

The Role of the Clinical Environment of Care in Preventing Healthcare-Associated Infections

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Disclosures

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CE Accreditation

1 Contact Hour

Participants must complete entire activity. No partial credit will be awarded

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There is no conflict of interest for any planner or presenter

- This CNE activity has been jointly provided by Terri Goodman & Associates collaboratively with DFW APIC.
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Objectives

- Discuss the role of the clinical environment of care in the transmission of Healthcare Associated Infections
- Discuss the impact of interprofessional collaboration between Environmental Services and Infection Prevention to achieve the IHI Triple Aim and reduce Healthcare Associated Infections
- Discuss the core elements of an integrated infection control program centered around the clinical environment of care

MUCH OPPORTUNITY!!!!

- Many HAIs are preventable with current recommendations
- Failure to use proven interventions is unacceptable
- Only 30%-38% of U.S. hospitals are in full compliance
- Just 40% of healthcare personnel adhere to hand hygiene
- Less understood role of the healthcare environment in transmission

Source: Centers for Disease Control and Prevention

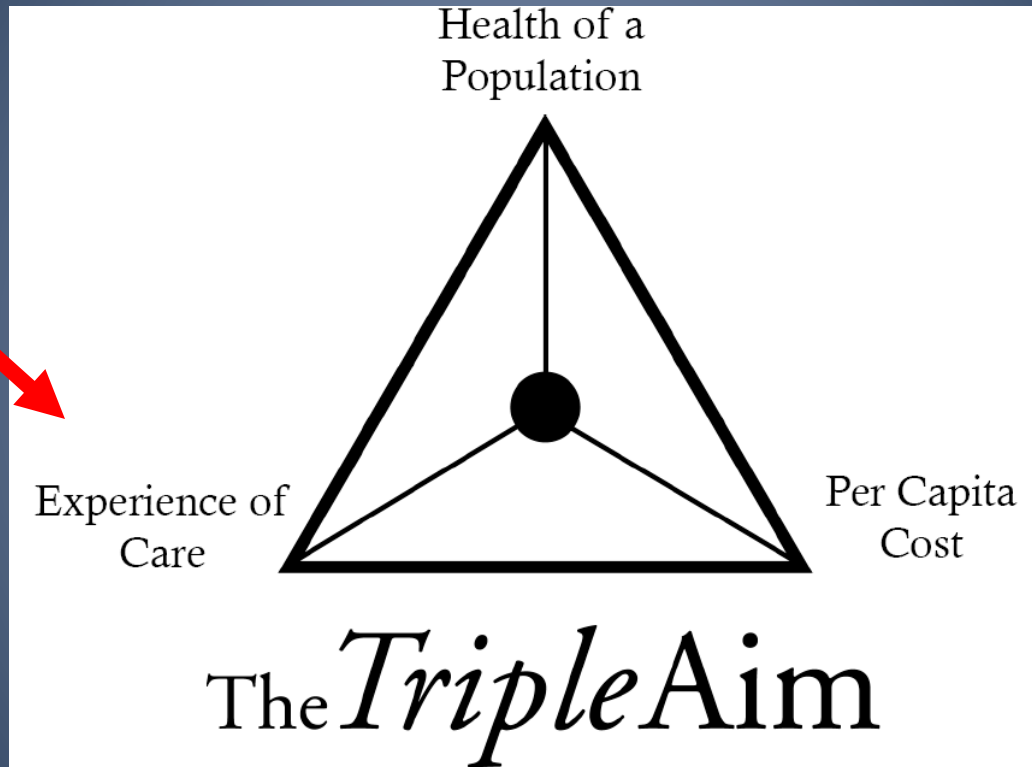
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The Future of Healthcare

Clinical
Environment
of Care



Source: Image Courtesy of Institute for Healthcare Improvement

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Pre-Acute Care

Acute Care

Post-Acute Care

Today's Continuum of Care.

Most appropriate care in the most appropriate setting.



Source: Image Courtesy of Western Maryland Health System

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What is the Perception of the Patients about the Environment?

Are all Infections preventable?

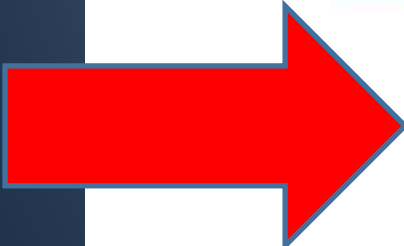
Is my environment clean?

What should I do to prevent infection?

What is responsible for keeping my environment clean during my stay?

These are Changing Times

in



The Death of the Healthcare
"Housekeeper"

Published on November 3, 2016

Reference: <https://www.linkedin.com/pulse/death-healthcare-housekeeper-garrett-jr-phd-msn-mph-fnp-va-bc>

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How Does Transmission Occur?



Fundamental Question

5-10 Years
Ago

Today

*What role does
the
Environment
play in
transmission of
HAI's?*

Well Look at Recent News



Source: Centers for Disease Control and Prevention

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What do these have in common?



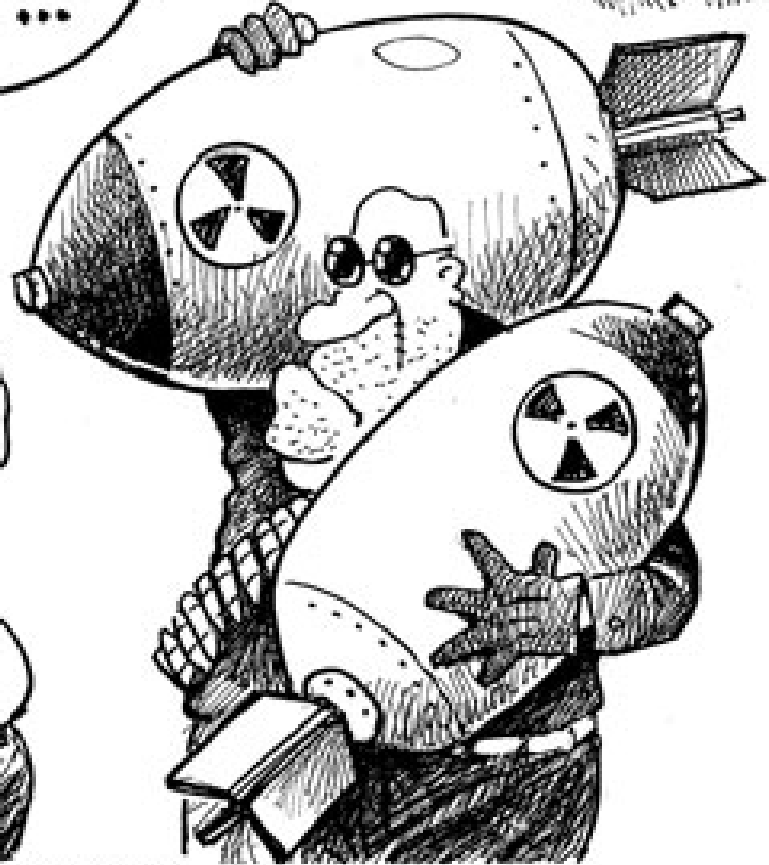
Transportation
Security
Administration



TSA AIRPORT SCREENING

SORRY, SIR...
YOU'RE ALLOWED
ONLY **ONE**
CARRY-ON ...

GATE
5



What is the Ideal Situation?



Case Study

- 62 pt admitted to ICU with sepsis for 42 days
 - Ventilator
 - Multiple Central and Peripheral Lines
 - Multiple Rounds of IV Abx
 - Multiple Surgeries
 - Total Number of unique environmental surfaces and devices: 52

Interdisciplinary Care Team

- RNs: 63
- MD/DOs: 21
- PA/NPs: 13
- PharmDs: 6
- CNAs: 16
- EVS: 5
- Total: 124 Personnel Interacting with Pt

Transmission of Infection

Role of the Environment



Nursing/Techs

Environmental Services

Patient's Family

**Engineering/Architects/
Interior Designers**

Survivability in the Environment

Environmental Contamination

Environmental survival of key pathogens on hospital surfaces

Pathogen	Survival Time
<i>S. aureus</i> (including MRSA)	7 days to >12 months
<i>Enterococcus</i> spp. (including VRE)	5 days to >46 months
<i>Acinetobacter</i> spp.	3 days to 11 months
<i>Clostridium difficile</i> (spores)	>5 months
Norovirus (and feline calicivirus)	8 hours to >2 weeks
<i>Pseudomonas aeruginosa</i>	6 hours to 16 months
<i>Klebsiella</i> spp.	2 hours to >30 months

Source: <https://image.slidesharecdn.com/newtechnologiesinenvironmentalcleaning-160330051223/95/new-technologies-in-environmental-cleaning-7-638.jpg?cb=1459314857>

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The Inanimate Environment Can Facilitate Transmission

X represents VRE culture positive sites



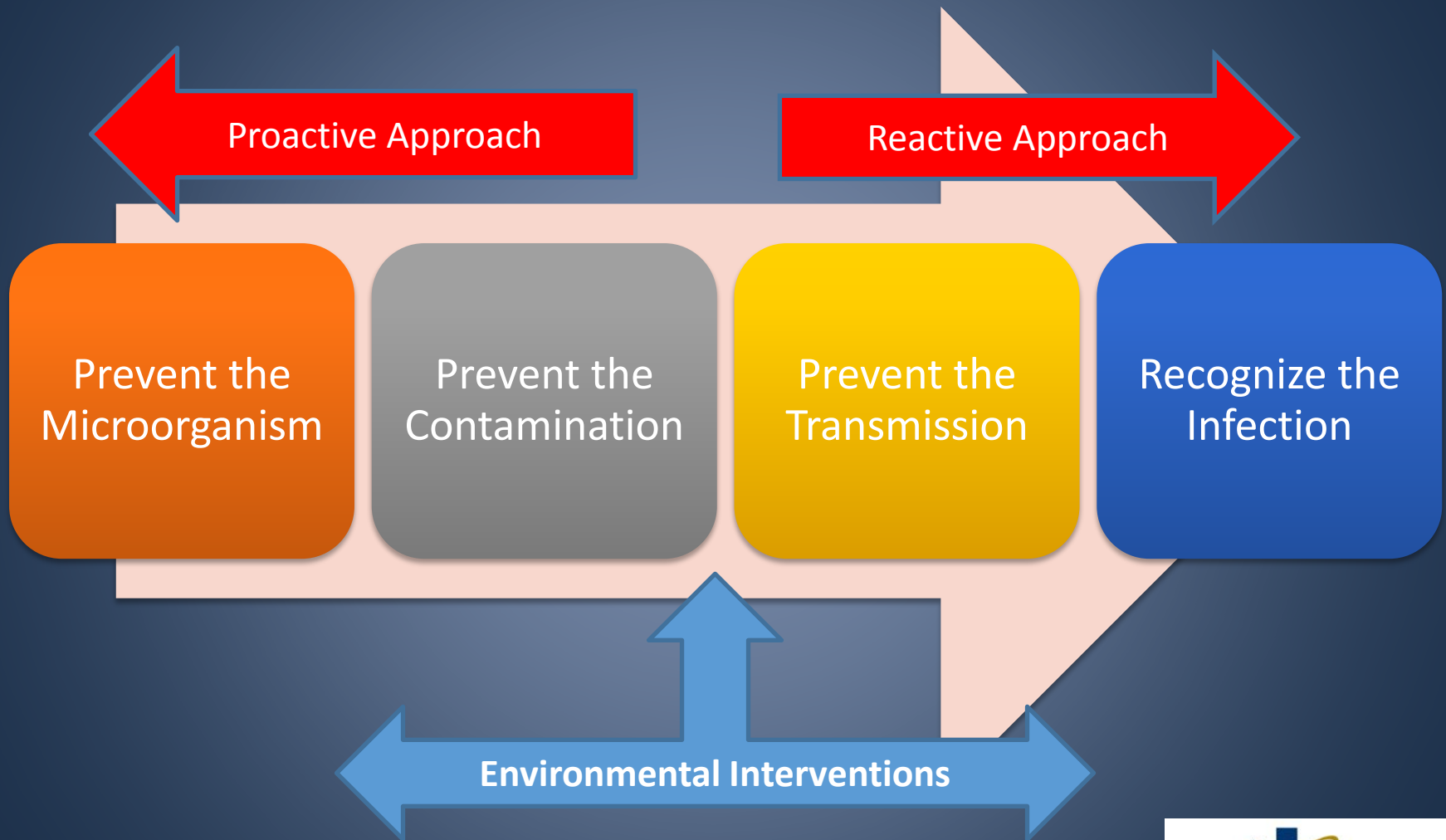
~ **Contaminated surfaces increase cross-transmission** ~

Abstract: The Risk of Hand and Glove Contamination after Contact with a VRE (+) Patient Environment. Hayden M, ICAAC, 2001, Chicago, IL.

Putting Things in Perspective



Infection Control Imperatives



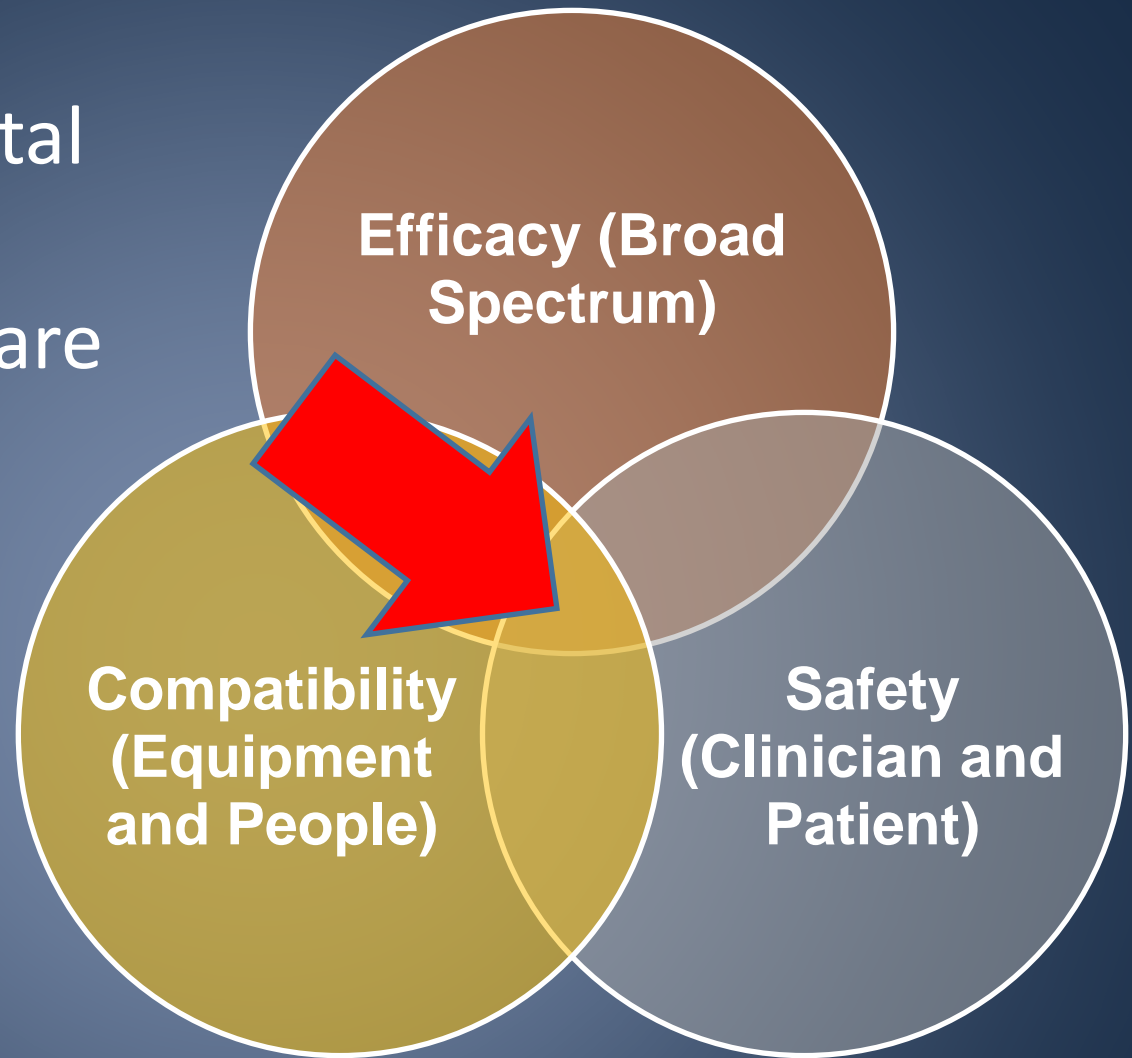
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Three Fundamental Elements for Environment of Care

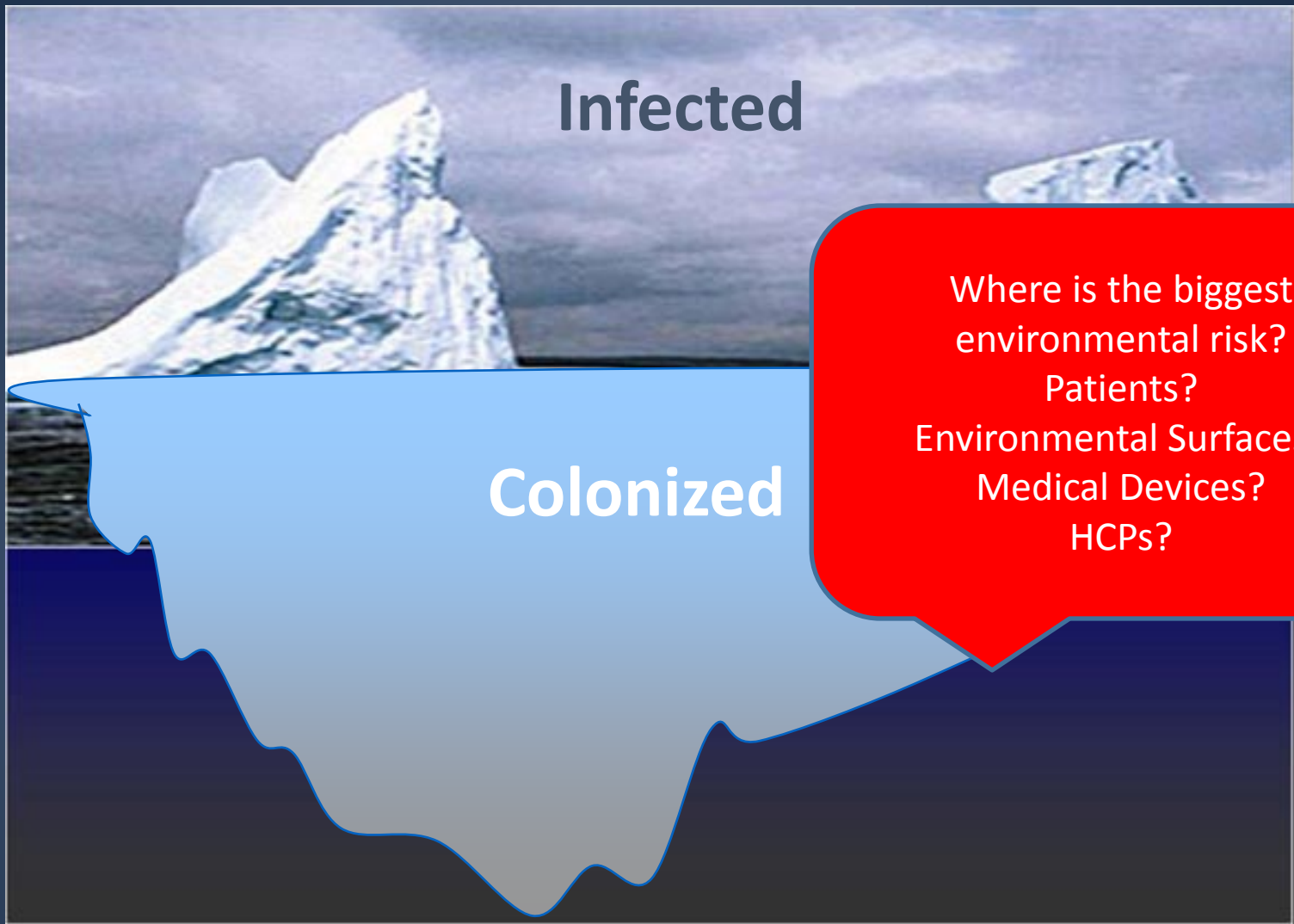


Learn From The Past Prepare for the Future

Prevention of
Transmission

Prevention of
the Pathogen



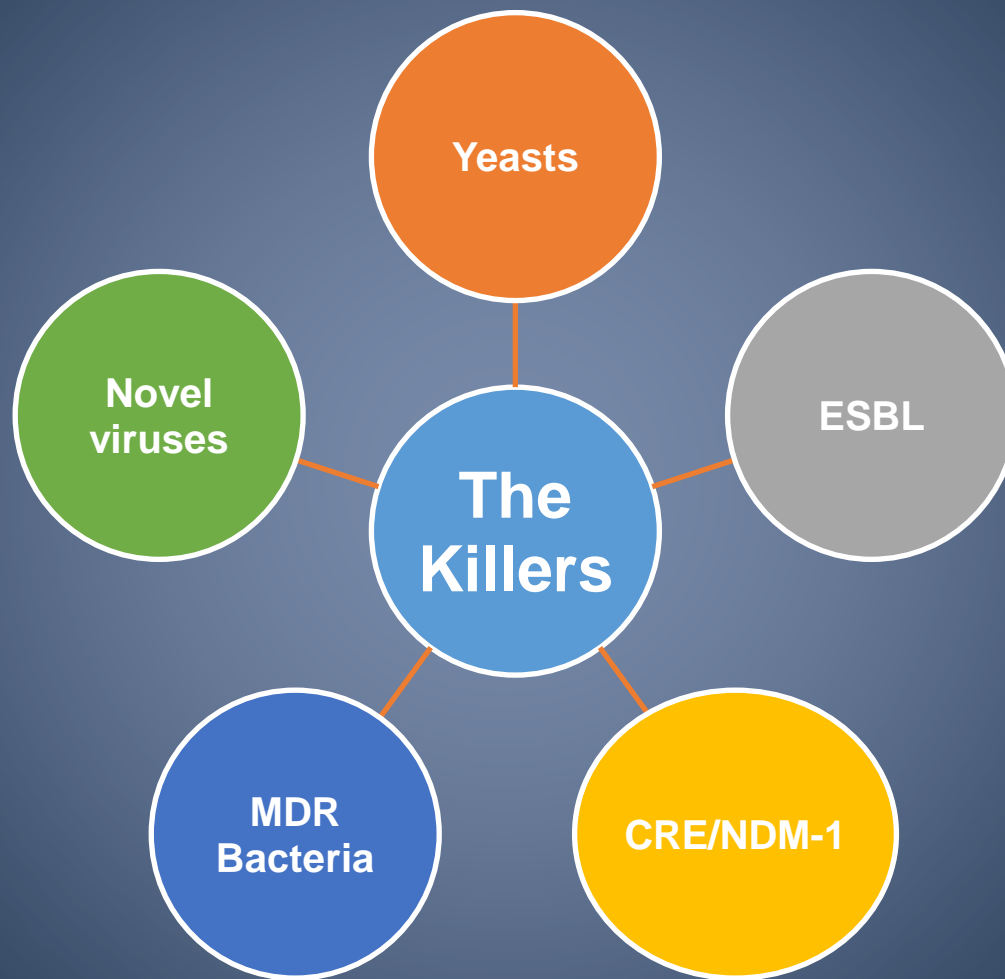


Infected

Colonized

Where is the biggest environmental risk?
Patients?
Environmental Surfaces?
Medical Devices?
HCPs?

Pathogens of Significance



Applications of Spaulding Classifications

Disinfection of Semicritical Items-SPD/Reprocessing Techs

- High Level Disinfectants

General Use Disinfection of Noncritical Items-EVS and Nursing

- Intermediate Level Disinfectants
- Low Level Disinfectants

Food Service Use-Food Service/Dietary Personnel

- Sanitizers

Disinfection Principles

Cleaning

- Removal of Soil and Bioburden

Disinfection

- Intermediate Level

Environmental Monitoring Program

Source: Guidelines for Disinfection and Sterilization in Healthcare Facilities, Centers for Disease Control and Prevention

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Critical Claims for Healthcare Disinfection

Broad Spectrum for bacteria

Viruses (non-enveloped and enveloped)

Multi-Drug Resistant Organisms (Drug Resistant Strains)

Pathogenic Fungi (Candida)

Bloodborne Pathogens (HIV, HBV, HCV)

Emergent Pathogens (Novel viruses, etc.)

Source: Infection Prevention Institute, Inc.

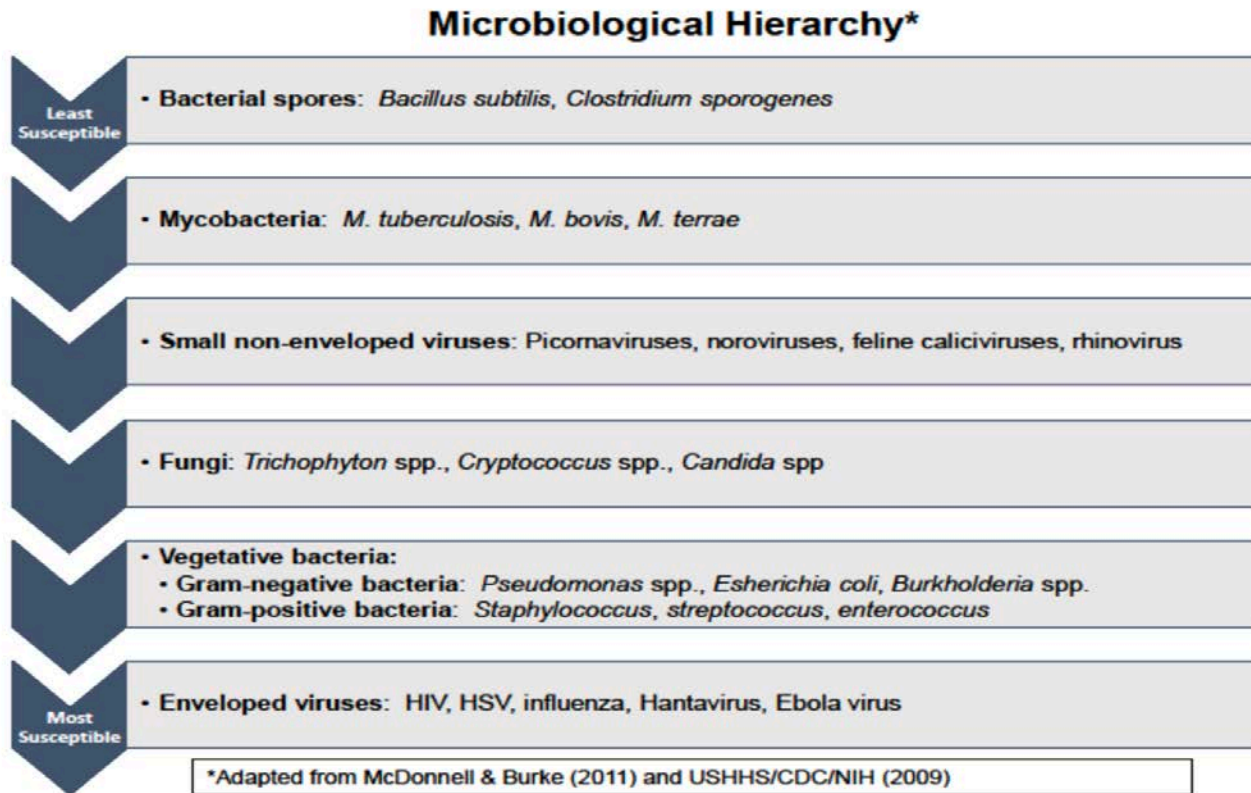
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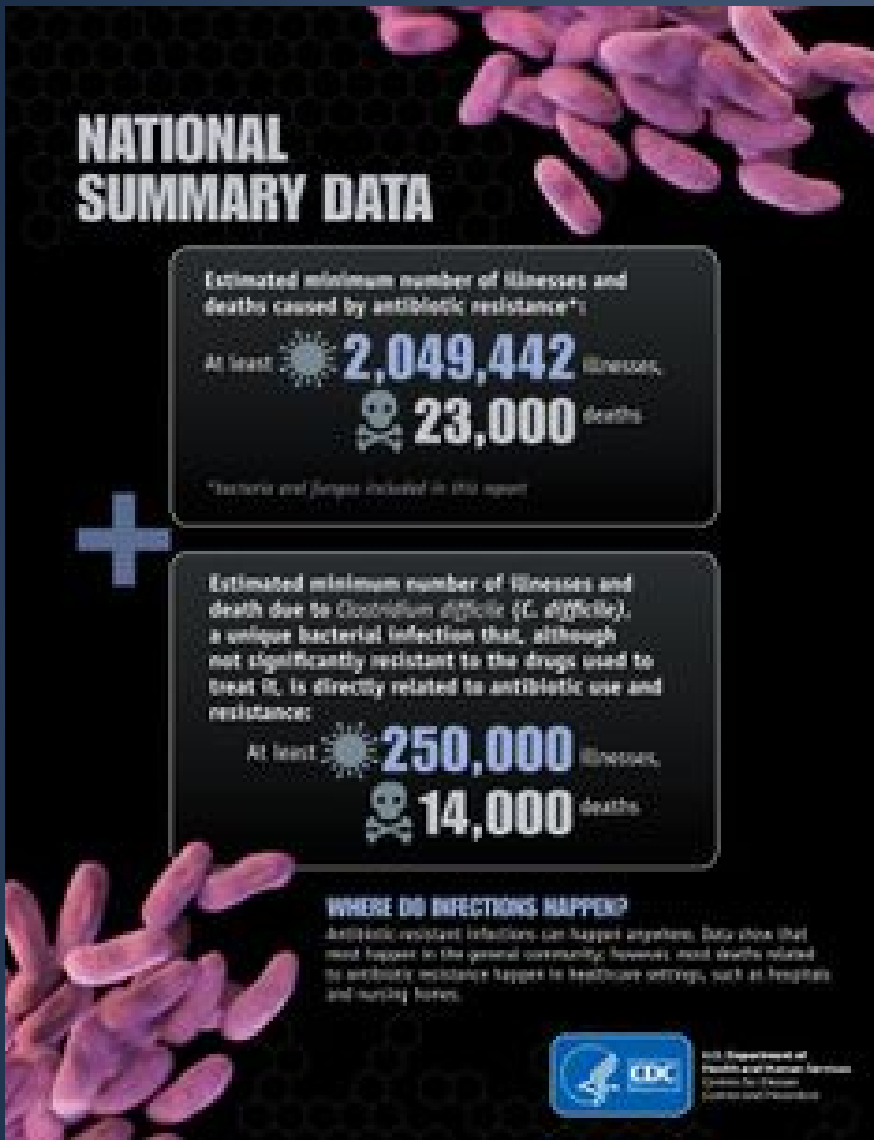


Approach to Emergent Pathogens: High Consequence Organisms

Figure 1. Microbiological disinfection hierarchy. Examples of microorganisms in each category are provided.



Source: Hierarchy of Pathogens for Disinfection White Paper, Environmental Protection Agency.



How does this impact society?

- Community Resistance
- Costs
- Antibiotic/Disinfectant Pipeline
- Colonization

Source: Centers for Disease Control and Prevention

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CDC Core Elements of Hospital Antibiotic Stewardship Programs

Leadership Commitment

Accountability

Drug Expertise

Action

Tracking

Reporting

Education



What about
Environment of
Care Expertise
for
Antimicrobials?

Source: Core Elements of Antimicrobial Stewardship, Centers for Disease Control and Prevention

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Moving Testimony to Importance of HAI Prevention: HHS Partnering to Heal

Partnering to Heal

[Instructions for Use](#)
[Skip the Introduction](#)
[View the Credits](#)
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Teaming-Up Against Health Care-Associated Infections

START

Click here to
begin the training

U.S. Department of Health and Human Services
A Virtual Experience Immersive Learning Simulation (VEILS®)
U.S. Patent No. 5,813,863 All Rights Reserved

Source: Partnering to Heal, Department of Health and Human Services

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Antibiotic Stewardship



“Antimicrobial Stewardship”



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Core vs. Adjunctive Technologies

Core Measures

- Cleaning
- Disinfection
- Environmental Monitoring



Adjunctive Technologies

- UV
- Gas/Fogging
- Cubicle Curtains
- Novel Technologies
- Antimicrobial
Environmental Surfaces

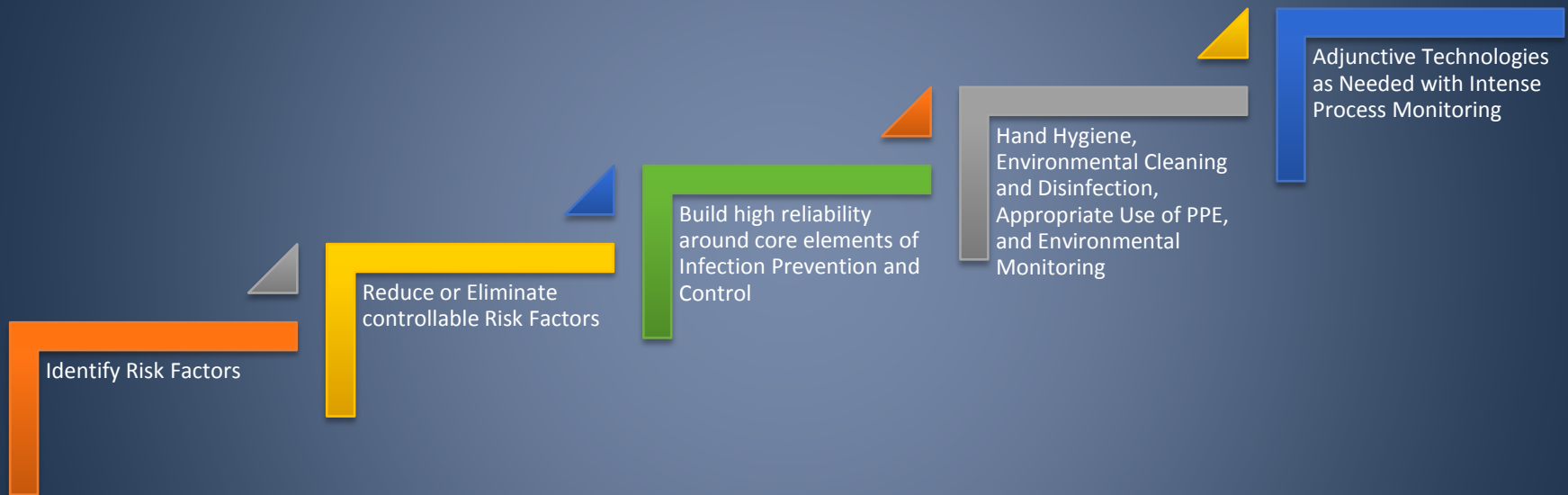
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Clinical Algorithm for the Clinical Environment of Care



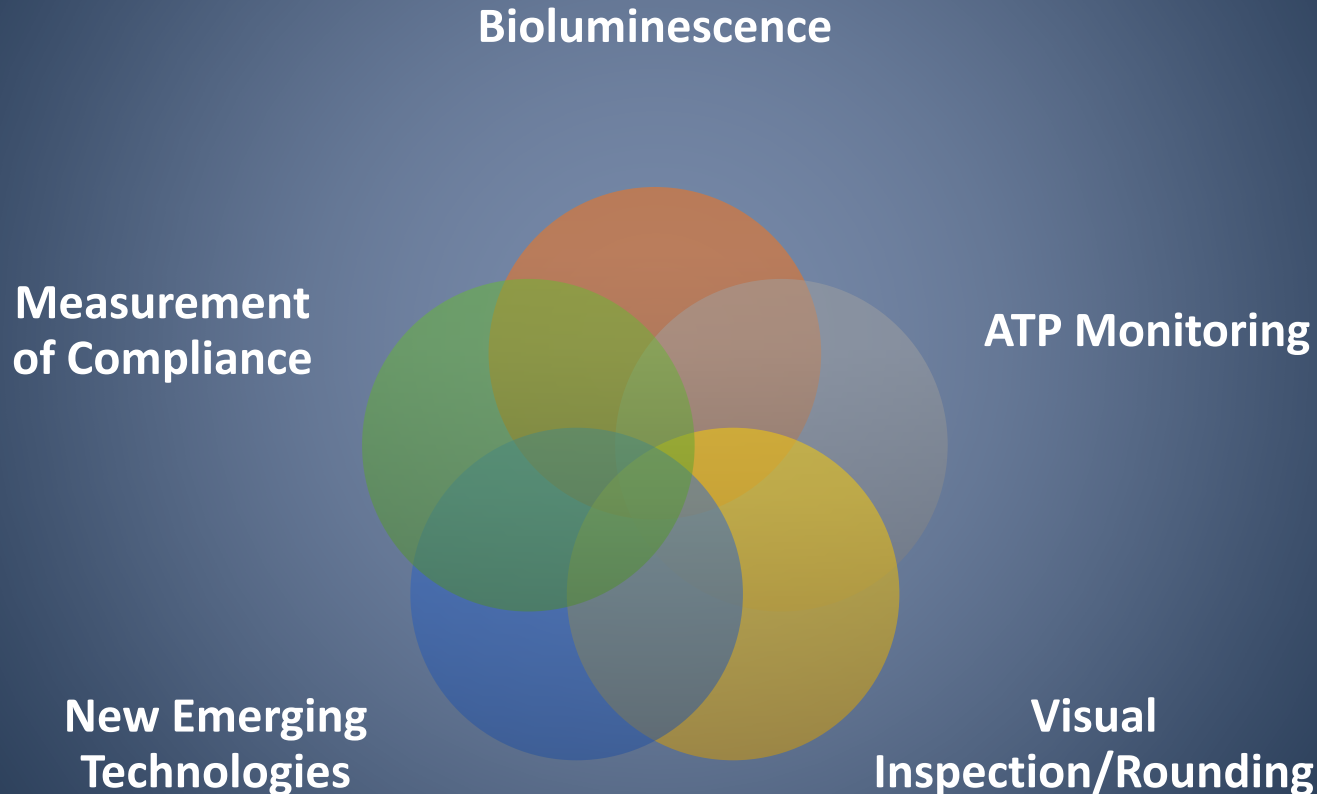
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Environmental Monitoring



Staff Education and Training

- Annual and New Hire Competency
- Documentation of IFU
- Components of Required Training:
 - Proper Use/Instructions for Use
 - Indications for Use
 - PPE
 - Disposal
 - First Aid/SDS

New Medscape Training Resources

CME from CDC: What You Need to Know About Infection Control

Each year in the United States, at least 2 million people become infected with bacteria resistant to antibiotics and at least 23,000 people die as a direct result of these infections. It's critical that all healthcare workers understand proper infection control procedures and use them every day.

The Centers for Disease Control and Prevention and Medscape are launching a series of six CME/CE activities addressing the key issues surrounding infection prevention in healthcare facilities.

The series includes:

1. Risk Recognition in Healthcare Settings ([Available Now](#))
2. **May:** Environmental Services and Infection Prevention
3. **June:** Recognizing Infection Risks in Medical Equipment
4. **July:** Infection Transmission Risks Associated with Nonsterile Glove Use
5. **August:** Infection Prevention: A Hierarchy of Controls Approach
6. **September:** Injection Safety: A System Approach

These CME-/CE- certified activities are available at: http://www.medscape.org/viewcollection/34044?src=acdmultipart_cdc_34044. You must be a registered Medscape member to access these CME/CE activities, and registration is free. The first activity, Risk Recognition in Healthcare Settings is available now. A new activity will be added each month.

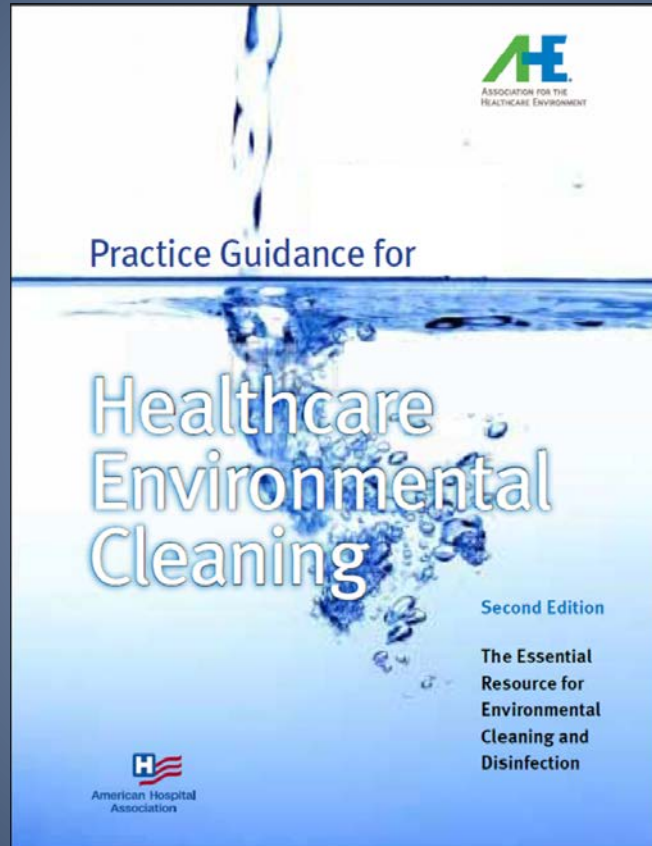
To access the programs,
visit: http://www.medscape.org/viewcollection/34044?src=acdmultipart_cdc_34044

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EVS EBP-Reference for Environmental Cleaning



Source: American Hospital Association

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What are the environmental threats of the future?

Are we ready to respond?

Back to the Basics Approach

CDC Core Elements of Infection Control for Healthcare Providers

Additional CDC Study Underway

Understanding transmission events related to patient room surfaces

Measuring cleanliness

Improving cleanliness by focusing on process

Improving cleanliness by evaluating emerging interventions

Source: Centers for Disease Control and Prevention, EIC Program: <https://www.cdc.gov/hai/research/eic-meeting.html>

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BALDWIN



“The patient in the next bed is highly infectious. Thank God for these curtains.”

Summary

- Collaborate and Communicate with all stakeholders about “antimicrobial stewardship” relative to the clinical environment of care
- Reduce the risk for the clinical environment of care to serve as a vector for transmission across the continuum of care
- Integrate EVS into the clinical care team
- Focus on basic core infection control practices before deploying adjunctive technologies
- Training is critical and emphasize back to the basics

References

Centers for Disease Control and Prevention. (2007). Guidelines for isolation precautions: Preventing transmission of infectious agents in healthcare settings 2007. Retrieved January 5, 2010 from

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5 Million Lives Campaign (2008). Getting Started Kit: Sustainability and spread. Cambridge, MA: Institute for Healthcare Improvement. Available at <http://www.ihl.org>

Association for the Healthcare Environment Practice Guidance for Environmental Cleaning (2013).

EPA Whitepaper Resources

- <https://www.epa.gov/sites/production/files/2015-09/documents/disinfection-hierarchy-white-paper-draft.pdf>
- <https://www.epa.gov/pesticide-registration/emerging-viral-pathogen-guidance-antimicrobial-pesticides>
- https://www.epa.gov/sites/production/files/2016-02/documents/dh_final_summary_of_workshop_-_exploration_of_the_disinfection_hierarchy_meeting_summary_final_docx_2_4_16.pdf

Questions

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