A Stroll Down Memory Lane…

‘No lepers, lunatics, or persons having the falling sickness or other contagious disease, and no pregnant women or sucking infants, and no intolerable persons, even though they be poor and infirm, are to be admitted in the house; and if any such be admitted by mistake, they are to be expelled as soon as possible’...

- Medieval English Hospital, 1219
1847: Semmelweis & Puerperal Fever

- Women whose babies born out of hospitals less likely to develop fever
- Ward A (medical students) vs Ward B (midwives) observations
- Autopsies pre-delivery on Ward A
- Hand washing implemented....
Maternal Mortality due to Postpartum Infection General Hospital, Vienna, Austria, 1841-1850

Semmelweis’ Hand Hygiene Intervention

Maternal Mortality (%)

1841 1842 1843 1844 1845 1846 1847 1848 1849 1850

MDs

Midwives
History...

- 1854- Florence Nightingale
  - Appropriate ventilation & sick patients isolated
- 1875- John Hopkins Hospital, Baltimore
  - Well-ventilated and isolations wards “for the occasional case so contagious ...or unpleasantly smelly that it cannot remain under the same roof with others”.
- 1920- Chicago's Presbytarian Hospital
  - Proposed all single rooms with a dedicated toilet....
Today...

• Healthcare facility design, infrastructure and IP&C practices are an integral part of how we do business to protect patients/residents
• Organizations dedicated to IP&C
• IP&C programs & standards: Accreditation Canada requirement
• Numerous guidelines available to help us deliver safe care in an safe environment
  – e.g. WHO, CDC, PHAC, CSA, CPSI, IPAC Canada, PIDAC
HAIs in Canada

• 200,000 Canadians acquire a healthcare-associated infection (HAI) each year and 8,000 of them die as a result
• About 8% of children and 10% of adults in Canadian hospitals have an HAI at any given time
• Mortality rates attributable to *Clostridium difficile* infection have more than tripled in Canada since 1997
• The healthcare-associated Methicillin-resistant *Staphylococcus aureus* infection rate increased more than 1,000% from 1995 to 2009

Why it Matters?

• Vulnerable populations
• High-risk for severe health outcomes
• Infection most common reasons for transfer from LTC to acute care (33% in one study)
• Accessibility & access impacts (wait times)
• Staff health and safety
• Our responsibility!!
Infrastructure & Design Challenges

• Aging infrastructure
  – Most hospitals/LTCF are many decades old

• Buildings challenged to meet today’s standards for design & renovation (best practices)
  – Aging plumbing
  – Ventilation systems
  – Poor layout
  – Surface selection (e.g. tile/grout)
  – Opportunities for mold growth, etc
Has Infection Prevention & Control been consulted??
What’s Not New....
The Chain of Infection

- Organism
- Reservoir
- Portal of Exit
- Portal of Entry
- Mode of Transmission
- Susceptible Host
What are Routine Practices?

• **Routine Practices** are the Infection Prevention and Control practices for use in the routine care of all patients/residents, at all times, in all healthcare settings and are determined by the circumstances of the patient/resident, the environment and the task to be performed.

• Source: Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings, PHAC
Important Elements in IP&C

- Hand Hygiene
- Engineering Controls
- Administrative Controls
- Personal Protective Equipment
- Point of Care Risk Assessment
- Environmental Cleaning & Disinfection
Hand Hygiene

• Hand Hygiene encompasses:
  ✓ Hand washing
  ✓ Hand antisepsis (e.g. ABHR)
  ✓ Actions taken to maintain healthy hands

• National and international guidelines on hand hygiene in health care settings
Provincial Significance

• Hand hygiene adherence rates by HCWs are a provincially monitored and publicly reported patient safety indicator in NS acute care facilities
  – *Patient Safety Act (2012)*
  – Accessible & appropriate sinks and ABHRs are necessary to facilitate and drive improvements
How often are healthcare workers cleaning their hands?

April-June 2015

Before initial contact
Cleaned hands before initial patient/patient environment contact.

After contact
Cleaned hands after patient/patient environment contact.
NOTICE
EMPLOYEES MUST
WASH HANDS
BEFORE RETURNING TO WORK
EVEN IF YOU’RE
99% SURE YOU
 Didn’t GET
PEE ON THEM
Occupational Obsession?

- Sink specs/design
- Sink locations & access
- Dedicated staff hand hygiene sinks?
- AHBRs EVERYWHERE!!!!!
2009 study where 36 patients infected in Toronto ICU

17 patients died

Hand hygiene sink drains splashed at least 1 metre from the sink

Importance of sink design and placement
HAND WASHING

Because C.diff Tastes Even Worse Than It Smells
• Built into the LTC facility and include elements such as structure, design and ventilation
• Reduce the opportunity for error or inconsistency in the application of IP&C practices by eliminating the individuals (e.g. HCW, visitor) choice about when or if to apply them
Examples of Engineering Controls

• Also called environmental controls
• Patient/resident single accommodation & dedicated bathroom
• Design and location of hand washing sinks
• Point-of-care ABHR and sharps containers
• Safety engineered sharps
• Ventilation/HVAC
• 66 patients infected (no deaths) in Toronto
• Transplant unit
• Organism found in the sinks
• Outbreak emphasized challenges with limited space, body fluid management and sinks in older hospitals
Policies, procedures and patient/resident care practices intended to prevent exposure and transmission of microorganisms during the provision of care

Require organizational commitment and resources for their implementation and sustainability
Examples of Administrative Controls

• IP&C Committee and all components of the IP&C program
• Employee health, healthy workplace policies
• Employee education
• Audits of practice (e.g. environmental services, hand hygiene)
• SOPs
• Equipment/preventative maintenance
• Minimize exposure to and subsequent transmission of infectious agents
• Provides a barrier between you from the source patient/resident or contaminated environmental surfaces/medical equipment
• PPE is highly dependent on the user’s adherence and is for this reason, the *weakest tier* in the hierarchy of controls
Weakest Tier?

• Depends on ‘choice’ on whether to wear it
• Needs to be accessible
  – It is visible to staff/visitors?
  – Taken out only when an outbreak happens?
• Gloves most frequently used but often overused and unnecessary
  – NOT a substitute for hand hygiene
HCWs evaluate the likelihood of exposure to infectious agents and identify the strategies to decrease or eliminate exposure.

HCWs should perform a PCRA prior to each patient/resident interaction.

In conducting a PCRA, a HCW should ask themselves the following 7 questions......
Point of Care Risk Assessment
SEVEN QUESTIONS TO ASK YOURSELF

- What is my skill level for this task?
- What are the patient’s symptoms?
- What actions do I need to take?
- What is the environment where I will be performing this task?
- What task am I doing?
- How cooperative is the patient?
- What is my risk of exposure?

If you’d like to learn more about Point of Care Risk Assessment, check out the PCRA module on the Capital Health LMS.
• IP&C education/training for housekeeping staff
• Written protocols and procedures (e.g. schedule for cleaning/disinfection, record keeping, monitoring the cleaning/disinfection process)
• Ensuring surfaces in the facility are able to withstand cleaning and disinfection processes
  – Intact, non-porous...
• System for enhanced cleaning during outbreaks
The Challenge of Surfaces

• Keeping up with wear and tear
Also not new...Additional Precautions

*Additional Precautions* are enhanced IP&C interventions used *in addition to Routine Practices* when Routine Practices alone may not interrupt transmission of an infectious agent.

*Additional Precautions* are based on the method of transmission and applied for specific clinical presentations or syndromes and pathogens.

Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings, PHAC
Based on Mode of Transmission

- **Contact**
  - Direct and Indirect

- **Droplet**

- **Airborne**
Impact for Additional Precautions

- Anterooms, putting on and removing PPE
- Negative & positive pressure rooms; protective environment rooms
  - Monitoring and documentation
- Availability of private rooms
- Hand hygiene sinks?
- Location of soiled utility rooms
- Strategies to reduce the risk of spread
KEEP CALM AND LET INFECTION CONTROL FREAK OUT
What’s (sort of) New...
Evolution continues...

- Global impact of novel/rare infectious agents
- Best practices in facility design
- IP&C during construction/renovation/maint.
- Human waste management
- Human factors engineering
- NEW IP&C and design guidelines
Global impacts
Design in Healthcare

• CSA Z8000-11
• Can and should help guide decision-making in all renovation activities and building of new health care facilities
• Room specs, assistance in layouts, selection of materials etc
• Private rooms with washroom
  – 1 bum per toilet!!
Renovation and Construction

• CSA Standard Z317.13- *Infection Control during Renovation, Construction and Maintenance of Health Care Facilities*
• Training for key staff crucial
• Involving IP&C staff beginning at design
• Inclusion of training requirement e.g. tenders, trades
• Preventative Measures Analysis!!
A Case for Controlling Dust Bunnies

• Dust particles contaminated with bacteria & fungi can be dispersed during construction/renovation activities

• Puts patients/residents at risk
  – Compromised immune systems - transplants
  – Co-morbidities – dialysis, diabetes, cancer, COPD, cardiac
  – Age
  – Post-operative
  – Steroid therapy (particularly for Legionella)

• Also concerns for staff and visitors
Human Waste Management

• Winner for most frequently asked question....

• Best practice guidance (SBAR)
  – Support of automated waste disposal systems
  – Don’t dispose in sinks, shared toilets
  – Macerators, flusher/disinfectors systems
  – Cleaning & disinfection of equipment
Human Factors

• Human factors examines the relationship between human beings and the systems with which they interact by focusing on improving efficiency, creativity, productivity and job satisfaction, with the goal of minimizing errors.

• Study of the interrelationship between humans, the tools and equipment they use in the workplace and the environment where they use it.
Human Factors Engineering

• Humans are not machines; making the right thing to do more visible & reduce errors

• Standardizing processes

• Checklists and pictures
  – e.g. Pictorial reminder to staff and patients/residents about cleaning their hands; housekeeping checklist; all clean utility rooms labelled and supplies organized in the same manner
FINALLY!

- Released June 2015
- The information should be integrated with existing IP&C programs and policies in each facility and used as part of a comprehensive effort to implement accepted standards and best practices for infection prevention and control
IP&C in Long-Term Care Facilities

• The DHW guidelines are not regulatory
  – Recommend they be used to standardize infection prevention and control practices

• A consistent approach will reduce confusion and promote a better understanding by all

• Be prepared for questions as document is implemented.....
Also Hot off the Press...

• “Patient-Focused Primary Healthcare Design Guide for Infrastructure Supporting Collaborative Healthcare Teams”
• This has been approved and is successfully being used!
The Challenge

• Limited everything!

- TIME
- MONEY!
- STAFF & HUMAN RESOURCES
- KNOWLEDGE & CAPACITY
The Opportunities

• Collaboration!

• Cost savings/avoidance

• Patient/resident safety and satisfaction with care

• Mutual understanding of IP&C best practices

Next time someone says “let’s see what IP&C thinks?”
Thank you!

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