

## Best Practices for Environmental Cleaning In All Health Care Settings

### Provincial Infectious Diseases Advisory Committee (PIDAC)

Mary Vearncombe, MD, FRCPC  
Chair, PIDAC Subcommittee on Infection Prevention and Control  
Medical Director, Infection Prevention and Control  
Sunnybrook Health Sciences Centre, Toronto

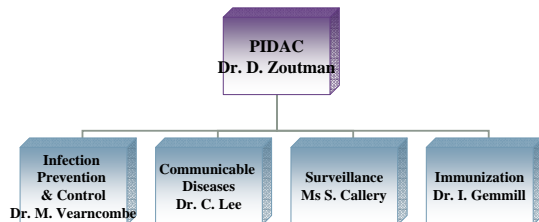


### Objectives:

1. To review the FINAL DRAFT PIDAC *Best Practices for Environmental Cleaning in All Health Care Settings*
2. To receive feedback on the content

### PIDAC Organizational Structure

- to provide advice to Chief MOH  
- [www.PIDAC.ca](http://www.PIDAC.ca)



### IP&C Subcommittee members

- Dr. M. Vearncombe, Chair
- Donna Baker, LTC, Ottawa
- Mary Lou Card, London
- Dr. Maureen Cividino, Occupational Health, Hamilton
- Dr. Allison McGeer, Toronto
- Pat Piaskowski, NWOICN
- Dr. Virginia Roth, Ottawa
- Dr. Kathryn Suh, Paediatric IP&C, Ottawa
- Dr. Kevin Katz, North York
- Dr. Irene Armstrong, Public Health, Toronto
- Liz Van Horne, Liaison, OAHPP
- Dr. D. Zoutman, Kingston
- Dr. Beth Henning, ex-officio, MOHLTC

### IP&C Subcommittee: Environmental Cleaning

- Environmental Services Consultants:
  - Andre Hendriks, Lakeridge Health
  - Keith Sopha, Homewood Health Care
- Writer:
  - Shirley McDonald

### I. Principles of Cleaning and Disinfecting Environmental Surfaces in a Health Care Environment

1. Evidence for Cleaning
2. The Client/Patient/Resident Environment and High Touch Areas
3. Selection of Finishes and Surfaces in the Health Care Setting in Areas Where Care is Delivered
4. Cleaning Agents and Disinfectants
5. New Equipment/Product Purchases

## II. Best Practices for Environmental Cleaning in All Health Care Settings

1. Principles of IP&C Related to Environmental Cleaning
2. Cleaning Best Practices for Client/Patient/Resident Care Areas
3. Laundry and Bedding
4. Waste Management and Disposal of Sharps
5. Care and Storage of Cleaning Supplies and Utility Rooms
6. Additional Considerations
7. Education
8. Assessment of Cleanliness and Quality Control
9. Occupational Health and Safety Issues Related to the Environment

## III. Cleaning and Disinfection Practices for all Health Care Settings

1. Routine Health Care Cleaning Practices
2. Cleaning and Disinfection Practices for Patients/Residents on Additional Precautions
3. Cleaning Spills and Body Substances

## Appendices

- A: Ranking System for Recommendations
- B: Risk Stratification Matrix to Determine Frequency of Cleaning
- C: Visual Assessment of Cleanliness
- D: Sample Environmental Cleaning Checklists and Audit Tools
- E: Advantages and Disadvantages of Hospital-grade Disinfectants and Sporicides Used for Environmental Cleaning
- F: Cleaning and Disinfection Decision Chart for Non-critical Equipment
- G: Recommended Minimum Cleaning and Disinfection Level and Frequency for Non-critical Client/Patient/Resident Care Equipment and Environmental Items

## 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
- Overcrowding, understaffing and pressures to move more patients through the health care system can challenge completion of environmental cleaning

## 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

## I. Principles of Cleaning and Disinfecting Environmental Surfaces in a Health Care Environment

1. Evidence for Cleaning
2. The Client/Patient/Resident Environment and High Touch Areas
3. Selection of Finishes and Surfaces in the Health Care Setting in Areas Where Care is Delivered
4. Cleaning Agents and Disinfectants
5. New Equipment/Product Purchases

### I. 1. Evidence for Cleaning

- Health care environment has been shown to be a reservoir for bacteria (e.g. MRSA, VRE, *C. difficile*, *Acinetobacter*, *Pseudomonas*, etc.) viruses (e.g. influenza, RSV, norovirus, rotavirus, etc.) and fungi (e.g. *Aspergillus*, etc.)
- Presence of the microorganism in the environment does not prove contribution to infection
- Categories of literature cited to show causality:
  - Studies showing survival or proliferation in the environment
  - Studies showing direct means of transfer from contaminated surfaces to patients/residents
  - Studies showing exposure to contaminated surfaces is associated with colonization/infection
  - Studies showing that decontamination results in lower rates of colonization/infection

### I. 2. The Client/Patient/Resident Environment and High Touch Areas

- Patients shed microorganisms into the healthcare environment
  - 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
- “High touch” surfaces require particular attention

### I. 3. Selection of Finishes and Surfaces in the Health Care Setting in Areas Where Care is Delivered

- Ease of cleaning must be considered in choice of materials/finishes
- Materials/finishes must be compatible with hospital-grade cleaners/disinfectants
- IP&C and ES involvement in choice of materials/finishes
- Characteristics of surfaces:
  - Ease of maintenance/repair
  - Cleanability
  - Inability to support microbial growth
  - Smooth, nonporous
  - Absence of seams

### I. 3. Selection of Finishes and Surfaces in the Health Care Setting in Areas Where Care is Delivered

- Regular cleaning program should be in place for all items
- Replace worn, stained, torn, cracked items
- Do not use cloth furnishings that cannot be cleaned in patient care areas
- If carpeting is used it must be cleanable and maintained
  - Not for use in areas where spills/contamination likely or areas for immunocompromised patients
- Antimicrobial treated surfaces are not recommended

### I. 4. Cleaning Agents and Disinfectants

- **Cleaning:** physical removal of foreign material from a surface/object
- **Disinfection:** process to kill microorganisms (except spores) on inanimate surfaces/objects
- IP&C and ES should be involved in choice of cleaning and disinfecting agents
- Products should have a DIN from Health Canada
- Follow manufacturer’s instructions for dilution and contact time
- Prevent contamination of solution:
  - frequently change solution;
  - no “double dipping”
- Use PPE as appropriate

### I. 5. New Equipment/Product Purchases

- Non-critical medical equipment must be capable of being cleaned/disinfected according to standards
  - Must have written, item specific, manufacturer’s instructions
- IP&C and ES should be involved in selection of non-critical medical equipment
- Do not purchase equipment that cannot be cleaned
- Items provided by outside agencies are subject to the same standards (e.g. therapeutic beds/mattresses)

## II. Best Practices for Environmental Cleaning in All Health Care Settings

1. Principles of IP&C Related to Environmental Cleaning\*
2. Cleaning Best Practices for Client/Patient/Resident Care Areas\*
3. Laundry and Bedding
4. Waste Management and Disposal of Sharps
5. Care and Storage of Cleaning Supplies and Utility Rooms\*
6. Additional Considerations\*
7. Education\*
8. Assessment of Cleanliness and Quality Control\*
9. Occupational Health and Safety Issues Related to the Environment\*

## II. 1. Principles of IP&C Related to Environmental Cleaning

### Routine Practices

- ES staff must adhere to RP when cleaning
- 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

## II. 1. Principles of IP&C Related to Environmental Cleaning

### Cleaning and disinfection practices

- Each health care setting should have policies and procedures
- Cleaning is a continuous process
- Cleaning responsibilities and scope should be clearly defined; ensure no items are missed
- Frequency of cleaning dependent on risk classification of the surface or item

## II. 1. Principles of IP&C Related to Environmental Cleaning

### “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.

### Components of “Hotel Clean”

- Floors and baseboards are free of stains, visible dust, spills and streaks
- Walls, ceilings and doors are free of visible dust, gross soil, streaks, spider webs and handprints
- All horizontal surfaces are free of visible dust or streaks (includes furniture, window ledges, overhead lights, phones, picture frames, carpets etc.)
- Bathroom fixtures including toilets, sinks, tubs and showers are free of streaks, soil, stains and soap scum
- Mirrors and windows are free of dust and streaks
- Dispensers are free of dust, soiling and residue and replaced/replenished when empty
- Appliances are free of dust, soiling and stains
- Waste is disposed of appropriately
- Items that are broken, torn, cracked or malfunctioning are replaced

## II. 1. Principles of IP&C Related to Environmental Cleaning

### “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.**

## Components of "Hospital Clean"

### HOTEL CLEAN

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- High-touch surfaces in client/patient/resident care areas are cleaned and disinfected with a hospital-grade disinfectant
- Non-critical medical equipment is cleaned and disinfected between clients/patients/residents
- Wear appropriate PPE during cleaning for clients/patients/residents on Additional Precautions

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CLEANING PRACTICES ARE MONITORED AND AUDITED WITH FEEDBACK AND EDUCATION

NOTE: Frequency of Hospital Clean is determined according to the Risk Stratification Matrix in Appendix B

## II. 1. Principles of IP&C Related to Environmental Cleaning

### 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

## II. 1. Principles of IP&C Related to Environmental Cleaning

### Personal Protective Equipment (PPE)

- PPE is used:
  - to protect staff from microorganisms and chemicals
  - to prevent transmission of microorganisms from one patient to another
- Gloves:
  - Worn if there is a risk of hand contact with body substances, chemicals
  - Remove gloves immediately after the task for which they are worn and discard
  - Clean hands after removing gloves
  - Use of gloves does not replace need for hand hygiene
  - Remove gloves and perform hand hygiene on leaving each patient room/bed space; do not walk from room-to-room or to other areas wearing gloves
  - Do not wash or re-use disposable gloves
  - Select type of glove appropriate to task
  - Prolonged wearing of gloves increases risk of irritant contact dermatitis

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care Areas

All health care settings should provide adequate resources for ES:

- One individual with overall responsibility
- Written policies and procedures, including defined responsibility and accountability for specific items and areas
- Adequate human resources
- Priority given to patient care areas
- Outbreak response capacity that does not compromise regular patient care area cleaning
- Education of cleaning staff
- Monitoring of cleanliness
- Supervision by trained, knowledgeable staff
- Ongoing review of procedures
- **Same standards apply whether ES is provided in-house or contracted out**

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care Areas

Staffing levels should take in to account:

- Building factors:
  - age, design, size, climate, season, outside soil, type of floors/walls, presence of carpet/upholstered furniture, area of patient care vs administrative/public
- Occupancy factors:
  - rate and volume of cases, patient acuity, cleaning methodology, facility ARO rates, number of isolation rooms, outbreaks, etc.
- Equipment factors:
  - type of cleaning equipment available, placement of custodial closets
- Training:
  - training for new staff and auditing activities influence supervisory staff levels, staff experience
- Legislative requirements:
  - supervisory responsibilities under OHSA

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care 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

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care Areas

### 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.

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care Areas

### Vulnerability of the client/patient/resident population

- More susceptible to infection
  - Medical condition or lack of immunity
  - e.g. oncology, transplant, newborns, burns, etc.
- Less susceptible to infection
  - All other patients

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care Areas

### Probability of contamination of items/surfaces

- Heavy contamination
  - Exposed to large amounts of blood, body fluids, secretions, excretions
  - e.g. delivery suite, OR, haemodialysis unit, burn unit, etc.
- Moderate contamination
  - Contaminated with blood or other body fluids as part of routine activity
  - e.g. patient room, patient bathroom
- Light contamination
  - Surfaces not exposed to blood or other body fluids
  - e.g. lounges, libraries, offices

## II. 2. Cleaning Best Practices for Client/Patient/Resident Care Areas

### Non-critical patient care equipment

- Equipment that contacts only the intact skin of the client/patient/resident or the environment
- Requires cleaning and disinfection between uses for each patient
- Selection of equipment should include cleaning and disinfection considerations
- Written policies and procedures for each item defining frequency, level and responsibility for cleaning

## II. 5. Care and Storage of Cleaning Supplies and Utility Rooms

- Use automated dispensing systems
- No “topping up”
- Toilet brushes remain in patient bathroom
- Clean and dry cleaning equipment between uses
- Sufficient, dedicated housekeeping closets; appropriately sized and designed
- Separation of clean and soiled items on carts
- Separation of clean and soiled utility rooms
- Absence of personal items and food from housekeeping carts, closets, utility rooms

## II. 6. Additional Considerations

### 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

## II. 6. Additional Considerations

### Evolving Technologies

- Microfibers
- Air disinfection/Fogging
  - Hydrogen peroxide vapour
  - Ozone gas
  - Super-oxidized water
- Ultraviolet Irradiation
- Steam Vapour
- Antimicrobial-impregnated supplies and equipment

## II. 7. Education

- Environmental cleaning should be supervised and performed by knowledgeable, trained staff
- Training program should include documentation of training and proficiency verification
- IP&C component should include:
  - Routine Practices
  - Hand hygiene
  - Signage for Additional Precautions
  - Use of PPE
  - Prevention of blood and body fluid exposure, including sharps injury prevention
- ES managers/supervisors should be trained and certified

## II. 8. Assessment of Cleanliness and Quality Control

- 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

## II. 9. Occupational Health and Safety Issues

- ES staff should be offered appropriate immunization for health care settings:
  - annual influenza, MMR, varicella, tetanus, hepatitis B, acellular pertussis
  - contracts with supplying agencies should include the above for contracted staff
- PPE use for infectious and chemical hazards
- System for preventing and managing staff exposures
- "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
- Choose equipment following ergonomic principles

## III. Cleaning and Disinfection Practices for all Health Care Settings

1. Routine Health Care Cleaning Practices
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## III. 1. Routine Health Care Cleaning Practices

- Goal of cleaning is to keep the environment safe for clients/patients/residents, staff and visitors
- Sample procedures are provided for:
  - general cleaning practices
  - daily routine cleaning of patient/resident rooms
  - terminal/discharge cleaning of patient/resident rooms
  - routine bathroom cleaning
  - floor cleaning
  - carpet care
  - ice machines
  - playrooms/toys
  - ambulances
  - operating rooms
  - reprocessing areas
  - medical laboratories
  - haemodialysis units
  - neonatal ICUs and isolettes
  - biological spills

### III. 2. Cleaning and Disinfection Practices for Patients/Residents on Additional Precautions

- PPE to be worn as per signage outside the room
- Contact Precautions: sample daily and terminal cleaning procedures are provided for:
  - VRE
  - *C. difficile*
  - Norovirus
  - ( for MRSA – routine terminal/discharge cleaning)
- Droplet Precautions:
  - routine daily and terminal cleaning
  - attention to “high touch” surfaces
- Airborne Precautions:
  - routine daily and terminal cleaning
  - allow sufficient time, dependent on air changes per hour, for air to clear

### Appendices

- A: Ranking System for Recommendations
- B: Risk Stratification Matrix to Determine Frequency of Cleaning
- C: Visual Assessment of Cleanliness
- D: Sample Environmental Cleaning Checklists and Audit Tools
- E: Advantages and Disadvantages of Hospital-grade Disinfectants and Sporicides Used for Environmental Cleaning
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### Appendix B: Risk Stratification Matrix to Determine Frequency of Cleaning

- For each type of client/patient/resident care area
- Step 1: categorize factors:
- Probability of contamination
    - heavy = 3; moderate = 2; light = 1
  - Vulnerability of the population
    - more susceptible = 1; less susceptible = 0
  - Potential for exposure
    - high touch = 3; low touch = 1
- Step 2: add to get score: maximum 7; minimum 2
- Step 3: determine cleaning frequency based on risk stratification matrix
- examples provided

| Total Risk Score | Risk Type     | Minimum Cleaning Frequency  |
|------------------|---------------|---|
| 7                | High risk     | Clean after each case/event/ procedure and at least twice per day<br>Clean additionally as required |
| 4-6              | Moderate Risk | Clean at least once daily<br>Clean additionally as required (e.g., gross soiling)                   |
| 2-3              | Low Risk      | Clean according to fixed schedule<br>Clean additionally as required (e.g., gross soiling)           |

### Status of Document and Next steps:

- Stakeholder feedback reviewed and incorporated, as appropriate, by PIDAC IP&C Subcommittee
- Reviewed by PIDAC main committee and given final approval
- CMOH final approval pending, before posting
- Educational rollout:
  - CanClean, “Red, White and Green”, OHA HealthAchieve 2009
  - PIDAC/OHA videoconference

### PIDAC Best Practices for Environmental Cleaning In All Health Care Settings

- Questions?
- Feedback!
- Suggestions on practical strategies to get to front line?
  - train-the-trainer?
  - partner with RICN Coordinators?
  - other?