KICK THE BUCKET:
Reducing HAI exposure with
easier bedside toileting

Sigma Theta Tau International's
26th International Nursing Research Research Congress
Bias/Disclosures

• The Univ of MN Medical Center (UMMC) ED is moving toward 100% DISPOSABLE bedside commode pails
• Based on best-practice bedside toileting evidence, ER staff has designed, patented & developed an FDA/landfill-compliant disposable commode pail to absorb waste/reduce splashes & spills
• Financial interest with DISPOSABLE commode pails, the “Toilet Tote” from Healthcare Solutions & Education, Inc.
• A portion of sales goes to Medical Missions World Wide @ www.MMWW.org
Objectives

• Analyze GI pathogens whose effects cost billions of US dollars annually i.e. Ebola, C. diff, etc
• Realign incentives for caregivers to improve bedside toileting processes
• Justify bedside toileting upgrades that reduce the risks of patient cross contamination & employee splash injuries
NPSG.07.03.01
Implement evidence-based practices to prevent health care–associated infections due to multidrug-resistant organisms in acute care hospitals.

Note: This requirement applies to, but is not limited to, epidemiologically important organisms such as methicillin-resistant staphylococcus aureus (MRSA), clostridium difficile (CDI), vancomycin-resistant enterococci (VRE), and multidrug-resistant gram-negative bacteria.

--Rationale for NPSG.07.03.01--
Patients continue to acquire health care–associated infections at an alarming rate. Risks and patient populations, however, differ between hospitals. Therefore, prevention and control strategies must be tailored to the specific needs of each hospital based on its risk assessment. The elements of performance for this requirement are designed to help reduce or prevent health care–associated infections from epidemiologically important multidrug-resistant organisms (MDROs).

Note: Hand hygiene, contact precautions, as well as cleaning and disinfecting patient care equipment and the patient’s environment are essential strategies for preventing the spread of health care–associated infections. Hand hygiene is addressed in NPSG.07.01.01. Contact precautions for patients with epidemiologically significant multidrug-resistant organisms (MDROs) are covered in IC.02.01.01, EP 3. Cleaning and disinfecting patient care equipment are addressed in IC.02.02.01.

Elements of Performance for NPSG.07.03.01

1. Conduct periodic risk assessments (in time frames defined by the hospital) for multidrug-resistant organism acquisition and transmission. (See also IC.01.03.01, EPs 1-5)

2. Based on the results of the risk assessment, educate staff and licensed independent practitioners about health care–associated infections, multidrug-resistant organisms, and prevention strategies at hire and annually thereafter.

Note: The education provided recognizes the diverse roles of staff and licensed independent practitioners and is consistent with their roles within the hospital.
Bedside Toileting

- **Situation**
- **Background**
- **Assessment**
- **Recommendation**
The definition of insanity is...

...doing the same thing over & over again & expecting different results.

-Albert Einstein

Example of a bedside commode used by Florence Nightingale
SITUATION: What’s wrong in this picture?
How many RISKS did you find?

- Gloves
- Wipes
- Blocked sink
- Splash guard
- Trash for “unflushable” wipes
5x higher exposure rate to fecal pathogens

- Bathrooms
- Restrictive monitoring equipment/falls
- Hopper-induced dependence
  - Sewage hauling
  - Splash injuries
- At-risk behaviors:
  - Procrastination
  - Sanitation short cuts
- Growing virulence & under education
Splash injury risks increase during each of 5 steps:

1. Equipment set up—
   - Found dirty
   - Pre-Cleaning
2. Equipment Transport
3. Dumping of waste
4. Pre-cleaning/Cleaning
5. Equipment disinfection
   & Post-cleaning
Email from VP of Facilities…

- “We continue to have issues with sewer backups related to flushed wipes
- Despite posting signs in every bathroom stating *only toilet paper can be flushed*…
- Disposable wipes continue to be flushed creating [sewer] main backups which then result in hoppers/toilets overflowing in the nursing units.
- When the plumbers snake out the sewer lines they are removing bucket after bucket of disposable wipes
- Please get this reminder/message out to all staff ASAP…”
Literature Review of Bedside Toileting Challenges

• Pathogens/HAI

• Methods to reduce:
  – Fecal Pathogens
  – Pt cross-contamination
  – Employee splash injuries

• Interdisciplinary Considerations
Chain of Infection

- Organism
- Reservoir
- Portal of Entry
- Portal of Exit
- Transmission
- Vulnerable Hosts
<table>
<thead>
<tr>
<th>Pathogen/Source</th>
<th>Incubation</th>
<th>Duration</th>
<th>Treatment</th>
<th>Features</th>
</tr>
</thead>
</table>
| *Campylobacter* is associated with: | 2-5 days | 5-14 days | Erythromycin Azithromycin | • Bloody Diarrhea  
• Mimics acute appendicitis or Inflammatory Bowel Disease  
• Recurrence is common |
| • Wilderness water  
• AKA Backpacker’s Diarrhea | | | | |
| *Salmonella* is associated with: | 8-24 hrs | 2-5 days | Ciprofloxacin Azithromycin | High incidence populations  
• Pediatrics  
• Oncology  
• Immune deficient |
| • Pet owners  
• Poultry farmers (turkey story)  
• Drinkers of raw egg shakes/nogs  
• Eaters of raw cookie dough | | | | |
| *Shigella* is associated with: | 24-48 hrs | 4-7 days | Ciprofloxacin TMP-SMX | Toxigenic watery diarrhea, Followed by invasive dysentery |
| • Poor hygiene  
• Confined populations | | | | |
| *Yersinia* is associated with: | 12-48 hrs | 5-14 days | TMP-SMX Ciprofloxacin | • Mimics appendicitis or terminal ileitis-like syndromes  
• Present in feces for long durations |
| • Pet owners  
• Hog farming  
• Eating undercooked pork | | | | |
| *Vibrio parahemolyticus* is associated with: | 8-24 hrs | 1-2 days | IV & PO fluids Supportive Care | • Peaks in summer months  
• Self-limiting |
| • Sushi & Shellfish  
• Eating undercooked fish  
• Fish hatchery exposure | | | | |
| *E. Coli O157:H7* is associated with: | 3-8 hrs | 5-10 days | IV & oral fluids Supportive Care | • Bloody diarrhea/hemorrhagic colitis  
• Hemolytic uremic syndrome  
• Thrombocytopenic Purpura |
| • Traveling  
• Consuming undercooked meat | | | | |
# TABLE: Fecal Pathogens commonly found in ERs & Urgent Care


<table>
<thead>
<tr>
<th>Pathogen/Source</th>
<th>Incubation</th>
<th>Duration</th>
<th>Treatment</th>
<th>Features</th>
</tr>
</thead>
</table>
| *Plesiomona* is associated with:  
  - Traveling & travelers  
  - Undercooked fish  
  - Sushi & sashimi  
  - Fish tanks & aquariums | 1-2 days | 5-20 days | TMP-SMX | • Severe abdominal cramps  
  • Vomiting  
  • Dehydration |
| *Bacillus anthracis* is:  
  - Found in undercooked meat  
  - Associated with bioterrorism | 1-6 days | Weeks | Ciprofloxacin  
  Doxycycline | • Oral ulcers  
  • Lymphadenopathy  
  • Fever  
  • GI hemorrhage  
  • Ascites |
| *Clostridium difficile* is associated with: healthcare facilities | <7 days | Months to Years | Vancomycin  
  Metronidazole | • High number of events  
  • Forms a spore, “difficile” to eradicate  
  • Results in long term intestinal damage:  
    o Colitis  
    o Paralytic ileus  
    o Toxic megacolon  
    o Sepsis |
| *Rotavirus* is associated with:  
  - Pediatric populations  
  - Geriatric populations  
  - Adults may have milder symptoms | 1-3 days | 4 days to 1 month | IV & PO fluids  
  Supportive Care | • Peaks in winter months  
  • Acute vomiting followed by watery  
  • Non-bloody, profuse diarrhea  
  • Fever not always present |
| *Norovirus* is associated with:  
  - Healthcare  
  - Cruise ships (Olympic dorms)  
  - Barracks, camps or dorms  
  - Other confined/populated areas | 24-48 hrs | 3-7 days | IV & PO fluids  
  Supportive Care | • Peaks in winter months  
  • Self-limiting |
Background

Resources Shrink as Needs Increase

U.S. Congress shrink reimbursement to hospitals\(^1-^2\)
i.e. denials, takebacks, etc.

Hospital budget cuts mean less staff are spread over more pts

Less staff leads to less time for pt toileting

Disinfection shortcuts & at-risk behaviors

Baby Boomers Age

More diuretics, bowel preps...

Growing virulence, lack of safe equipment, unsafe practices, \(\hat{\text{r}}\) exposure

Inadequately cleaned equipment are reservoirs for pathogens\(^4-^5\)

HAIs increase with current methods of bedside toileting

More lost work hours due to splash injuries

Resources Shrink as Needs Increase
Incomplete Infection Prevention education

- 50 states with different “Right to Know” laws
- New & profound patterns of morbidity & death
- PPE noncompliance rates 5-83% in a specialty nursing unit
- U.S. economic consequences/costs related to C. diff management ALONE exceed $3.2 billion annually
- Inability to keep pace with challenges as pathogens mutate
EDINA, Minn. - A Twin Cities hospital system is going after hard-to-fight infections in its facilities by using a surprisingly simple technique.

The staff at Fairview Southdale Hospital is meticulous when disinfecting rooms. The regular cleaning solutions they use kill virtually every germ, but there's one bacterium, Clostridium difficile or C. difficile, that is difficult to get rid of.

"People that get it can get diarrhea 22 times a day which you wouldn’t wish on your worst enemy,” says Dawn Twenge, with Fairview Infection Prevention.

It can also destroy your colon, Twenge says.

Often transmitted in hospitals or care centers, C. difficile takes over the digestive system after good bacteria have been destroyed by strong antibiotics.

"It turns into a spore. That's why it's more difficult to kill. It's like an M & M with a shell on it," Twenge says.

Bleach will kills the bacteria, so Fairview Southdale employees started adding bleach wipes to their cleaning routine in rooms where patients with C. difficile had stayed.

Twenge said the hospital went from having a few occasional cases to none.

"It's been zero, month after month in our ICU so we're not transmitting it whatsoever," she says.

Follow up with black light shows just how clean the rooms are, once disinfected by employees.

"To be able to have zero is just a source of pride for our entire team," says Courtney Nelson, director of Environmental Services.
Toilet & Hopper Misting…

http://www.discovery.com/tv-shows/other-shows/videos/time-warp-toilet-flush.htm

Right Click on the link – open hyperlink
Assessment/Findings:

1. While both reusable & disposable systems have costs & risks, the advantages of DISPOSABLE bedside toileting products outweighed those of reusables.

2. Current bedside toileting methods increase the spread of HAIs.
Examples of disposables

- **1st generation**—simple liner
- **2nd generation**—emesis bag idea but big enough to fit standard commodes
- **3rd generation**—diaper materials added
- **4th generation**—compostable

Cost is similar to an adult overnight diaper
Disposables Eliminate Overhead

– Macerator, sluice machine & washer-disinfectors
– Sterile Stores processing labor
– Maintenance/engineer maintenance
– Equipment breakdowns, repairs & on-call costs
– Sewer snaking & flood cleanup
Disposables are Safer/Faster

• Currently accepted thermal decontamination parameters for bedpans & commode pails (80 degrees C for 1 minute) are NOT ADEQUATE to eliminate C. difficile spores

• Cleaning machine failure & delayed engineering response time lead to inadequately cleaned equipment

• Hopper dependence eliminated/at risk behaviors reduced
  – Folding commode chairs hung in each room, hallway or pod.
  – Mounted dispensers are mounted 4 per room, walking time is eliminated
  – Delays eliminated
Wipes/Sprays have Limitations

- 5-min scrub study done on flat surfaces
- Limited efficacy on curves/bends: Microbes pushed into curve/bends Reservoirs for colonization
- No scrubbing friction with sprays
- Normalized Deviance

Amer J Infect Control 2011; 39 (3):212-8
Bleach Germicidal Disposable Wipe
Ideal for disinfecting high risk areas endemic with Multi-Drug Resistant Organisms and Clostridium difficile spores.

- Effective against 50 microorganisms in 4 minutes, including:
  - *C. difficile*
  - Norovirus
  - MRSA
  - Acinetobacter baumannii
- For use when taking a pathogenic specific approach to disinfection
- Meets CDC, OSHA and CMS Tag F441 guidelines
- Bactericidal, Fungicidal, Tuberculocidal, Virucidal
- Compatible with a broad range of surfaces and equipment in healthc
### Assumptions:

- Admitted inpts will require some sort of bedside toileting while in the ER
- Based on acuity, ~12.5% of ER pts NOT admitted will also require ER beside toileting
- 5 minutes is spent cleaning the commode bucket (before/after or both)
- Each bedside toileted pt will experience 1.5 toileting events during the ER visit

Other Benefits...

- Without the hopper, faster response times lead to reduced incontinence & skin breakdown events, fewer bed changes & laundry/labor costs
- Wipes in hoppers create recurrent plumbing back-ups. This leads to sewage exposure to nursing units several times a year & costly removal.
- With disposables, wipes (to wipe down the commode chair) are used AWAY from the hopper, which then go in the trash
- Bariatric bags are in the planning phase (wide rim)
- “Green” compostable commode pails, made from biodegradable corn byproducts, available at a higher cost
Recommendations:

1. **More research.**
2. **Improved education.** Those exposed must have a fuller understanding & appreciation for the growing risks of fecal pathogen exposure
3. **Better hygiene.** Current bedside toileting methods are associated with growing HAIs
4. **Better equipment.** The standard of care for bedside toileting should be DISPOSABLE commode pails
References


Questions?

Molly Delaney, Nurse Manager
University of MN Medical Center
Emergency Department, East Bank
425 Delaware St SE Box 710
Minneapolis MN 55346
mdelane2@fairview.org
612-273-2977