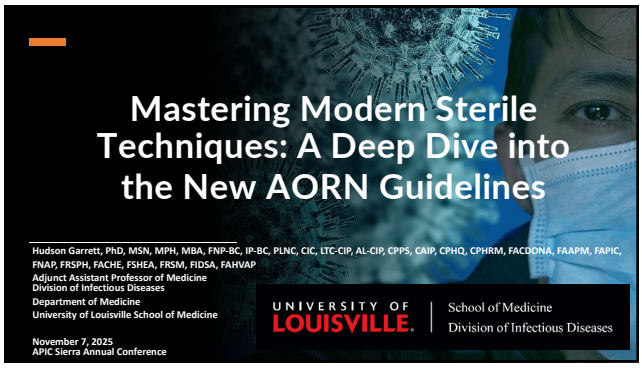

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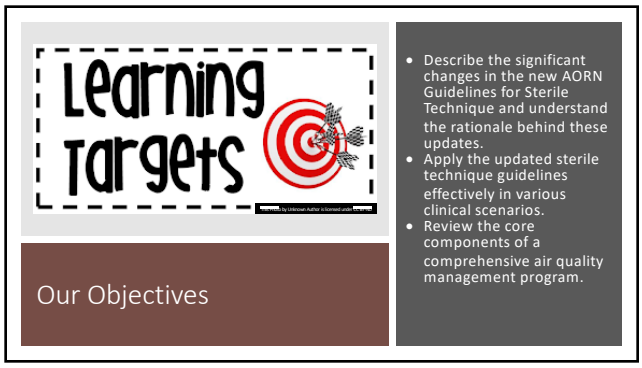

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Fundamental Belief that Zero is Achievable and Must be Realized

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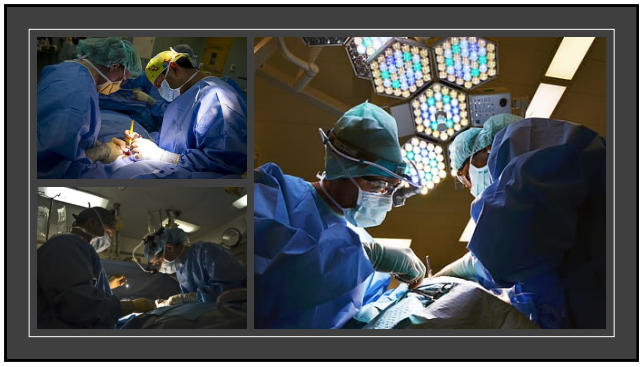

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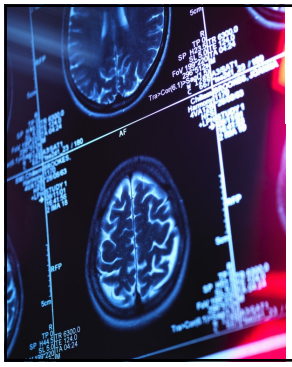


New AORN Guideline Published

- Released on April 18, 2024
- Reviewed and Endorsed by American Association of Nurse Anesthesiology (AANA), American College of Surgeons (ACS), Association for Professionals in Infection Control and Epidemiology (APIC), American Society of Anesthesiologists (ASA), Healthcare Sterile Processing Association (HSPA), the Society for Healthcare Epidemiology of America (SHEA), and the Surgical Infection Society (SIS)
- Represents Interprofessional Collaboration to Advance Sterile Technique in the Perioperative Environment

6

What is Out of Scope?

- surgical attire selection
- hand hygiene processes
- extended use and reuse of surgical masks
- selection of unidirectional airflow devices integrated into the design of the surgical suite
- the effects of forced-air warming equipment
- environmental contamination originating from the sterile field
- product evaluation

7

Where do Risks in Healthcare Primarily Originate From?

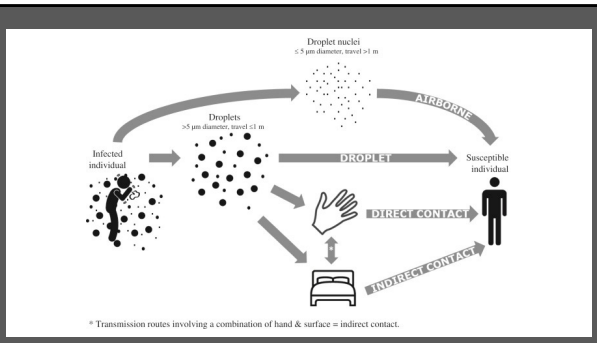
Contaminated Hands of the HCP or Pt

Contaminated Clinical Environment of Care

Contaminated Skin of the Patient (Microbiome)

Contaminated Air

8



Source: Centers for Disease Control & Prevention

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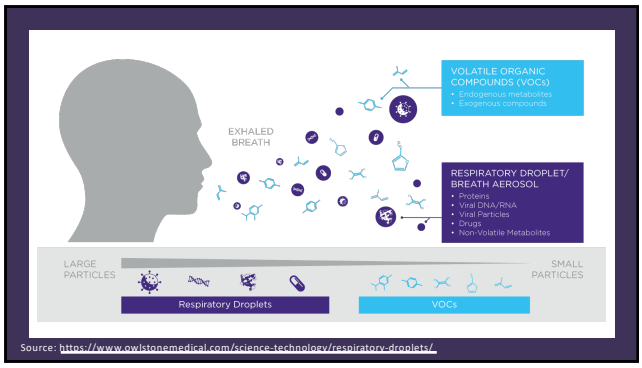

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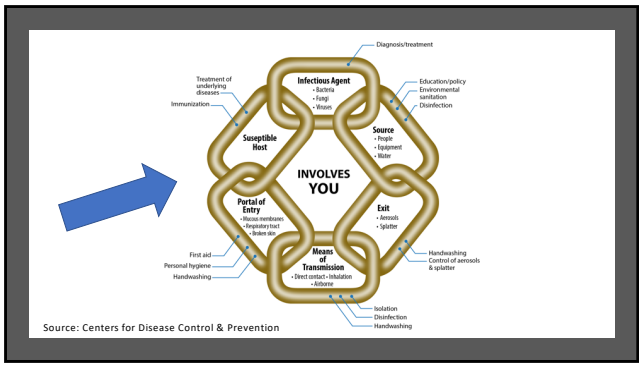
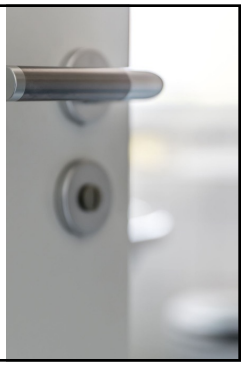


12

Risk of Environmental Contamination Revealed

- OR door openings increase environmental contamination in the room by affecting the positive pressure of the OR and airflow in the room. When door opening is necessary, opening only one door can help maintain room pressurization and decrease the level of contaminants that can enter the room. **6.2, 6.2.1**
- Movement around the sterile field can increase environmental contamination and contribute to disruptions in the airflow of the room that increase the risk of particle movement in unintended directions (eg, toward the sterile field). **6.3–6.5**
- Conversations can increase the presence of microorganisms from respiratory droplets in the air above the sterile field. Limiting conversations that are irrelevant to the patient or surgical process may reduce the risk of airborne contamination of the surgical site. **6.6**



13

What are the Primary Airborne Risks?

- Infectious Particles
- VOCs
- Hydrogen Cyanide
- Inorganic Gases
- Nitriles
- Aromatic Hydrocarbons
- Polycyclic Aromatic Hydrocarbons

Source: AORN Guideline for Surgical Smoke Safety

14

Evidence of Challenges Exists

Evidence for airborne transmission	Fungi	Bacteria	Viruses
Numerous reports in health-care facilities	*Aspergillus* spp.+ *Mucorales* (*Rhizopus* spp.)[97, 113]	*Mycobacterium tuberculosis*+	Measles (rubeola) virus[168-170] Varicella-zoster virus[162-166]
Occasional reports in health-care facilities (atypical)	*Acremonium spp.*[105, 206] *Fusarium spp.*[102] *Pseudoallescheria boydii*[110] *Scedosporium spp.*[176] *Sporothrix cyanescens*¶[118]	*Acinetobacter spp.*[161] *Bacillus spp.*¶[160, 207] *Brucella spp.*+[208, 211] *Staphylococcus aureus*[48, 156] Group A *Streptococcus*[151]	Smallpox virus (variola)‖[188, 189] Influenza viruses[181, 182] Respiratory syncytial virus[183] Adenoviruses[184] Norwalk-like virus[185]
No reports in health-care facilities; known to be airborne outside.	*Coccidioides immitis*[125] *Cryptococcus spp.*[127] *Histoplasma capsulatum*[124]	*Coxiella burnetii* (Q fever)[212]	Hantaviruses[193, 195] Lassa virus[206] Marburg virus[205] Ebola virus[193] Crimean-Congo virus[205]
Under investigation	*Pneumocystis carinii*[31]	n/a	n/a

Source: https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/air.html#c1

15

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19

What OSHA Regulations Apply?

- OSHA Personal Protective Equipment (29 CFR 1910.132)
- OSHA Respiratory Protection (29 CFR 1910.134)
- OSHA Air Contaminants (29 CFR 1910.1000)

Source: Occupational Safety and Health Administration

OSHA®
Occupational Safety and Health Administration

20

Historical Approaches to "Clean" Air

- Properly Functioning HVAC System
- Surgical Face Masks
- Medical Respirators
- Central Laminar Flow in the Operating Room
- Anesthesia Gas Evacuation Systems (Wall-Mounted)

21

What about PAPRs?

- Powered air-purifying respirators (PAPRs) **MAY** be used in the presence of a sterile field when indicated for respiratory protection. ***[Conditional Recommendation]***

22

Guidance on Surgical Gloves

Table 2. Evidence on Recommended Timing of Surgical Glove Changes by Surgical Specialty

Source	Surgical Specialty or procedure type	Recommended Timing of Glove Changes
Sayin et al, 2019[67]	Open abdominal surgery	60 minutes
Partecke et al, 2009[79]	General surgery	90 minutes
Harnoß et al, 2010[80]	Gastroenterological surgery	90 minutes
Hübner et al, 2010[81]	Colorectal and other gastroenterological surgery	90 minutes
Kojima and Ohashi, 2005[82]	Thoracic surgery	≥ 120 minutes
de Oliveira and Gama, 2014[83]	Gastroenterological, cardiovascular, and pediatric surgery	≥ 150 minutes
Osodin et al, 2022[60]	Oral and maxillofacial surgery	60 minutes
Kim et al, 2019[78]	Arthroplasty procedures	60 minutes
American Academy of Orthopaedic Surgeons[62]	Orthopaedic surgery	120 minutes

Source: AORN Guideline for Sterile Technique, 2024.

23

Case Example: Cath Lab

- Large Academic Medical Center routinely sets up surgical field the night before for "emergencies" and covers them with sterile towel.
- Facility has seen increase across the board in SSIs.
- AORN Recommendation: Prepare the sterile field as close as possible to the time of use. [Recommendation]

24

Adhesive Drapes? Ya or Na?

No recommendation can be made regarding the use of adhesive incise drapes with or without antimicrobial properties for the prevention of SSIs or wound contamination. [No Recommendation]

Table 3. Organizational Recommendations on Use of Adhesive Incise Drapes

Centers for Disease Control and Prevention. Guideline for the Prevention of Surgical Site Infection, 2017[14]	The use of plastic adhesive drapes with or without antimicrobial properties is not necessary for the prevention of surgical site infection (SSI). Weak recommendation High- to moderate-quality evidence suggesting a trade-off between clinical benefits and harms
Society for Healthcare Epidemiology of America (SHEA), Infectious Diseases Society of America (IDSA), Association of Professionals in Infection Control and Epidemiology (APIC). Strategies to Prevent Surgical Site Infections in Acute Care Hospitals: 2022 Update[138]	Do not routinely use antiseptic drapes as a strategy to prevent SSI. High-quality evidence
World Health Organization. Global Guidelines for the Prevention of Surgical Site Infection, 2017[45]	The panel suggests not using plastic adhesive incise drapes with or without antimicrobial properties for the purpose of preventing SSIs. Conditional recommendation Low- to very low–quality evidence
National Institute for Health and Care Excellence. Surgical Site Infections: Prevention and Treatment, 2020[139]	Do not use non-iodophor-impregnated incise drapes routinely for surgery as they may increase the risk of SSI. If an incise drape is required, use an iodophor-impregnated drape unless the patient has an iodine allergy.

Source: AORN Guideline for Sterile Technique, 2024.

25

Too Many People? NEVER!

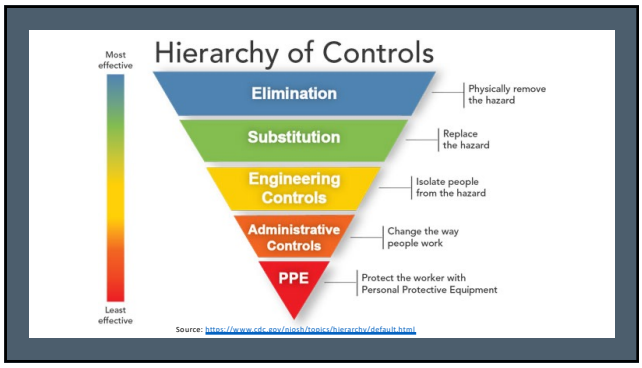
- Keep the number of individuals in an operative or invasive procedure room to a minimum. [Recommendation]
- Limit nonessential movement around and within the sterile field. [Recommendation]

26

Current Guidance for Air Disinfection

ASHRAE AORN CDC

27



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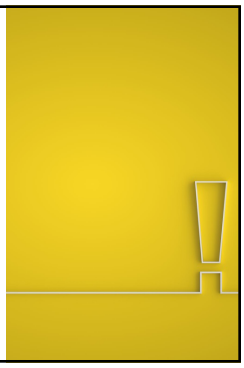
New Recommendation #1

The health care organization should implement strategies to reduce the risk of airborne environmental contamination in rooms where surgical or other invasive procedures are performed. [Recommendation]



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Build an Air Quality Management Program

A perioperative air quality management program may be used as a strategy to reduce the risk of airborne environmental contamination in rooms where operative and other invasive procedures are performed. [Conditional Recommendation]

31

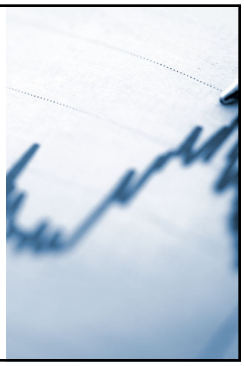
Who to Invite to the Party?

- an industrial hygienist
- facilities maintenance personnel
- an HVAC engineer
- infectious disease specialists
- surgeons
- perioperative RNs
- infection preventionists
- anesthesia professionals
- surgical technologists
- environmental services leaders
- risk management professionals
- quality improvement professionals
- laboratory services professionals (when the laboratory will be conducting analysis of air samples collected)
- others with needed expertise (eg, HVAC manufacturer representatives, air quality testing specialists)

32

Air Quality Correlations to SSIs

- When an SSI is identified, SSI surveillance may include a review of the air quality sampling data from the OR where the procedure was performed and the recorded or observed equipment, environment, and personnel factors. [Conditional Recommendation]
- Reviewing the equipment, environment, and personnel factors when there is an SSI can help identify areas for improvement.



33

Need for Interprofessional Collaboration

- Quality assurance and performance improvement programs conducted by an interdisciplinary team that includes an infection preventionist assist in evaluating and improving sterile technique practices. **9.1, 9.2.1**

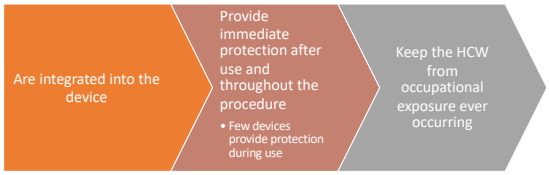
34

Reduce Airborne Contamination

- Reducing the level of airborne contamination is one strategy to reduce the risk of SSIs; this may include establishing an interdisciplinary air quality management program. **9.4-9.5.6**

35

Better Designs Mitigate Risks



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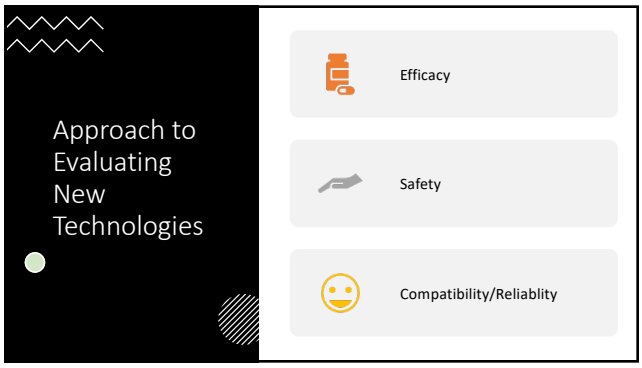

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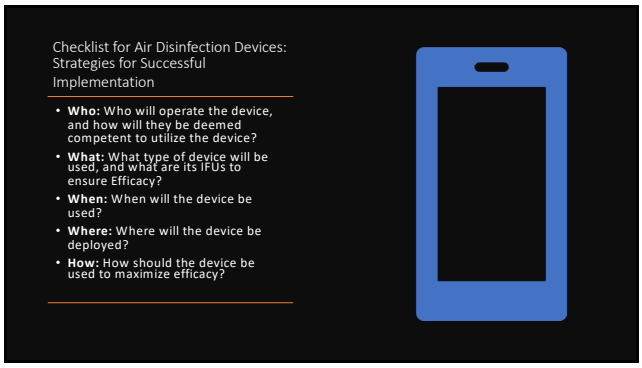
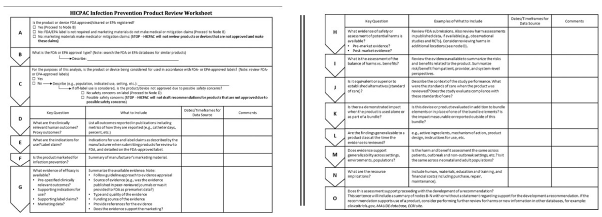


39

CDC HICPAC Technology Evaluation Checklist



HICPAC Infection Prevention Product Review Worksheet

A — Is the product or device FDA approved/cleared or EPA registered?
- ☐ Yes (Proceed to Node B)
- ☐ No: FDA/EPA label is not required and marketing materials do not make medical or mitigation claims (Proceed to Node B)
- ☐ No: marketing materials make medical or mitigation claims: **(STOP - HICPAC will not review products or devices that are not approved and make these claims)**

B — What is the FDA or EPA approval type? (Note: search the FDA or EPA databases for similar products)
→ Describe: ____________

C — For the purposes of this analysis, is the product or device being considered for used in accordance with FDA- or EPA-approved labels? (Note: review FDA- or EPA-approved labels)
- ☐ Yes
- ☐ No → Describe (e.g., population, indicated use, setting, etc.): ____________
  → If off-label use is considered, is the product/device not approved due to possible safety concerns?
  - ☐ No safety concerns on label (Proceed to Node D)
  - ☐ Possible safety concerns **(STOP - HICPAC will not draft recommendations for products that are not approved due to possible safety concerns)**

	Key Question	What to Include	Dates/Timeframes for Data Source	Comments
D	What are the clinically relevant human outcomes? Proxy outcomes?	List all outcomes reported in publications including metrics of how they are reported (e.g., catheter days, percent, etc.)		
E	What are the indications for use? Label claim?	Indications for use and label claims as described by the manufacturer when submitting products for review to FDA, and detailed on the FDA-approved label.		
F	Is the product marketed for infection prevention?	Summary of manufacturer's marketing material.		
G	What evidence of efficacy is available? • Pre-specified clinically relevant outcomes? • Supporting indications for use? • Supporting label claims? • Marketing data?	Summarize the available evidence. Note: • Follow guideline approach to evidence appraisal • Source of evidence (e.g., was the evidence published in peer-reviewed journals or was it provided to FDA as premarket data?) • Type and quality of the evidence • Funding source of the evidence • Provide references for the evidence • Does the evidence support the marketing?		

	Key Question	Examples of What to Include	Dates/Timeframes for Data Source	Comments
H	What evidence of safety or assessment of potential harms is available? • Pre-market evidence? • Post-market evidence?	Review FDA submissions. Also review harm assessments in published data, if available (e.g., observational studies and RCTs). Consider reviewing harms in additional locations (see node O).		
I	What is the assessment of the balance of harms vs. benefits?	Review the evidence available to summarize the risks and benefits related to the product. Summarize risk/benefit from patient, provider, and system-level perspectives.		
J	Is it equivalent or superior to established alternatives (standard of care)?	Describe the context of the study performance. What were the standards of care when the product was reviewed? Does the study evaluate compliance with these standards of care?		
K	Is there a demonstrated impact when the product is used alone or as part of a bundle?	Is this device or product evaluated in addition to bundle elements or in place of one of the bundle elements? Is the impact measurable or reported outside of this bundle?		
L	Are the findings generalizable to a product class at the time the evidence is reviewed?	e.g., active ingredients, mechanism of action, product design, instructions for use, etc.		
M	Does evidence support generalizability across settings, environments, populations?	Is the harm and benefit assessment the same across patients, outbreak and non-outbreak settings, etc.? Is it the same across neonatal and adult populations?		
N	What are the resource implications?	Include human, materials, education and training, and financial costs (including purchase, repair, maintenance).		
O	Does this assessment support proceeding with the development of a recommendation? This sentence will include a summary of nodes B-N with or without a statement regarding support for the development a recommendation. If the recommendation supports use of a product, consider performing further review for harms or new information in other databases, for example: *clinicaltrials.gov, MAUDE database, ECRI site.*			

Source: Centers for Disease Control and Prevention Healthcare Infection Control Practices Advisory Committee

40

So Now We Have a Choice

Which Option is Best for Our Team's Safety?

41

Stay Connected

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42