

Construction and Renovation in Health Care Facilities

Communication, Collaboration and
Respect

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Agenda

- Project Management
 - Role of Infection Control in Construction
 - Stages of a Construction Project
 - Words to the Wise
- Infection Control
 - The Facts
 - Multidisciplinary Team
 - Infection Control Requirements
 - FAQs: Mold, decontaminating water sources, ICP mentors/education

Project Management

- Role of Infection Control in Construction
- Stages of a Construction Project
- Words to the Wise

Role of IC in Construction

- Collaboration and communication
- Guidance / expertise
- Oversight / following procedures
- Testing

Stages of a Construction Project

- Pre-Design Planning / Business Case
- Design / Construction Drawings
- Tendering / Contract Award
- Construction
- Commissioning / Handover
- Operation

Words to the Wise

- Construction has its own language
- Be pro-active, part of the team
- Get involved early
- Don't be afraid to ask questions
- Remember: you are the expert
- Repeat yourself

Construction and Renovation in Health Care Facilities



The Facts: *Infections Related to Health Care Construction/Renovation are no Laughing Matter*

- In Canada 250,000 patients a year experience hospital acquired infections resulting in 8,000-12,000 deaths
- And 7-8% are due to construction, maintenance and repair.
- That 7-8% translates into 500-1000 deaths in Canadian hospitals per year.

(Fundamentals of Infection Control in HCF Issue 2 Rev. 3)

The Facts: *Infections Related to Health Care Construction/Renovation are no Laughing Matter*

- **Aspergillus** is the most common fungi related to construction/renovation in health care (is ubiquitous in soil, water, and decaying vegetation).
- Can be dispersed when floors, walls or ceilings are penetrated and can remain suspended in air for prolonged periods.
- Usually transient colonizer in healthy individuals but can cause invasive infection in the immunosuppressed host.

The Facts: *Infections Related to Health Care Construction/Renovation are no Laughing Matter*

- **Legionella** is the most common bacteria related to construction/renovation in health care (is ubiquitous in water, soil and dust).
- Hospital environmental sources include cooling towers, evaporative condensers, heated potable water systems (ie. showers), and heating and air conditioning systems.
- Immune suppressed most vulnerable.

Prevention is Key: Multidisciplinary Team

- Responsibility for prevention does not begin and end with the Infection Control Practitioner as a solitary entity.



Multidisciplinary Team

- Prevention requires a multidisciplinary team approach.



Multidisciplinary Team

- Collaboration, communication and respect for individual expertise are key elements of the multidisciplinary team.

Multidisciplinary Team

- May include: Facilities Management, architects, engineers, contractors, sub-trades, plant services, senior administration, ICPs, housekeeping, Occupational Health and Safety, and representation from affected department(s) (ie. Manager, PCC, Educator).

Multidisciplinary Team

- Not everyone needs to be present for every meeting.
- Everyone has a valuable expertise in their specific area...nobody needs to know everything (Infection Control Practitioners are not engineers)!!!!!!

Multidisciplinary Team

- Ensures that everyone understands and agrees on what infection control measures are required prior to work beginning.
- Infection Control requirements can significantly impact the operations within a department so it is crucial to have representation from any affected area to help identify and rectify possible roadblocks.

Multidisciplinary Team

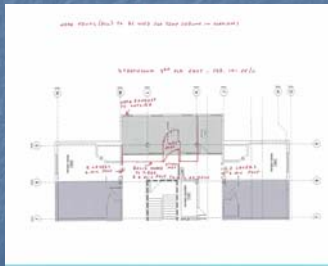
(when the right people aren't involved.....)

- Vernacare product holder above Vernacare.
- Product is loaded and retrieved from the top.



Infection Control Requirements

- Drawing or sequence or both.



GRAHAM

Sequence to remove and wash and disinfect Vernacare product holder in not stage room when:

2. The top cover will be removed and washed in accordance with the manufacturer's instructions. The top cover will be washed with soap and water and disinfected with the appropriate disinfectant.
3. The top cover will be removed and washed in accordance with the manufacturer's instructions. The top cover will be washed with soap and water and disinfected with the appropriate disinfectant.
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6. The top cover will be removed and washed in accordance with the manufacturer's instructions. The top cover will be washed with soap and water and disinfected with the appropriate disinfectant.
7. Once all primary tasks have been completed and the room is clean, the top cover will be removed and washed in accordance with the manufacturer's instructions. The top cover will be washed with soap and water and disinfected with the appropriate disinfectant.
8. The top cover will be removed and washed in accordance with the manufacturer's instructions. The top cover will be washed with soap and water and disinfected with the appropriate disinfectant.
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Infection Control Requirements: Dust Barriers Above the T-Bar Ceiling

- Around ductwork above the t-bar ceiling.



Infection Control Requirements (cont'd)

- Separating construction area from patient care area – after hours work



Infection Control Requirements (cont'd)

- Anything that can't be moved should be covered with 2 layer fire retardent polyethene



Infection Control Requirements (cont'd)

- Negative pressure with construction level 3 and 4.



Infection Control Requirements (cont'd)

- Negative pressure should be at 7.5 Pa or 0.03 in wc (water column) by a pressure monitor.
- If gauge is not in use then tissue test can be used.
- The smoke test is also a viable option.....

Infection Control Requirements (cont'd)

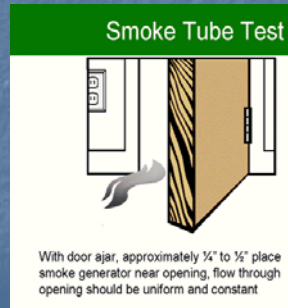
- Smoke test.....



Infection Control has gone to the dogs!

Infection Control Requirements (cont'd)

- Can use a commercially available smoke generating kit consisting of water and acid.
- Minimal smoke.



Infection Control Requirements (cont'd)

- Alternatively, can use incense sticks (two that are side by side recommended).
- Downside....strong odour!

FAQs: Mould



FAQs: Mould

Common sources

- False ceilings
- Carpeting
- Damp wood /Sheetrock
- Bird droppings in air ducts
- Building demolition, construction



FAQs: Mould

- Under right conditions can grow rapidly
- Colonization with masses of spores evident within 3-5 days

Your Multidisciplinary team needs to be involved early!



FAQs: Mould

May appear as

- Black, green or grey spotty circular growth
- Masses of white fine fluffy growth
- Have a musty earth smell which is attributed to the release of metabolic by products
- Mould can produce billions of spores per square metre

FAQs: Mould (successful remediation)

Identification and rectification of underlying cause

Development of a remediation plan to include

1. Method of containment
2. Repairs
3. Cleaning and disposal

FAQs: Decontamination of water sources

- Restoring water after a shut down period can lead to the loosening of debris
- Systematic flushing of systems will reduce the removal of organic debris

Interventions

1. Hot water flushing
2. Chlorination
3. Copper silver ionization treatment

Decontamination should occur when fewest occupants present

FAQs: Decontamination of water sources

1. Hot water flushing
 - High temperatures 71-77°C
 - Ensure water to each outlet for a minimum of 5 minutes
2. Chlorination
 - Need a residual of free chlorine greater than 2ppm
 - Flush each outlet until odor is detected
 - more that 2 hours

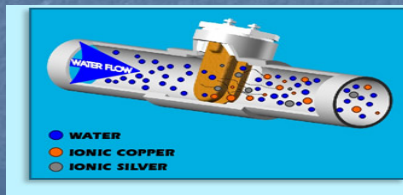
FAQs: Decontamination of water sources

3. Copper- silver ionization treatment

- Effective in penetration of bio films and reduces pipe corrosion.
- 2003 US study of 16 hospitals demonstrated copper-silver ionization to be superior to superheating, hyperchlorination and ultraviolet light for eradicating Legionella (Stout, J, & Yu, V., 2003).

FAQs: Decontamination of water sources

- An electric current is created through copper-silver, causing positively charged copper and silver ions to form. This action serves to disinfect.



Excuse me: I have a headache...



Resources

- CSA 2.2317.13-07 May 2008 Infection Control during construction renovation and maintenance of health care facilities
- Facilities Guideline Institute 2010-Guidelines fro design and construction of Healthcare facilities
- Guidelines for Environmental Infection control in Health-Care facilities 2003CAN/CSA-Z317.2-10 - Special requirements for heating, ventilation, and air-conditioning (HVAC) systems in health care facilities
- Mould Guidelines for the Canadian Construction Industry-2004

Resources

- National Guidelines from the Prevention of Nosocomial Invasive Aspergillosis During construction/Renovation Activities- 2002
- APIC State of the art Report: The role of infection control during construction in health care facilities 2000
- A comprehensive well designed Construction and Renovation Policy will ensure timely notification of ICP and multidisciplinary team.

Resources

- Colleagues within Infection Control
- Colleagues within Maintenance and construction

Communication, collaboration and respect

