UW TASP tele-antimicrobial stewardship program | echo

July 11, 2017

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Agenda

- Didactic: *Catheter-Associated UTI*
- Case Discussion
- Open Discussion

URL: http://rwpoll.com
Code: uwecho

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Catheter-Associated UTI

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This presentation is intended for educational use only, and does not in any way constitute medical consultation or advice related to any specific patient.

Disclosures

- No financial conflicts of interest
- Everything we discuss is QI, thus protected from legal discovery under WA State Code

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Question…

Is CAUTI an issue at your hospital?

A. Yep
B. Nope
C. I'm not sure…

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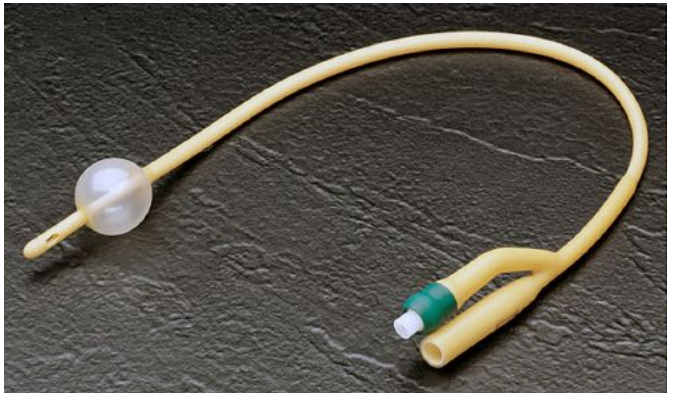
CAUTI: *Major Impact*

- Catheter-associated urinary tract infection (CAUTI) causes patient morbidity, mortality, and is the most common hospital-acquired infection.

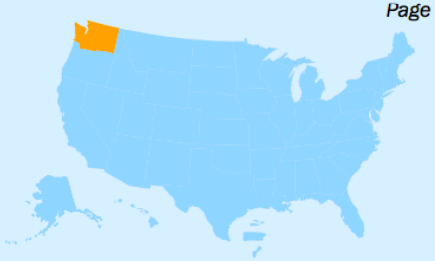


- CAUTI leads to:
  - Patient discomfort
  - Lengthened hospital stays
  - Increased antimicrobial use (and thus increased drug resistance, allergic reactions, drug interactions)
  - Secondary infections (including C.difficile)
  - Cost of care no longer reimbursed by third party payers
  - Accrediting bodies require public reporting of CAUTI

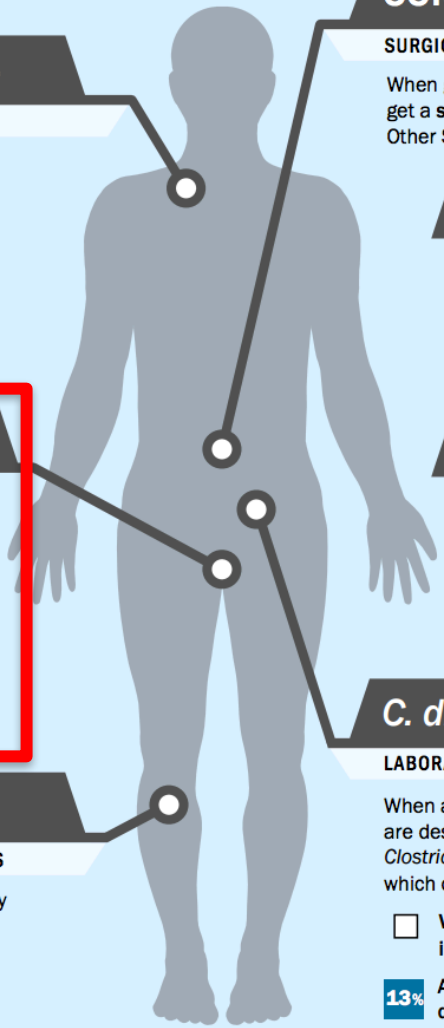
HEALTHCARE ASSOCIATED INFECTIONS PROGRESS

WASHINGTON

ACUTE CARE HOSPITALS



Healthcare-associated infections (HAIs) are infections patients can get while receiving medical treatment in a healthcare facility. Working toward the elimination of HAIs is a CDC priority. The standardized infection ratio (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The infection data are reported to CDC's National Healthcare Safety Network (NHSN). HAI data for nearly all U.S. hospitals are published on the Hospital Compare website.
This report is based on 2014 data, published in 2016.



CLABSIs

↓ 49% LOWER COMPARED TO NAT'L BASELINE*

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

When a tube is placed in a large vein and not put in correctly or kept clean, it can become a way for germs to enter the body and cause deadly infections in the blood.

☐ **Washington hospitals reported no significant change in CLABSIs between 2013 and 2014.**

7% **Among the 51 hospitals in Washington with enough data to calculate an SIR, 7% had an SIR significantly higher (worse) than 0.50, the value of the national SIR.**

CAUTIs

↓ 11% LOWER COMPARED TO NAT'L BASELINE*

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

When a urinary catheter is not put in correctly, not kept clean, or left in a patient for too long, germs can travel through the catheter and infect the bladder and kidneys.

■ **Washington hospitals reported a significant decrease in CAUTIs between 2013 and 2014.**

5% **Among the 61 hospitals in Washington with enough data to calculate an SIR, 5% had an SIR significantly higher (worse) than 1.00, the value of the national SIR.**

MRSA Bacteremia

↓ 16% LOWER COMPARED TO NAT'L BASELINE

LABORATORY IDENTIFIED HOSPITAL-ONSET BLOODSTREAM INFECTIONS

Methicillin-resistant *Staphylococcus aureus* (MRSA) is bacteria usually spread by contaminated hands. In a healthcare setting, such as a hospital, MRSA can cause serious bloodstream infections.

☐ **Washington hospitals reported no significant change in MRSA bacteremia between 2013 and 2014.**

3% **Among the 34 hospitals in Washington with enough data to calculate an SIR, 3% had an SIR significantly higher (worse) than 0.87, the value of the national SIR.**

SSIs

SURGICAL SITE INFECTIONS

When germs get into an area where surgery is or was performed, patients can get a **surgical site infection**. Sometimes these infections involve only the skin. Other SSIs can involve tissues under the skin, organs, or implanted material.

SSI: Abdominal Hysterectomy

↓ 22% LOWER COMPARED TO NAT'L BASELINE

☐ **Washington hospitals reported no significant change in SSIs related to abdominal hysterectomy surgery between 2013 and 2014.**

0% **Among the 11 hospitals in Washington with enough data to calculate an SIR, 0% had an SIR significantly higher (worse) than 0.83, the value of the national SIR.**

SSI: Colon Surgery

↓ 6% LOWER COMPARED TO NAT'L BASELINE

☐ **Washington hospitals reported no significant change in SSIs related to colon surgery between 2013 and 2014.**

10% **Among the 39 hospitals in Washington with enough data to calculate an SIR, 10% had an SIR significantly higher (worse) than 0.98, the value of the national SIR.**

C. difficile Infections

0% NO CHANGE COMPARED TO NAT'L BASELINE

LABORATORY IDENTIFIED HOSPITAL-ONSET *C. DIFFICILE* INFECTIONS

When a person takes antibiotics, good bacteria that protect against infection are destroyed for several months. During this time, patients can get sick from *Clostridium difficile* (*C. difficile*), bacteria that cause potentially deadly diarrhea, which can be spread in healthcare settings.

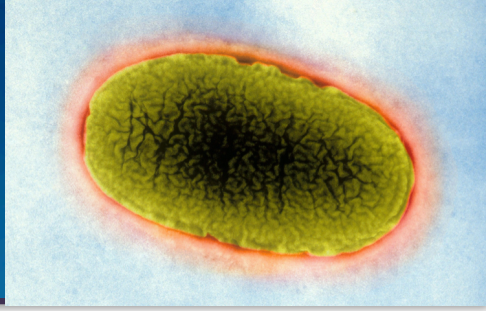
☐ **Washington hospitals reported no significant change in *C. difficile* infections between 2013 and 2014.**

13% **Among the 67 hospitals in Washington with enough data to calculate an SIR, 13% had an SIR significantly higher (worse) than 0.92, the value of the national SIR.**

*Statistically significant

CDC

CAUTI: *Pathogenesis*



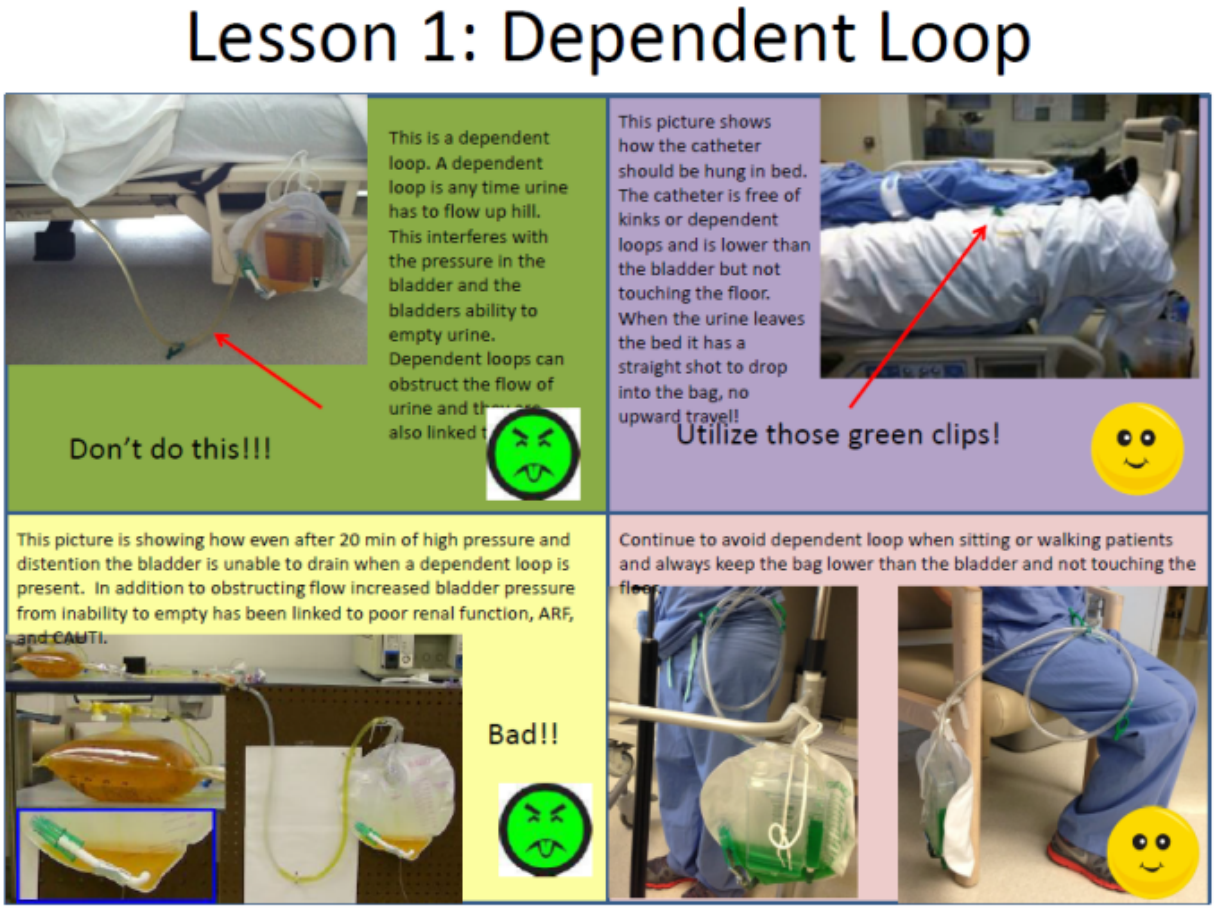
- Colonization: Endogenous flora ascends peri-catheter space or lumen (common)
- Infection: Inflammatory response to adherent or invasive bugs (rare)

CAUTI: *Prevention*

Bladder Bundle Elements….

- Use foley only
- Aseptic i…
- Maintain…
- Know w…
- Condom…
- *Pull ther… fails*

- Car…
- Pre…
- Har…
- Ope…
- Pati…



CAUTI: *Key Concepts*

- Colonization virtually universal… *No need for routine surveillance cultures!*
- Appreciate difference between asymptomatic bacteriuria and UTI!
- Diagnosis: *Challenging!*

UTI: *Diagnosis*

Leukocyte esterase:
If $>10^5$ cfu/ml, then:
sensitivity 68-98% specificity 59-96%

Nitrite:
If $>10^5$ cfu/ml, then:
sensitivity 19-45% specificity 95-98%

- ✓ *Enterobacteriaceae* reduce nitrate to nitrite, but *Pseudomonas*, *S. saprophyticus*, & *Enterococcus* do not.

CAUTI: *Diagnosis*

Microscopic analysis

Pyuria: majority of symptomatic UTIs have pyuria…
but *lower PPV among catheterized pts*

Gram stain for bacteria: >1 organism per hpf on uncentrifuged urine is $>10^5$ on culture

Culture

Method: collect from sterilized tube port, not bag

Inoculate 1 to 10 μl onto agar plate

Criteria for *Enterobacteriaceae* UTI

- Symptomatic women
  10^2: sensitivity 95%, specificity 85% for cystitis
- Asymptomatic women
  10^5: used in high risk clinical settings & research

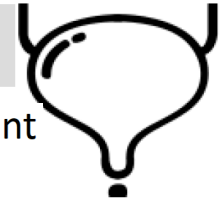
CAUTI: *Treatment*

Empiric Abx: *UTI*

Pearls:

- ABU≠CAUTI
- Bladder Bundle!
- Change or remove the catheter if UTI diagnosed

URINARY



B. Catheter-associated UTI or Hospital- acquired:(Resistant Gram-negative rods)

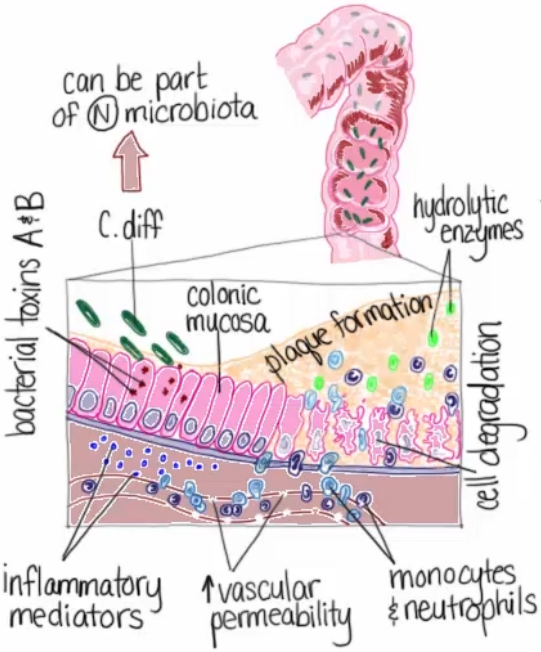
Diagnosis: In symptomatic pts, obtain specimen from new foley, or from sterilized port on existing foley, not from collection bag or urimeter. Send U/A with reflexive gram stain and culture (UACRC). WBCs and Bacteria on direct stain suggests infection, but colonization also very common.

- Ceftazidime 2g IV q8h
- If GPC seen on gram stain, add: Vancomycin**
- De-escalate or discontinue coverage if alternate source found for patient symptoms.

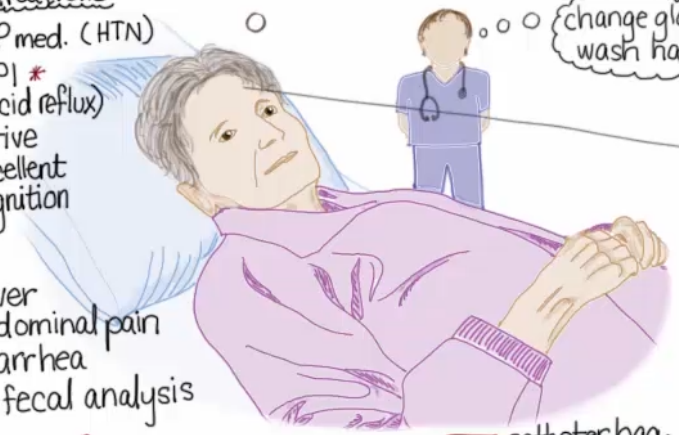
Typical Duration: 7-14 days

Pseudomembranous Colitis

Clostridium difficile



- relatively healthy 82 y.o. ♀
- medications
  - BP med. (HTN)
  - * PPI * (acid reflux)
- active
- excellent cognition



- fever
- abdominal pain
- diarrhea
  - ↳ fecal analysis

Cerebrovascular accident (CVA)

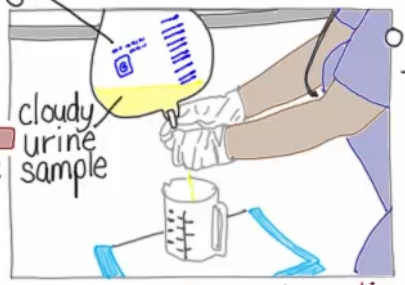
↓

hospital admission (rehabilitation)

- Foley catheter (placed unnecessarily)
  - left in situ × 2 weeks

↑convenience

- catheter removed



Asymptomatic bacteriuria

culture

++ bacterial growth

- ØUTI symptoms
- Øsystemic signs of infection (fever, ↑WBCs, delirium)

↓

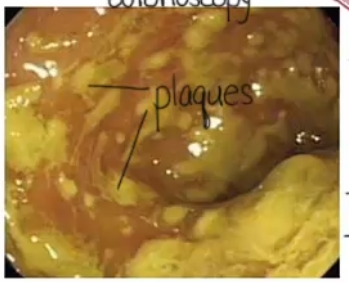
ØUTI

7 days broad-spectrum antibiotics (unnecessary)

↓

alteration of (N) microbiota

COMPLICATION



colonoscopy

Pseudomembranous Colitis

TREATMENT

- oral vancomycin

COMPLICATIONS

- toxic megacolon
- bowel perforation

several weeks later

- community acquired pneumonia (CAP)

↓ bacterial resistance to abx

↓

deterioration & death

INAPPROPRIATE USE OF ANTIBIOTICS

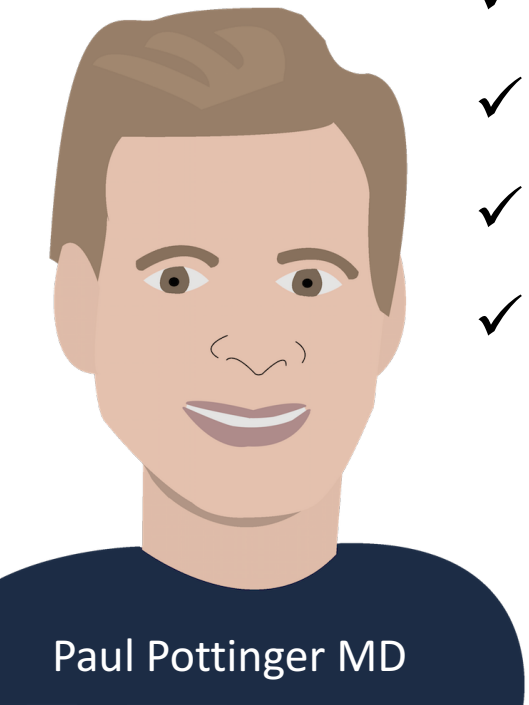
↓

SERIOUS CONSEQUENCES

Conclusions

CAUTI: *Opportunities for Antimicrobial Stewardship*

- ✓ Leading source of abx overuse
- ✓ Find Foley alternatives when possible
- ✓ Deploy the “Bladder Bundle”
- ✓ Resist testing unless truly symptomatic!
- ✓ If you must treat… treat narrowly!
- ✓ Challenge & Opportunity: RN ownership



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