Infection Prevention and Control
Is it the same infection prevention and control issues?

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Objectives

1. Identify the published guidelines (i.e. HICPAC, AORN, ASHERS) associated with health care environmental services.

2. Discuss the development of a consistent method for the disinfection of common touch points throughout the hospital and identify what high touch surfaces ES should concentrate efforts.

3. Describe assessment processes to measure acceptable implementation and compliance of IC guidance.

4. Describe methods to build best practice relationships with the ICP to achieve the same goals.
Guidelines

CDC Healthcare Infection Control Practices Committee
Guidelines for Environmental Infection Control in Health-Care Facilities

• Clean and disinfect- high touch surfaces
• Do not use alcohol as a disinfectant
• Non critical medical equipment surfaces should be cleaned with a detergent/disinfectant
• High-level disinfectants should not be used on environmental surfaces (off label use)
• Handle linen with a minimum of agitation
• Plan for Construction Renovation Remediation Repair and Demolition projects
• Handle regulated waste according to OSHA guidelines
• Control the spread of microorganisms
Guidelines

AORN Recommended Practice: Environmental Cleaning in the Perioperative Setting

• All horizontal surfaces should be damp dusted before first case of the day
• EPA registered disinfectants should be used to clean floors, non critical equipment, and other surfaces
• Clean operating rooms after each surgical procedure
  - move OR table
  - mop entire floor
• Terminally clean after scheduled cases are completed
• Follow an established routine
• Prevent contamination of disinfectant
• Take precautionary measures to limit transmission of microorganisms
Guidelines

ASHES Practice Guidelines

• Have a checklist developed for area being cleaned
• Clear and concise assignments
• Use pour bottles, not spray bottles for disinfectants
• Use appropriate disinfectant for the surfaces and equipment being cleaned
  - Basic elements for disinfectants- contact time, temperature, concentration, mechanical action and pH
• Cleaning and disinfecting all high touch areas
• Do not re-place dirty mop or cleaning cloth in disinfectant solution
• Prevent transmission of microorganisms
Touch Points

Some of the dirtiest areas in the environment:

- Kitchen sink - greater than 500,000 bacteria per square inch
- Airplane bathrooms
- Wet laundry
- Public drinking fountains
- Shopping cart handles
- ATM buttons
- Women’s purses
- Playgrounds
- Health club (exercise machines/exercise mats)
- Home bathtubs
- Remote control in hotels
## Touch Points in the Healthcare Facility

- Sink
- Bathroom light switch
- Toilet seat
- Toilet hand rail
- Tray table
- Bedside table
- Toilet handle

- Side rail
- Call box
- Telephone
- Chair
- Bedpan cleaner
- Room door knobs
## Pathogenic Organisms

<table>
<thead>
<tr>
<th>Viruses Non-enveloped (non lipid)</th>
<th>Viruses Enveloped (lipid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fecal-oral route, fomites</td>
<td>Respiratory droplets, blood, mucus, saliva and semen</td>
</tr>
<tr>
<td>Sturdy</td>
<td>Organ transplants</td>
</tr>
<tr>
<td>Drying, detergents, extremes of pH, temperature may not effect them</td>
<td>Fragile</td>
</tr>
<tr>
<td>Stomach acid may not effect them</td>
<td>Must remain wet for transmission</td>
</tr>
</tbody>
</table>
## Types of Viral Diseases

<table>
<thead>
<tr>
<th>Non-enveloped (non lipid)</th>
<th>Enveloped (lipid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis A</td>
<td>Hepatitis B, C</td>
</tr>
<tr>
<td>Parvovirus</td>
<td>Respiratory Syncytial Virus</td>
</tr>
<tr>
<td>Rotovirus</td>
<td>Adenovirus</td>
</tr>
<tr>
<td>Norwalk Virus</td>
<td>Influenza</td>
</tr>
<tr>
<td>Enterovirus</td>
<td>Coronavirus</td>
</tr>
</tbody>
</table>
Bacteria

Resistant bacteria
• MRSA
• VRE
• Extended Spectrum Beta Lactamase (Gram negative bacteria produce)
• Carbapenem-Resistant Enterobacteriaceae

Bacteria of concern
• Clostridium difficile
• Acinetobacter baumanii
• A. calcoaceticus
• Pseudomonas aeruginosa
• E. coli 0157:H7

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Methods to disinfection

- Recognize level of bioburden
- Be familiar with type and level of contamination
- Use the appropriate concentration of disinfectant and exposure time
- Use the correct disinfectant for the object being cleaned
- Use PPE if needed while using a disinfectant
- Follow facility policy and procedure
- Be consistent

“Dust bunnies”
Assessment Process

- Use of checklist
- Observation
- Clear expectations
- Educational review of cleaning
- Role model
- Champions
- Adequate staffing
- Objective feedback
- Recognition program- with pictures on a bulletin board
- Adenosine triphosphate bioluminescence testing
- Environmental culturing- molecular epidemiology
- Hand hygiene
Relationships- IP and EVS working together

Educational Review of cleaning
• Hand hygiene review
• Safe usage of products
• Reinforce proper technique
• Partners in Infection Prevention and Control
• Role model
• Speak the same language
• Mutually identify obstacles
• View improvement as a team effort owned by everyone
• Share the responsibility and accountability
Staffing Issue Risk Factors

- High rates of occupancy
- High rate of turnover
- Lack of oversight
- Level of motivation
- Educational intervention and performance feedback
- Environmental hygiene failures
Performance Measurements

Construction example:

- Documentation of Infection Preventionist and EVS involvement and integration of roles in Construction, Renovation, Remediation, Repair, and Demolition

- Identification of water damage and need for repair and drying of wet structural or porous materials within a 72 hour time frame.

- Assist in determining if environmental contamination is occurring or has occurred
Cartoon by Chad Carpenter

Remember, there's not going to be enough left for everyone to have seconds, so just take what you need.
2009 Infection Prevention & Hospital Cleaning Survey

Materials Management, APIC and ASHES Survey
Hospitals measure of compliance with cleaning standards
✓ Observation-based audit 87%
✓ Patient satisfaction scores 78%
✓ Monitor compliance with performance targets 34%
✓ Risk-based audit 15%
✓ Environmental culture results 14%
✓ Measure cleaning rates of high risks objects 14%
2009 Infection Prevention & Hospital Cleaning Survey

Steps taken to optimize EVS staff performance

- Hands on training in cleaning protocols 84%
- Education transmission of HAI pathogens resultant infection 81%
- Ongoing performance feedback 62%
- Predefined performance targets for patient area cleaning 31%
- Patient interviews by supervisory staff 27%
- Well-defined quality management programs 24%
- Use of visually observable tool (e.g. black light, ATP) 20%
- Quality control assessments tied to compensation 10%
2009 Infection Prevention & Hospital Cleaning Survey

Cleaning practices and technologies routinely employed

- Sodium hypochlorite 68%  Plan to use 6%
- Quaternary ammonium 85%  Plan to use 1%
- Disinfectant-impregnated wipes 77%  Plan to use 3%
- Microfiber cloths 46%  Plan to use 17%
- Micro fiber mops 68%  Plan to use 14%
- Copper and copper-alloy fixtures 4%  Plan to use 2%
- Pour bottles to dispense disinfectants 42%  Plan to use 4%
- Change cubical curtains after patient discharge HAI 57%  Plan to use 13%
- Hydrogen peroxide vapor decontamination system 2%  Plan to use 5%
2009 Infection Prevention & Hospital Cleaning Survey

Hospitals using chemicals to verify cleaning of high risk objects

- Bed rail 16%
- Tray table 16%
- Nurse call device 16%
- Bedside table 15%
- Bathroom knobs 15%
- Toilet seat 15%
- Patient telephone 15%
- Sinks 14%
- Toilet handle 14%
- Patient doorknobs and cabinet pulls 14%
- Bathroom light switch 14%
- Restroom grab bars 13%
2009 Infection Prevention & Hospital Cleaning Survey

Eleven challenges to cleaning and disinfection

1. Pressure to expedite room turns 42%
2. Assigned responsibility for mobile objects 41%
3. High hospitality occupancy 35%
4. Inadequate time to properly clean 32%
5. Reluctance to clean electronic equipment with saturated cloth 32%
6. Lack of knowledge of the role specific high-risk play in transmission 20%
7. Too busy/insufficient time allowed to follow consistently protocols 28%
8. High turnover rates of EVS 26%
9. Inadequate financial resources to invest in cleaning technologies & equipment 26%
10. Lack of objective microbiologic standards for hospital cleaning 20%
11. Lack of knowledge of the role specific high-risk play in transmission 20%
Pets in the Healthcare Facility

Animal assisted activities

• Interaction of patients with animals during pet visitation
• Benefits
  - Distraction from pain and loneliness
  - Reduced anxiety and depression
  - Increased physical and social activity
Pets in the Healthcare Facility

Negative effects

• Phobias
• Allergies
• Bites, scratches
• Disease transmission 80% carried at least one potentially zoonotic pathogen
  – C difficile 58%
  – Salmonella 3%
  – ESBL E coli 4%
  – Giardia 7%
  – Toxocara canis 2%
  – Paturella canis/multicida 22%/7%

- Group A streptococci 0%
- MRSA 0%
- Ringworm 0%
- Cryptosporidium spp 0%
Pets in the Healthcare Facility

Transmission from patients
- 26 dogs studied in hospital visitation Canadian study
  Two dogs picked up pathogens on their fur/paws from patients
Cartoon by Chad Carpenter

THE DANGER OF HAVING EYES BIGGER THAN YOUR STOMACH

LIFT!

LIFT!
Summary

• Use Guidelines
• Use methods for identifying & disinfecting touch points
• Assess process for measuring implementation & compliance
• Enhance relationship with the IP to achieve mutual goals
Thank You
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References

• CDC Guideline for environmental infection control in healthcare facilities. MMWR 2003:52(RR-10):1-42. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm
• Burton GR, Engelkirk PG. Diversity of Microorganisms Part 1: Acellar and Procaryotic Microbes. In: Microbiology for Health Sciences. Lippincott, Williams & Wilkins: 71-107