system gaps—such as device utilization, containment, and skin integrity—that contribute to infection risk

Infection Prevention:
Traditional Practice vs Systems-Based Prevention

The Traditional Approach

Reactive: responds after infections occur

Focus on individual compliance (e.g., hand hygiene, isolation)

Education-heavy, variable adoption

Ownership often unclear or siloed

Reliance on audits without consistent follow-through

Limitations:

- Inconsistent practices across units
- Gaps in accountability
- Hard to sustain improvement over time

Systems-Based Approach

Proactive: designs processes to prevent infections upstream

Standardization of workflows (e.g., equipment cleaning, isolation processes)

Built-in **reliability** (checklists, visual cues, defined workflows)

Clear ownership and accountability

Data-driven with **real-time feedback** loops

“If everyone needs to think outside the box, maybe it is the box that needs fixing.”

- Malcolm Gladwell

Infection Prevention = Patient Safety Infrastructure

Infection Prevention is NOT just about stopping the spread of germs.

It's about:

- Systems of care
- Workflow design
- Human factors
- Reliability
- Accountability

Strong Infection Prevention delivers:

- Reduced infections & complications
- Improved patient outcomes
- Lower healthcare costs
- Stronger CMS quality performance
- Safer care environments

CAUTI: Catheter Associated Urinary Tract Infection

Patient Impact of CAUTIs

- **Urinary tract infections are the most common type HAI and about 75% of UTIs acquired in the hospitals are associated with a urinary catheter**[1]
  - Almost half of patients with urinary catheter do not have an appropriate indication[3]
  - Increased morbidity and mortality → can progress to bacteremia and sepsis
- **↑ Length of stay (+ 1-3 days)**[2]
- **↑ Antibiotic exposure → ↑ C. difficile risk, ↑ MDROs**
- **Patient discomfort**

1. Centers for Disease Control and Prevention. (2025, June 27). *Catheter-associated urinary tract infection (CAUTI) basics.* https://www.cdc.gov/uti/about/cauti-basics.html
3. Patel, P., et al (2023). Strategies to prevent catheter-associated urinary tract infections in acute-care hospitals: 2022 Update. *Infection Control & Hospital Epidemiology*, *44*(8), 1209–1231. doi:10.1017/ice.2023.137

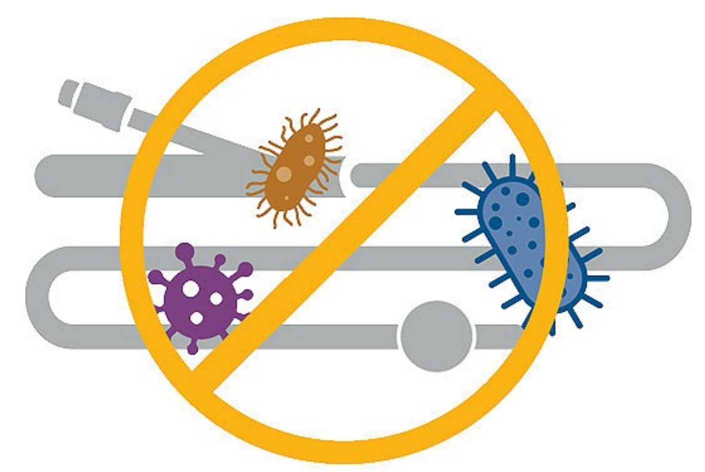
Evidence Based CAUTI Prevention Bundle[1]

Avoid unnecessary catheters!

- Approved indications only
  - Acute urinary retention or obstruction
  - End of life care (CMO)
  - Fluid monitoring, *Strict* I's and O's
  - Assistance with healing perineal/sacral wounds
  - Required strict immobilization for trauma or surgery

Insert aseptically

- Trained staff only
- Sterile technique and sterile equipment



1. Centers for Disease Control and Prevention. (2025, June 27). *Catheter-associated urinary tract infection (CAUTI) basics.* https://www.cdc.gov/uti/about/cauti-basics.html

Evidence Based CAUTI Prevention Bundle[1]

Maintain a closed, secured system

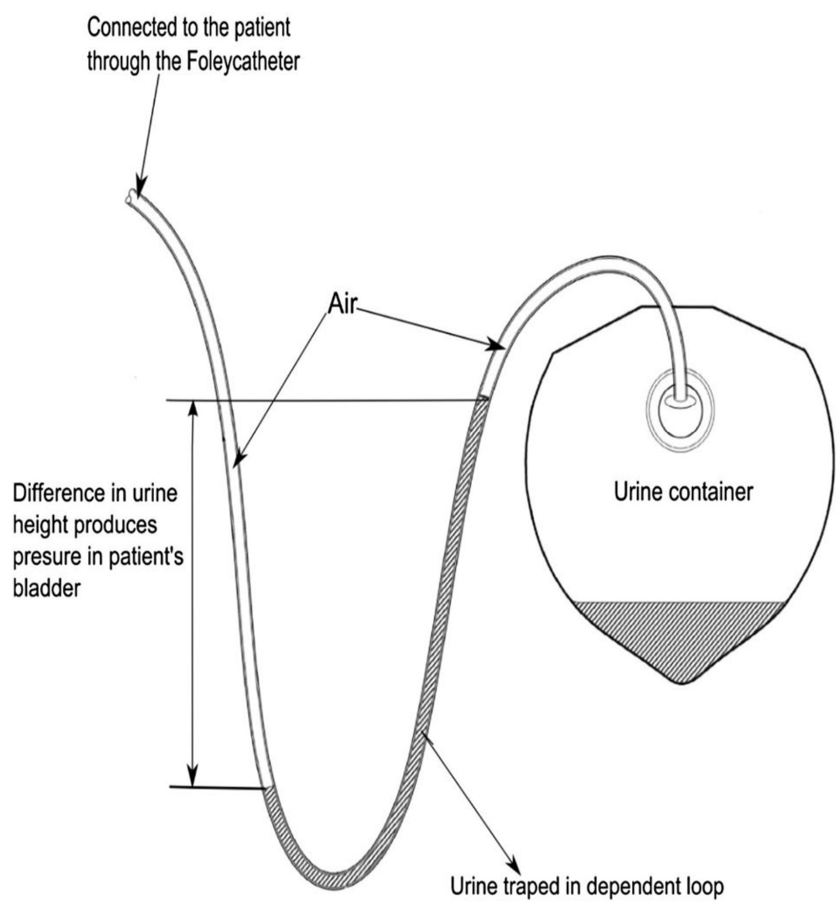
- Maintain a Closed System
- Secure catheter to prevent traction
- Bag below bladder--no dependent loops

Review necessity daily & remove promptly

- RN Driven protocols

Diagnostic Stewardship & Surveillance

- Symptom free, let it be!
- Apply NHSN criteria, track catheter days & utilization



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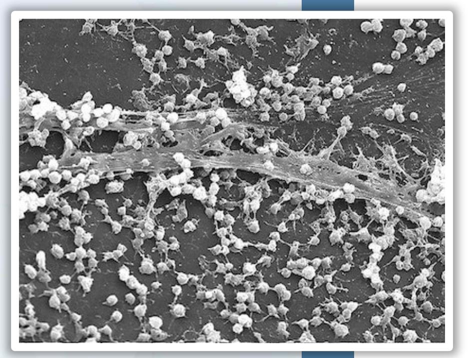


Why Catheter Avoidance Is the Most Effective CAUTI Prevention Strategy

What the Evidence Shows:

- **CAUTI risk increases with every catheter day:**
  - Estimated ~**3–7%** increased risk per day of catheterization[4]
- **Beware of Biofilm!**
- Catheter **presence and duration** are the strongest independent risk factors for CAUTI
- **Avoidance and early removal** produce the largest, most sustained CAUTI reductions
- **No catheter = no CAUTI.**
  - Minimizing catheter use and duration has a greater impact than any other single intervention.

4. Gupta, P.,, et al. (2023). Reducing catheter-associated urinary tract infections in the cardiac intensive care unit with a coordinated strategy and nursing staff empowerment. *BMJ open quality*, *12*(2), e002214. https://doi.org/10.1136/bmjoq-2022-002214

CAUTI – NHSN Application & Pitfalls

Symptoms required for NHSN CAUTI criteria

- Fever is non-specific. May be attributed to another source but will still count according to NHSN

Timing of catheter presence

- Day of insertion = day 1
- One day can make all the difference!

Specimen collection technique

- Straight cath or clean catch to avoid false positives

CAUTI Prevention Through Surveillance

Monitor Foley device days

Prioritize removal, consider alternatives

Track catheters placed in the ED →Inpatient

Use the Standardized Utilization Ratio (SUR) to assess appropriateness of catheter use

Improved SIR/SUR
→ Better CMS outcomes

Daily multidisciplinary catheter review – all hand on deck!

What drives CAUTI outcomes?

How it started...

- Manual tracking of Foley duration
- Verified indications in real time. Did not just rely on documentation
- Initial resistance → “eye rolls,” frustration
- Built shared accountability (IPs → charge nurses → directors)
- Units began tracking device days as a measure of risk
- Created a supportive escalation pathway a Foley “hotline” (not punitive)

How it ended...

- Foley removal became a shared priority
- Removing a foley = a win. It wasn’t just about preventing the infection, it was about preventing the **RISK** of infection

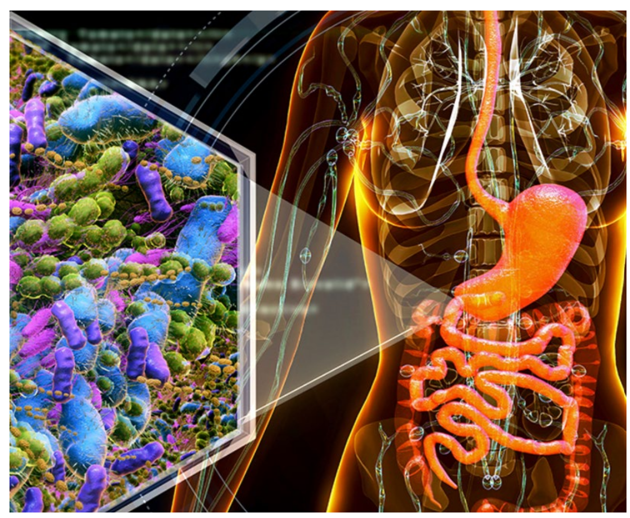
Results...

- Culture shift
- Shared Ownership
- 61% reduction in CAUTIs

C. diff: Clostridioides difficile

C. difficile Infection Prevention Bundles[5]

- **Contact (PLUS) precautions**
  - Gown and Gloves upon entering patient environment
- **Hand hygiene** with soap and water
- **Antibiotic and diagnostic stewardship**
- **Environmental cleaning** with bleach or other sporicidal
- **Reduce risk of transmission**
  - Early identification and isolation
  - Prevent environmental contamination - Fecal Management Devices, dedicated bathroom



5. Blanco, N., et al.(2021). Impact of a C. difficile infection (CDI) reduction bundle and its components on CDI diagnosis and prevention. *American journal of infection control*, *49*(3), 319–326. https://doi.org/10.1016/j.ajic.2020.10.020.

Early Identification & Containment

Early Identification

- ✓Test when patient meets criteria
- ✓Consider RN driven protocols for testing
- ✓Initiate Contact Plus Precautions immediately
- ✓Prompt specimen collection = prompt results = prompt isolation

Preventing Environmental Contamination

C. diff reservoirs in patient rooms are predominantly found on high-touch surfaces like nurse call buttons, floor corners, and **patient bed**[6]

Fecal Management

- Liquid stool increased environmental contamination
- Reduces environmental contamination
- Protects skin integrity
- Remove when no longer clinically indicated

6. Yui, S., et al. (2017). Identification of Clostridium difficile Reservoirs in The Patient Environment and Efficacy of Aerial Hydrogen Peroxide Decontamination. *Infection control and hospital epidemiology*, *38*(12), 1487–1492. https://doi.org/10.1017/ice.2017.227

What Drives C. difficile Prevention?

How it started…

- Through audits, environmental contamination raised concerns
- Approach to equipment cleaning varied across units. Responsibility and frequency for cleaning not clearly defined
- Missed opportunities for earlier testing led

How it's going…

- New organizational framework for equipment cleaning
- Standardized process for each equipment type clearly defined and implemented
- Implemented RN Driven Protocol for earlier testing

Results (ongoing)…

- Clear accountability
- Consistent practices across units with cleaning workflows
- Environmental cleaning becomes a reliable system—not just a task
- Early detection, prompt isolation, and stool management to reduce environmental contamination
- Reduction in C. diff

Incontinence Associated Dermatitis

IAD Prevalence

Definition:

Characterized by inflammation and/or erosion of the skin from prolonged exposure to urine, stool, or both.

- **13-26%** (hospital setting)[7]
- Prevalence varies considerably across settings (long term, acute/critical care)[7]
- While IAD is not rare, it is inconsistently measured, and likely underreported.

Secondary infections occur in approximately **14.8% to 32%** of patients with incontinence-associated dermatitis (IAD).[8]

- Progression to pressure injuries (especially sacral area)
- Increased risk of wound infections
- Potential entry point for systemic infection in severe cases

7. Koloms, K., Cox, J., VanGilder, C. A., & Edsberg, L. E. (2022). Incontinence management and pressure injury rates in US acute care hospitals: Analysis of data from the 2018-2019 International Pressure Injury Prevalence™(IPUP) survey. Journal of Wound Ostomy & Continence Nursing, 49(5), 405-415.

8. Kayser, Susan A.; Phipps, LeeAnn; VanGilder, Catherine A.; Lachenbruch, Charlie. Examining Prevalence and Risk Factors of Incontinence-Associated Dermatitis Using the International Pressure Ulcer Prevalence Survey. Journal of Wound, Ostomy and Continence Nursing 46(4):p 285-290, July/August 2019. | DOI: 10.1097/WON.0000000000000548.

IAD and Skin Integrity: The First Line of Defense

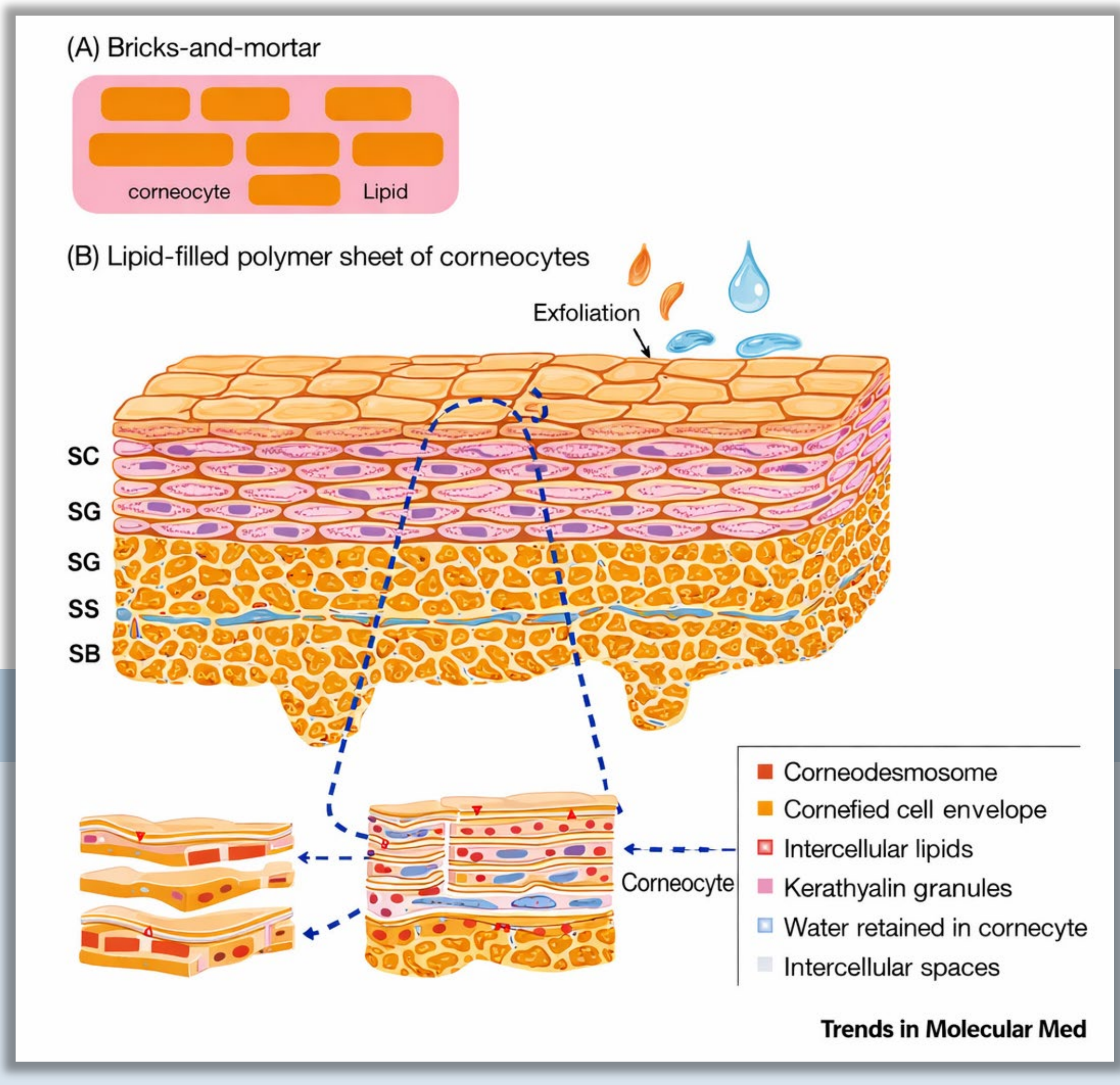


Image credit: Copyright: https://www.cell.com/trends/molecular-medicine/fulltext/S1471-4914(22)00049-1.

IAD in the Chain of Infection

IAD sits at the intersection of **skin integrity, microbial exposure, and system reliability, not just "wound care."**

Reservoir → Portal of Exit → Transmission → Portal of Entry → Susceptible Host

IAD is not benign irritation—it's chemical injury with inflammation and potential skin erosion, driven by prolonged exposure to urine/stool, pH changes, friction, and enzymes.

- Normal barrier function is lost
- Colonization risk increases
- Secondary fungal or bacterial infections become more likely (candida, s. aureas, gram negatives)

When skin breaks down, the barrier to infection is gone

IAD and Inappropriate Catheter Use (CAUTI risk)

- Severe IAD and skin compromise may lead to escalation to indwelling urinary catheterization for perceived skin protection
- However, incontinence alone is not an appropriate indication for catheter use
- Risk of pressure injury or wound contamination can influence inappropriate device placement

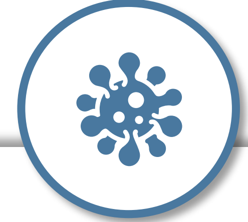
IP guidance: Incontinence should be managed by other means, when possible, without catheters. Skin care, toileting strategies, or non-invasive and external devices.[9]

IAD → Increased likelihood of catheter use → Elevated CAUTI risk

Preventing IAD reduces unnecessary device exposure and associated infection risk

9. Agency for Healthcare Research and Quality. (n.d.). *Technical interventions to prevent CAUTI*. U.S. Department of Health and Human Services. https://www.ahrq.gov/hai/cauti-tools/guides/implguide-pt3.html

Incontinence and Environmental Contamination Risk



Incontinence = Continuous Contamination at the Bedside

- Urine and stool - direct contamination of high-touch surfaces (bed rails, call bells, shared equipment)
- Repeated episodes = higher bioburden
- Each care interaction= multiple opportunities for spread
- Contaminated hands/gloves=cross-transmission

Why It Matters in Infection Prevention

- Drives C. diff transmission (spore contamination, high spore burden in the environment)
- Leads to IAD and skin breakdown
- Triggers device use - increased CAUTI risk

If incontinence isn't contained, contamination and risk of transmission is continuous

Incontinence, IAD & the Evolving Role of Infection Prevention

Infection Prevention = upstream prevention

- Prevent **exposure and risk** at the source
- Focus on **systems, processes, and environment**
- Proactive and preventive

Addressing Incontinence and IAD highlights where opportunities to intervene early before the infection starts.

IAD is an "infection-relevant" condition, not just a skin issue. It reflects:

- Failed containment/management of urine/stool
- Loss of skin barrier integrity
- Increased transmission risk

Upstream system gaps driving HAIs (possible increase in device utilization--> increased CAUTI risk)

Incontinence management and IAD is a **signal**, not just a symptom.

What Infection Prevention Can Do

- ✓ **Elevate IAD as an IP risk marker**
  - Identify IAD trends alongside CAUTI, CDI, and device utilization
- ✓ **Reinforce alternatives to indwelling catheter, recognize opportunities to manage stool output**
  - Remind staff that incontinence alone is not an indication for indwelling catheters
  - Address skin protection early to prevent escalation
- ✓ **Focus on high-risk workflows--where care breaks down**
  - Identify units/times with prolonged moisture exposure (overnights, staffing transitions, high acuity)
- ✓ **Improve data accuracy**
  - Partner with wound care to differentiate IAD vs. Stage 2 pressure injury
  - Ensure surveillance includes identifying underlying causes
- ✓ **Promote exposure reduction**
  - Reframe IAD prevention as containment and exposure control—not just comfort care

Questions?

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