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 immunosuppresed 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

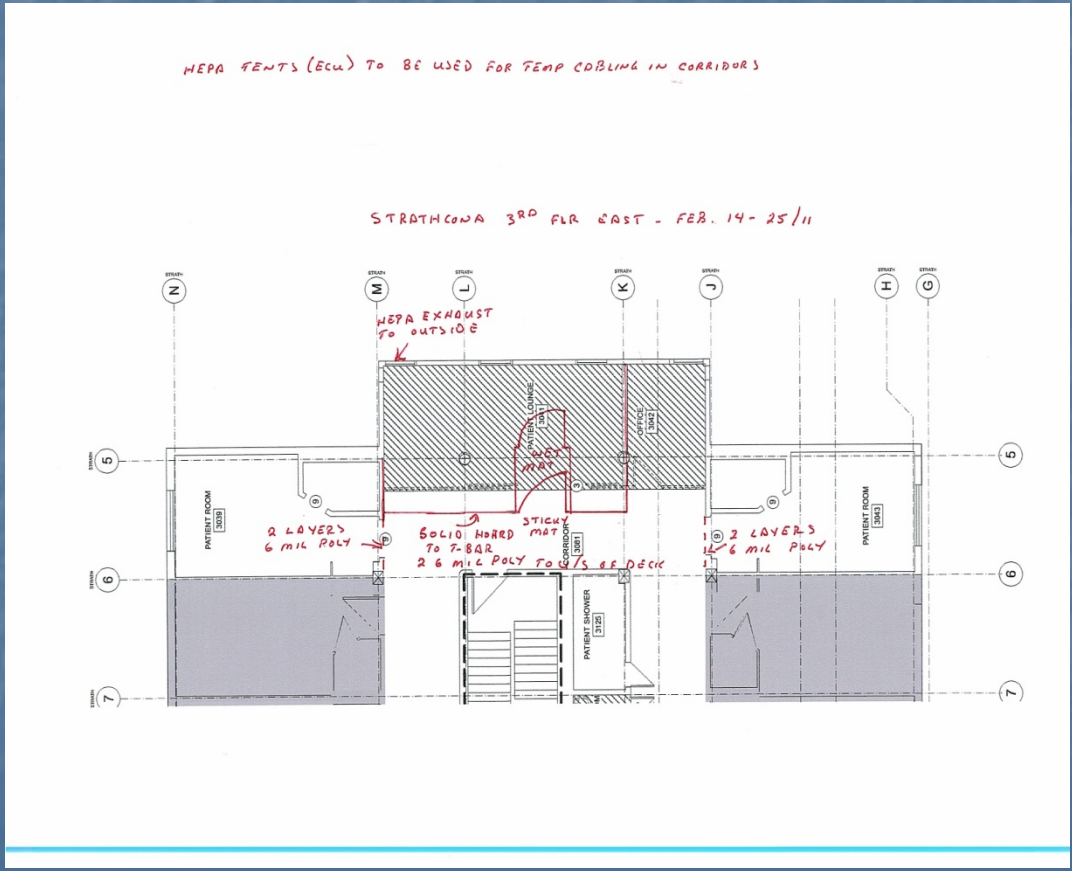
- Ensures that everyone understands and agrees on what infection control measures are required prior to work beginning.
- Infection Control requirements can significantly impact the operations within a department so it is crucial to have representation from any affected area to help identify and rectify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

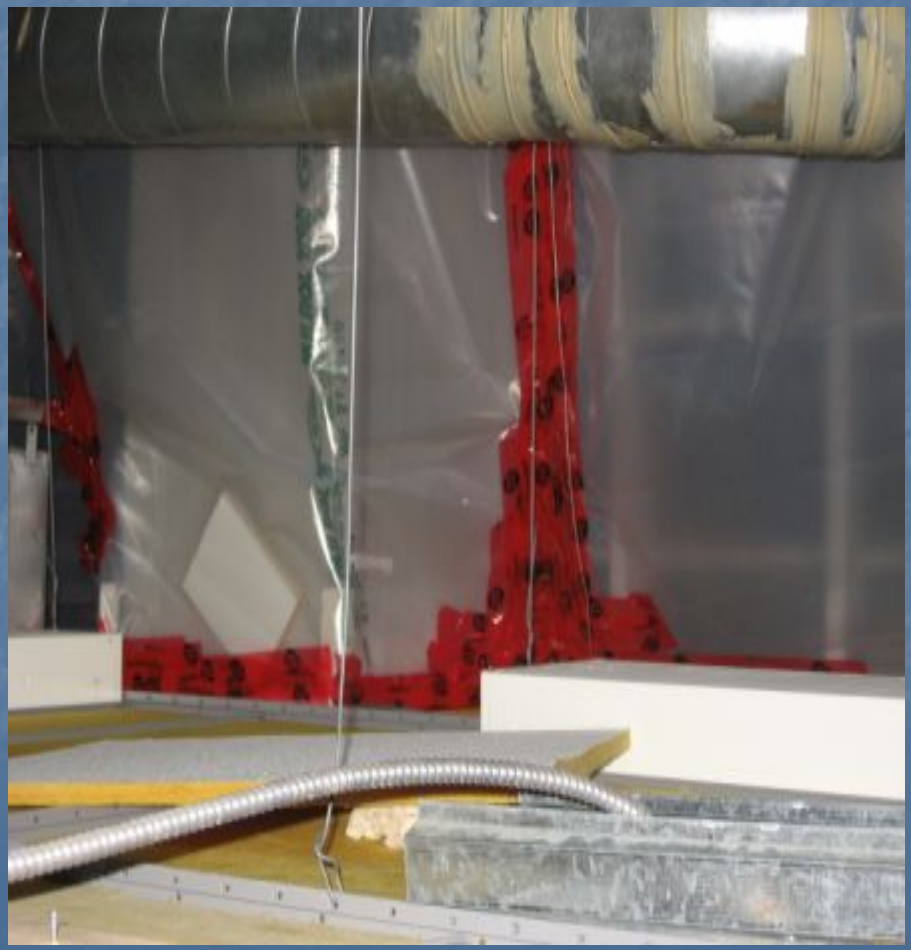
May 10, 2010

Sequence to remove mill work and install vinyl board panel wall in old triage nurses station.

1. 2x6 mm poly will be installed and sealed to separate walk through between ED and Admitting. Existing cupboard and cabinets will be covered
2. The old triage nurses station millwork will be removed from its mounts, dust controlled with a HEPA filter, covered and transported through the vestibule doors.
3. Panel wall components will be brought in and installed on the back portion of the existing space to create an office barrier.
4. Mounting holes in existing walls will be patched and painted.
5. Work to commence in admitting area after 2000 hrs to minimize staff and public interaction/ interruption.
6. Wall Structure is to be installed at the confirmed location in the old triage nurses station. A HEPA filtered Vacuum will be made available to assist in dust control during installation.
7. Once wall/privacy panels have been installed and area is clean, then the walls will be painted to match existing wall colors.
8. Work area to be kept clear of hospital staff and BCAS personnel. Notification of area work to the Emergency Department is to be coordinated through IHA and department head.

Infection Control Requirements: Dust Barriers Above the T-Bar Ceiling

- Around ductwork above the t-bar ceiling.



Infection Control Requirements (cont'd)

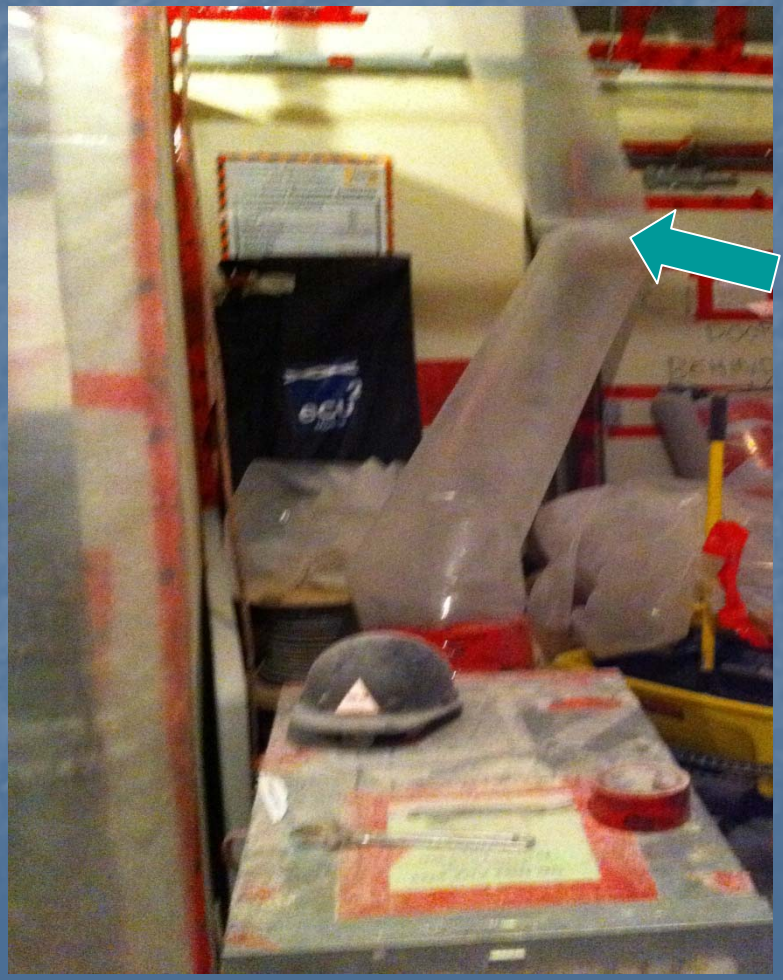
- Separating construction area from patient care area – after hours work

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)

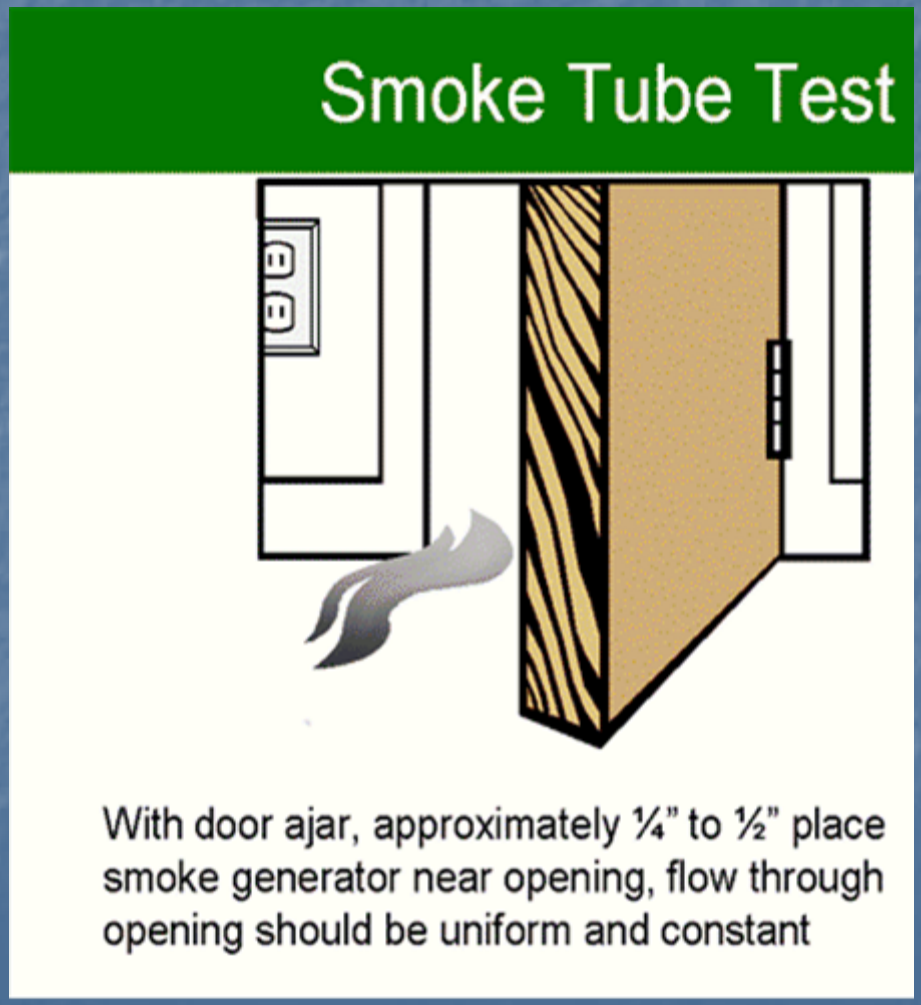
- Negative pressure should be at 7.5 Pa or 0.03 in wc (water column) by a pressure monitor.
- If gauge is not in use then tissue test can be used.
- The smoke test is also a viable option.....

Infection Control Requirements (cont'd)

- Smoke test.....

Infection Control 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

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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

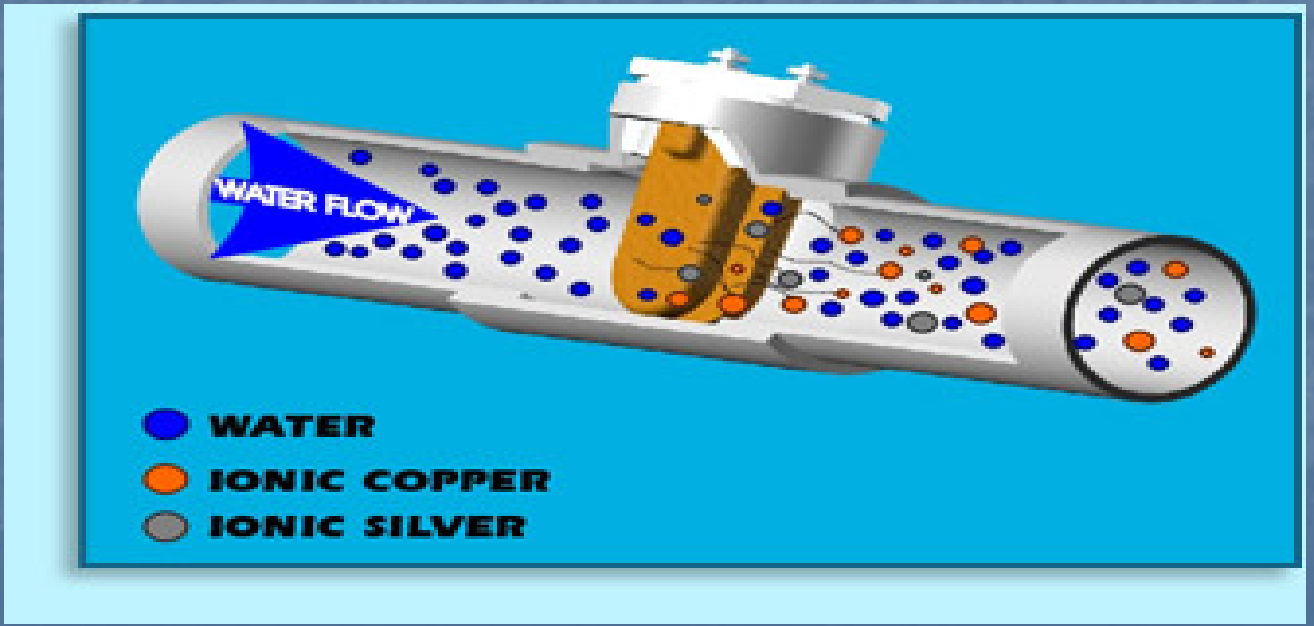
FAQs: Decontamination of water sources

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 erradicating 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...

ATURDAY, APRIL 2, 2011 | BREAKING NEWS: VANCOUVERSUN.COM

CANADA & WORLD

LUMBING

Electronic faucets harbour more bacteria

Baltimore's Johns Hopkins Hospital reverts to old-fashioned faucets after testing

Y ERYN BROWN

Hands-free electronic faucets an save a lot of water – and ecause you don't have to touch hem with your grubby fingers o turn them on, have widely een assumed to help fight the pread of germs, too.

But a team at the Johns Hopkins Hospital in Baltimore has discovered that at their facility, electronic faucets were more likely to be contaminated with Legionella bacteria than the old-fashioned manual type.

So much more likely that the hospital ripped out the newfangled plumbing in patient care areas, and elected to purchase traditional fixtures for new clinical buildings that are set to open in 2012.

"Newer is not necessarily better when it comes to infection control in hospitals," said Johns Hopkins infectious disease expert Dr. Lisa Maragakis, in a statement. Maragakis was the senior investigator on the research.

Initially, the team wasn't seeking to compare traditional and automatic faucets. Rather, it planned to test new faucets to see how often they needed to be flushed out with the treated water hospitals use to combat water-borne bacterial infestations.

But when it became apparent that the automatic faucets harboured far higher levels of Legionella than the manual ones – the bacteria were present in 50 per cent of cultured water samples from the electronic-eye faucets tested, but in only 15 per cent of manual faucets tested in the same part of the hospital – the investigators switched gears.

It is believed the bacteria counts are higher tronic faucets be have a complicate valves that is diffic researchers said.

The study will be the annual meeting ety for Health Care ogy today.

Los Angeles Times

Resources

- CSA 2*Z317.13-07 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 fro 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