Best Practices for Environmental Cleaning for Prevention and Control of Infections In All Health Care Settings (revised May 2012)

Provincial Infectious Diseases Advisory Committee on Infection Prevention and Control (PIDAC-IPC)

Mary Vearncombe, MD, FRCPC

Chair, PIDAC Committee on Infection Prevention and Control
Medical Director, Infection Prevention and Control
Sunnybrook Health Sciences Centre, Toronto
Objectives:

• To briefly outline the Infection Prevention and Control Structure at Public Health Ontario

• To review key concepts and updates in PIDAC Best Practices for Environmental Cleaning for Prevention and Control of Infections in All Health Care Settings, 2012
For the Public’s Health: a plan of action

- Final report of the Ontario Expert Panel (Walker Panel) on SARS and Infectious Disease Control, April 2004
- Operation Health Protection: an action plan to prevent threats to our health and to promote a healthy Ontario, June 2004
  - Creation of a Health Protection and Promotion Agency
  - Public Health Renewal
  - Health Emergency Management
  - Infection Control and Communicable Disease Capacity
  - Health Human Resources
  - Infrastructure for Health System Preparedness
    - surveillance, communication, information technology
Infection Prevention & Control Capacity at Public Health Ontario (PHO)

- PIDAC
- Regional Infection Control Networks (RICNs)
- Just Clean Your Hands
- Core Competency Education Modules
- Infection Control Resource Teams
Originally, to provide scientific advice and support to the CMOH (not operational issues)

Under SPIB → Public Health Branch → PHO
PIDAC-IPC Terms of Reference

Mandate:

- Consider entire healthcare system, without limitation to institutional health care
- Protection of both patients and healthcare providers
- Exclusion of non-healthcare community settings
- Advice to be evidence-based to the greatest extent possible
PIDAC-IPC Terms of Reference

Membership:

• Adult infectious disease physician
• Paediatric infectious diseases/IP&C
• Medical microbiologist
• Public health communicable diseases physician
• Occupational health physician
• ICPs from across the continuum of care (acute, LTC, community)
• Ex-officio liaison: PHO, RICN, MOHLTC-PH branch, MOHLTC-LTC branch, MOL
• Geographic representation
• Other expertise dependent on topic
PIDAC-IPC Process

- Medical writer
- Research librarian
- Administrative support from PHO
- Monthly meetings (10 per year)
- Document development is an intensive process with input from experts
- Draft documents reviewed by relevant external stakeholders
- Documents “evergreen”
  - Review every 2 years or sooner if necessary
  - Comments from field collected and addressed
- MOHLTC given a 30 day notice before release
PIDAC Best Practice Documents

- Developed by committee of experienced, trained, qualified experts
- “Industry” consultants recruited when appropriate
- Documents are evidence-based on published literature
  - Updates/changes to document are evidence-based
- “Best practices” rather than standards
  - Practices for organization to work toward to improve patient safety
PIDAC-IPC Best Practices Documents:

• Best practices for Infection Prevention and Control Programs in Ontario

• Routine Practices and Additional Precautions
  • Annex A: Screening, Testing and Surveillance for Antibiotic Resistant Organisms: MRSA, VISA/VRSA, VRE, ESBL, CRE
  • Annex B: Best Practices for Prevention of Transmission of Acute Respiratory Infection in Health Care Settings
  • Annex C: Testing, Surveillance and Management of Clostridium difficile in Health Care Settings

• Best Practices for Hand Hygiene in Health Care Settings

• Best Practices for Cleaning, Disinfection and Sterilization of Medical Equipment/Devices

• Best Practices for Environmental Cleaning for Prevention and Control of Infections in Health Care Settings

• Best Practices for Infection Prevention and Control in Perinatology

www.pidac.ca
Background

• The cleaning practices are for all settings where care is provided, across the continuum of health care, with the exception of home care
  • includes: pre-hospital and emergency care, acute care, LTC, CCC, rehabilitation, outpatient clinics, office practice

• The best practices provide criteria for health care settings for Environmental Services (ES) managers and for contracted services
  • Same standards apply whether ES is provided in-house or contracted out
Background

- Healthcare Associated Infections (HAIs) occur as a result of health care interventions in any health care setting.
- HAIs are a patient safety issue and represent a significant adverse outcome of the healthcare system.
- The environment around the client/patient/resident influences the incidence of infection.
  - Cleaning and disinfection reduces the numbers of microorganisms in the healthcare environment.
- The goal of cleaning is to keep the environment safe for patients/residents, staff and visitors.
- Environmental Services is an important partner in patient safety.
The Client/Patient/Resident Environment

• All patients shed microorganisms into the healthcare environment
  • Shedding increased if coughing, sneezing, diarrhea
• Bacteria and viruses survive on surfaces for days to months
• The area around the patient is touched by the HCW during care
• Many surfaces and non-critical patient care equipment items have been shown to be contaminated
• Cleaning disrupts the transfer of microorganisms to HCW hands and other patients
Organisms present on patient skin and environment surfaces

- Organisms (e.g. *S. aureus*, enterococci, *Acinetobacter* spp.) present on intact areas of some patients’ skin: 100-1 million colony forming units (CFU)/cm²
- Nearly 1 million skin squames containing viable organisms are shed daily from normal skin
- Patient environment (bed linen, furniture, objects) becomes contaminated by patient organisms

*Transmission: Step 1 (Pittet et al, The Lancet Infectious Diseases, October 2006)*
“High touch” surfaces require particular attention

**High Touch Surfaces**

- Frequent contact with hands
  - higher likelihood to be a source for transmission
- Require more frequent cleaning
  - at least daily or more frequently if higher contamination
- e.g. doorknobs, telephone, call bell, bedrails, keyboards, monitors, etc.

**Low Touch Surfaces**

- Minimal contact with hands
- Require scheduled cleaning and when visibly soiled
- e.g. floors, walls, window sills, etc.
“Hotel Clean” vs “Hospital Clean”

“Hotel Clean”

- A measure of cleanliness based on visual appearance that includes dust/dirt removal, waste disposal and cleaning of windows and surfaces. The basic cleaning that takes place in all areas of the health care setting.

“Hospital Clean”

- A measure of cleanliness routinely maintained in patient care areas of the health care setting.
- Hospital clean is hotel clean with the addition of disinfection, increased frequency of cleaning, auditing and other infection control measures in patient care areas.

Priority for cleaning should be given to patient care areas, rather than administrative or public areas.
Frequency of Routine Cleaning

Depends on:

• frequency of contact: high touch vs low touch surfaces
• type of activity in the area
• vulnerability of the patients in the area
• probability of body substance contamination in the area

• Each area should be evaluated to determine the appropriate routine cleaning
  • Appendix B: Risk Stratification Matrix to Determine Frequency of Cleaning
Environmental Services and Routine Practices

ES staff must adhere to Routine Practices when cleaning

• Movement of ES staff between each patient’s environment needs to reflect practice of other HCWs

• Hand Hygiene:
  • The single most effective measure to prevent spread of HAIs
  • ABHR is the preferred method, unless hands visibly soiled
  • Must be practiced:
    • Before contact with patient/patient environment
    • After potential body substance exposure, even if gloves worn
    • After contact with patient/patient environment
Environmental Services and Routine Practices

• **Gloves must be removed/changed and hand hygiene performed between each patient’s environment**
  • Gloves must not be worn when going from one patient’s environment to another or one unit to another.

• **Cleaning of non-critical items between each patient**
  • Need for clear definition of responsibility for cleaning of each item
Definition of Patient’s Environment
Environmental Services and Outbreaks

• There may be requirements for additional or enhanced cleaning during an outbreak to contain the spread of the outbreak microorganism.

• Allow for surge capacity
  • additional staff, supplies, equipment

• Include ES on the outbreak management team
Construction and Containment

• “Construction Clean”: cleaning performed by construction workers to remove gross soil, dust, dirt, materials, hazards in the construction zone

• Responsibility usually delineated by hoarding
  • inside: construction workers
  • outside: health care setting’s staff

• Clear definition of responsibility in contract

• Clear transport route for materials, clean and used
Evolving Technologies

- Microfibers
- Air disinfection/Fogging
  - Hydrogen peroxide systems
  - Ozone gas
  - Super-oxidized water
- Ultraviolet Irradiation
- Steam vapour
- Antimicrobial-impregnated supplies and equipment
Assessment of Cleanliness and Quality Control

Just because it looks clean doesn’t mean it is clean

- Direct and indirect observation:
  - Visual assessment
  - Observation of performance
  - Patient/resident satisfaction surveys

- Residual Bioburden:
  - Environmental culture
  - ATP Bioluminescence

- Environmental marking
  - Fluorescence under UV light
Occupational Health and Safety Issues

• ES staff should be offered appropriate immunization for health care settings:
  • contracts with supplying agencies should include immunizations for contracted staff

• PPE use for infectious and chemical hazards

• “Healthy workplace” policy

• Chemical safety
  • Cleaning chemicals may be irritants and/or sensitizers
  • Respiratory or skin exposure
  • Do not apply cleaning chemicals using aerosol packs or trigger sprays
Best practices for Environmental Cleaning Educational Toolkit

• Developed jointly by the RICNs, CAEM and OHHA
• Contains 6 educational module CDs:
  • Chain of transmission
  • Routine Practices
  • Cleaning products and tools
  • General cleaning
  • Additional Precautions
  • Audits
• Adult education support materials
• DVD on sample procedures
How we update PIDAC-IPC best practice documents:

• Review of new published evidence
  • Evolving technology
  • Disinfectant formulations
  • Measures of cleaning effectiveness

• Continue to have ES consultant advice at the table

• Feedback from the field
  • Errors/clarifications/omissions
  • Usefulness of the toolkit
Updates to the 2012 version

• All major concepts retained

• Summary of revisions and page reference listed at beginning of document
  • Changes are also highlighted throughout the document

• Additional material added in response to field requests:
  • disinfectant wipes, laundry, flood response, playrooms/toys, adult activity rooms, bleach dilution chart

• Updated information on evolving technologies

• Upgraded recommendations for cleaning of difficult microorganisms, i.e. *C. difficile*, VRE, norovirus
  • *C. difficile*: sporicidal agent recommended for each CDI room; enhanced cleaning if multiple cases on unit
Questions, Comments, Discussion