Patient and Visitor Involvement: The Hand Hygiene Missing Link?

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Objectives

• Review some of our issues with antibiotic resistant organisms
• Discuss the importance of keeping our patient’s hands clean
Transmission occurs when the agent, in the reservoir, exits the reservoir through a portal of exit, travels via a mode of transmission and gains entry through a portal of entry to a susceptible host.

Figure 1: The Chain of Transmission
Where Do We Spend Our Time?

• Focus on
  – Reservoir
  – Mode of Transmission
Reservoir

• Patient Screening
  – Admission Screening

• Isolation
Admission Screening

• MRSA
  – Nares, perianal or groin, wounds, exit sites
• VRE
  – Stool or rectal swab
• CDI
  – No screening readily available
• Other ARO’s
  – Problems with culture media or standardization, what to look for?
Admission Screening Problems

• Cost
  – PCR can be pricey but quick - $75

• Turn Around Time (TAT)
  – PCR is quick – same day
  – Some culture techniques can take up to 5 or 7 days if mixed culture

• Snap shot of that day, that site
Contact Precautions

• Jim has problems with this!
CONTACT PRECAUTIONS

WE JUST FOUND OUT THAT THIS PATIENT HAS A BUG THAT COULD BE CARRIED TO THE NEXT PATIENT.

NOW WE REALLY MEAN YOU HAVE TO PERFORM HAND HYGIENE AND TRY NOT TO SOIL YOUR UNIFORM!

WE ARE NOT SURE ABOUT THE GUY NEXT DOOR, YET, SO DO WHATEVER YOU WANT!
Transmission occurs when the agent, in the reservoir, exits through a portal of exit, travels via a mode of transmission and gains entry through a portal of entry to a susceptible host.

Figure 1: The Chain of Transmission
Mode of Transmission

• Contact
  – Direct
  – Indirect
• Droplet
• Airborne
Mode of Transmission – Contact

• Hand hygiene
  – Alcohol hand rub
  – Soap and water
    • Variety of agents

• Equipment cleaning
  – Single patient use
  – Fomites such as toilets, tubs, etc.
HAND HYGIENE COMPLIANCE IN HOSPITALS BEFORE PATIENT CONTACT

FY 2008/09 - 2011/12

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Source: MOHLTC

http://www.hqontario.ca/public-reporting/patient-safety
Transmission occurs when the **agent**, in the reservoir, exits the reservoir through a **portal of exit**, travels via a **mode of transmission** and gains entry through a **portal of entry** to a susceptible **host**.

**Figure 1: The Chain of Transmission**
Infectious Agent

• Bacteria
• Fungi
• Viruses
• Parasites
• Prions
Acronyms on the Increase?

- MRSA - Methicillin Resistant *Staphylococcus aureus* – stable to climbing
- VRE - Vancomycin Resistant Enterococci
- CDI - *Clostridium difficile* Infection – still causing outbreaks
- ESBL – Extended Spectrum Beta-lactamase producing organisms
Newer Acronyms

- NDM-1 – New Delhi metallo-beta-lactamase
- CRE/CPE – Carbapenem resistant or carbapenemase producing Enterobacteriaceae

http://en.wikipedia.org/wiki/New_Delhi_metallo-beta-lactamase_1
Transmission occurs when the agent, in the reservoir, exits the reservoir through a portal of exit, travels via a mode of transmission and gains entry through a portal of entry to a susceptible host.

Figure 1: The Chain of Transmission
Susceptible Host

- Age
- Immunosuppression
- Diabetes
- Burns
- Surgery
- Lines
- Immunizations
Transmission occurs when the agent, in the reservoir, exits the reservoir through a portal of exit, travels via a mode of transmission and gains entry through a portal of entry to a susceptible host.
Portal of Exit

- Body Fluids (Blood, etc.)
- Skin
- Feces
- Mucous Membranes
  - Routine Practices
WARNING!!

This patient has:
– Skin!
– Feces!
– Mucous Membranes!

PERFORM HAND HYGIENE AFTER CONTACT WITH THIS PATIENT OR THEIR ENVIRONMENT!
Hi Healthcare Person

I have Skin, Feces and Mucous Membranes!
Please sanitize your hands after contact with me or my surroundings
Transmission occurs when the *agent*, in the *reservoir*, exits the reservoir through a *portal of exit*, travels via a *mode of transmission* and gains entry through a *portal of entry* to a susceptible *host*.

**Figure 1: The Chain of Transmission**
Portal of Entry - MRSA

• Common colonization site of nares
• HOW?
• Healthcare workers and noses?
• Patient and Nose?
Portal of Entry - MRSA

• Skin
  – Broken skin – opportunistic with own organism
    • Decolonization and SSI rates (Hacek 2008)
  – Perineum / perianal – GI tract?
    • Tubs
    • Linen
    • Patient hands
Portal of Entry - VRE

• Two entrances
  – Rectal or oral

• Rectal
  – Scopes
  – tubs
  – fingers
  – gloves
Portal of Entry - VRE

- Oral
- Is it us?
Portal of Entry – CDI

• Same as previous slides
  – Oral, rectal
  – Possible food based (Rodriguez-Palacios 2007)
    • Might explain some of the community related illness
Portal of Entry – CDI

• Proton Pump Inhibitors
  – Possible problem
  – Conclusion: Clean patient’s hands! (Metz 2008)

• Rates lower with hand hygiene program for both staff and patients (Drudy 2007)
Portal of Entry – CRE

• Let me guess…oral, rectal
• Can find in wounds, insertion sites
Portal of Entry – Our Patients

• Ward 2003 – ‘Improving Patient Hand Hygiene’
• If they don’t wash at home, won’t wash in the hospital
• Educate staff
• Provide information
  – Pamphlet, Verbally, Posters
Our Patients

• Unable to access facilities
  – Immobile
  – Attached to equipment
    • IV, monitors
• Ardizzone 2013
  – Surgical pain
  – Surgical dressings
Our Patients

• Patients want
  – More signs
  – Better Reminders
  – Personal hand sanitizers
Hand Sanitizer Bottle Label

FOR PATIENT USE
Keep on overbed table
If necessary, please ask for assistance to use this product
Portal of Entry – Our Patients

• Banfield et al – 2005.
• ‘Could hospital patients’ hands constitute a missing link?’
• Excellent review article
• Not a lot of studies that look at patient hands
Our Patients

- Studies did find potentially pathogenic bacteria on patient’s hands (Hedin 2012, Istenes 2013)
- Outbreak strains present
- Bed-ridden patients have higher numbers
- Patients help patients! (Tomic 2008)
Our Patients

• If not given the chance, won’t be able to do their hands
• Need to make sure patients can do it!
• Hand wipes a good idea (Burnett 2008)
Patients/Volunteers

• Study looking at education methods for parents visiting PICU (Chen 2007)
• Used video versus poster
• Video group had better technique
  – Overall no significant difference in compliance
• Patients and Visitors better than physicians at 57% (Randle 2010)
Children/Visitors

• Observation on paediatric unit
• General and Oncology
• No education over the presence of ABHR
• Visitors lower at 23%
• Need program for children (Randle 2012)
Staff Awareness

• Surveys recognize that staff think patient hand hygiene is a good idea (Burnett 2008, 2009)

• Staff felt HH more important after going to the toilet than before meals
  – Need to explain concept of fecal oral spread and the role of the environment
Does it Work?

- Gagne 2010
- Could not get rates down
- 4 full time and 4 part time attendants hired
- Met patients and visiting relatives at door
- Verbal and pamphlet
- Encourage to clean hands at least twice per day
- Used 70% with 0.5% Chlorhexidine
## Results Impressive

<table>
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<th>Reduction</th>
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<tr>
<td><strong>MRSA Infections per 1000 Admissions</strong></td>
<td>10.6</td>
<td>5.2</td>
<td>51%</td>
</tr>
<tr>
<td><strong>MRSA BSI</strong></td>
<td>1.3</td>
<td>0.2</td>
<td>85%</td>
</tr>
<tr>
<td><strong>MRSA Resp</strong></td>
<td>4.9</td>
<td>1.5</td>
<td>69%</td>
</tr>
<tr>
<td><strong>Ratio MRSA BSI / MSSA BSI</strong></td>
<td>59% (13/22)</td>
<td>14% (2/14)</td>
<td>76%</td>
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<tr>
<td><strong>MRSA Mortality</strong></td>
<td>0.7</td>
<td>0.2</td>
<td>71%</td>
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Projected Savings

• $688,843!
• May have prevented 51 infections
  – MRSA infection ~ $14,360
  – MRSA BSI ~ $27,083
  – Staffing was $170,000
Patient Moments

Landers 2012

1. After using the toilet, bedpan, or commode
2. When returning to room after test or procedure
3. Before eating, drinking, taking medicine, or putting anything in your mouth
Patient Moments

4. When visibly dirty
5. Before touching any breaks in the skin (wounds, dressing, tubes or any care procedure (dialysis, IV drug administration, injections)
6. Before dialysis, contact with IV lines or other tubes
7. After coughing, sneezing, or touching nose or mouth
8. Before interacting with visitors and after they leave
9. When there is concern about whether hand are clean
Jim’s Additional Moments

1. Leaving a wheelchair
   - New pamphlet for patients

2. After pet therapy (Lefebvre 2006)
CPSI

• “How to help prevent healthcare-associated infections: a patient and family guide”
• www.handhygiene.ca
Patient Assessment

• Alcohol hand rub on overbed table
• Observe if they can depress plunger
• Observe if they can adequately cover hands
• ‘Flag’ patient if they require assistance
Our Patients

- Use of volunteers?

http://images.buycostumes.com/mgen/merchandiser/17757.jpg
Transmission is interrupted when:

- the agent is eliminated or inactivated,
- the reservoir prevents egress,
- portals of exit are eliminated through safe practices,
- Transmission between objects or people does not occur due to barriers and/or safe practices,
- portals of entry are eliminated, and/or
- hosts are not susceptible

**Figure 2: Breaking the Chain of Transmission**
Summary

• We need more emphasis on patient hand hygiene
• We need more incentive (Schweon 2011)
  – Joint Commission, Centers for Medicare and Medicaid Services
This looks good!

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This Should Look Better!

http://www.hqontario.ca/public-reporting/patient-safety
Super Patient Hand Hygiener
References

- Burnett E. Perceptions, attitudes, and behavior towards patient hand hygiene. AJIC 2009;37:638-42
References


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• Hedin G. et al. Occurrence of potentially pathogenic bacteria on the hands of hospital patients before and after the introduction of patient hand disinfection. APMIS 2012;120:802-7


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• Metz DC. Clostridium difficile Colitis: Wash your hands before stopping the proton pump inhibitor. Am J Gastroenterol 2008;103:2314–16


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• Tomic V. Has the time come to recommend the use of alcohol-based hand rub to hospitalized patients? ICHE 2008;29(10): 987-8