



# APIC 25

ANNUAL CONFERENCE & EXPO  
JUNE 16-18 PHOENIX, AZ

## **OPERATING ROOM TURNOVER CLEANING AND DISINFECTION: THE INFECTION PREVENTIONIST'S SURVIVAL GUIDE**

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# DISCLOSURES

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## Relevant Financial Disclosures

Rebecca Battjes, MPH, CIC FAPIC and Vydia Nankoosingh, MLT, CIC are employees of Diversey—A Solenis Company.

All of the relevant financial relationships listed have been mitigated.



# LEARNING OBJECTIVES



Describe the Infection Preventionist's (IP's) optimal role in operating room (OR) environmental hygiene (EH).



Familiarize IPs with common OR equipment and challenges in OR cleaning and disinfection (C&D).



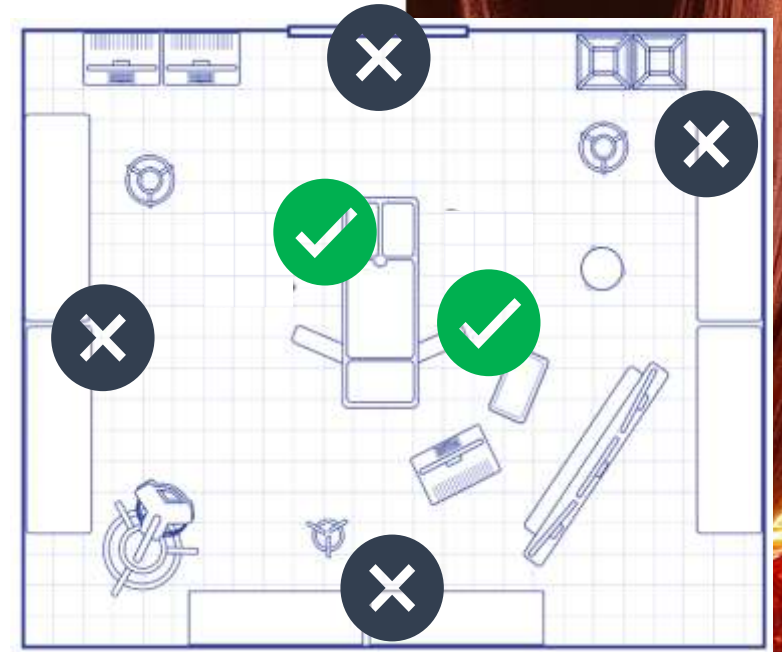
Implement tools and best practices for OR EH, including an innovative, **standardized process checklist** to assist with OR observations.

# OR ENVIRONMENTAL HYGIENE IN THE LITERATURE . . .

## *A Brief Review of Key Studies*

- Large, multicenter study demonstrated an average **cleaning rate of 25%** for objects in ORs after terminal cleaning (Jefferson et al, 2011)
- A single center study observed **only 47% of surfaces were cleaned** across 43 ORs after terminal cleaning (Muñoz-Price et al, 2012)
- Another, more recent single center study revealed only **33% of surfaces cleaned post-terminal** cleaning (Fraser et al, 2023).
  - Items at the room's **periphery were most missed.**
- **Very few studies evaluate in-between cleaning given logistical (time, turnover, case load) challenges.**

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# MAJOR TYPES OF OR CLEANING AND DISINFECTION

## DAMP DUSTING

- Performed **prior to the first case** of the day before surgical supplies are brought into the OR
- Typically, performed by clinical OR staff
- Use clean, **low-linting cloth** moistened w/disinfectant **OR pre-wetted, disposable wipe**
- **High to low/top to bottom**
- Removes dust that settles overnight

## END-OF-CASE/ IN-BETWEEN/TURNOVER

- **Performed in between patients**
- Time sensitive in most main ORs
- What we're discussing in detail today!

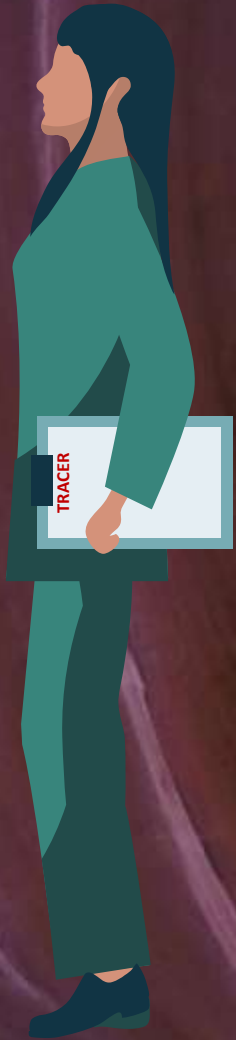
## TERMINAL/ END-OF-DAY

- **Performed after the final case of the day**
- May be completed by a team different than the one that performs turnover cleaning & disinfection.
- Clean and disinfect all exposed surfaces, including wheels & casters & all equipment in the room
- Move the equipment around the room to clean the floor **underneath**
- Includes Sterile Processing!!

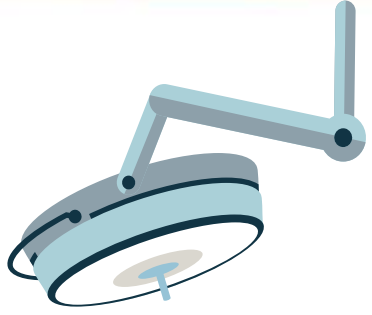
## SCHEDULED/ COORDINATED

- **Essentially, areas *not* cleaned in-between cases or at terminal.**
- **Facility determines freq (weekly, monthly)**
- **Areas like:**
  - Scrub sinks, vents & grills
  - Walls and ceilings
  - Privacy curtains
  - Pneumatic tubes & carriers
  - Lounges
  - Sterile, clean & soiled storage
  - Corridors & elevators
  - See AORN for more . . .

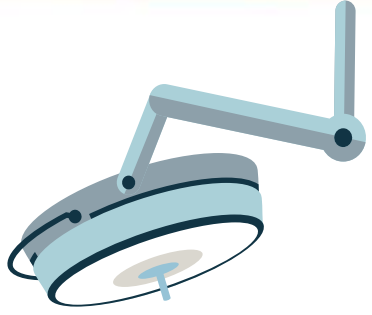
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# IP ROLE IN OR ENVIRONMENTAL HYGIENE



**AN IP'S FIRST TIME IN  
AN OR CAN BE  
INTIMIDATING . . .**



“Cloaked in interwoven traditions, **dogma, diverse** cultural identities, and evidence-based practices, the OR can present simultaneously as a **state-of-the-art** enclave where **heroic** lifesaving technologies **improve patient outcomes** and an **intimidating** environment to outsiders unfamiliar with this **‘turf’.**”



**APIC: IP'S GUIDE TO THE OR**

# PREPARE

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## Learn *Who Does What*

Every facility handles OR in-between case C&D, or turnovers, differently. Is EVS performing turnovers? Is it the clinical team (like in many ASCs)? How many people are involved typically?



## Focus on C&D

Environmental C&D observations are unique from actual surgical case observations or audits. Make life easier by dedicating time to each of these separately.



## Inform Team Leaders

Meet with OR & EVS leaders in advance. Ask them what their challenges are! Because you aren't observing actual cases, the surgeons may be less aware of your presence.



## Review AORN

Odds are that someone in your organization has access to [AORN eGuidelines+](#). It will be helpful to review the *Environmental Cleaning*.

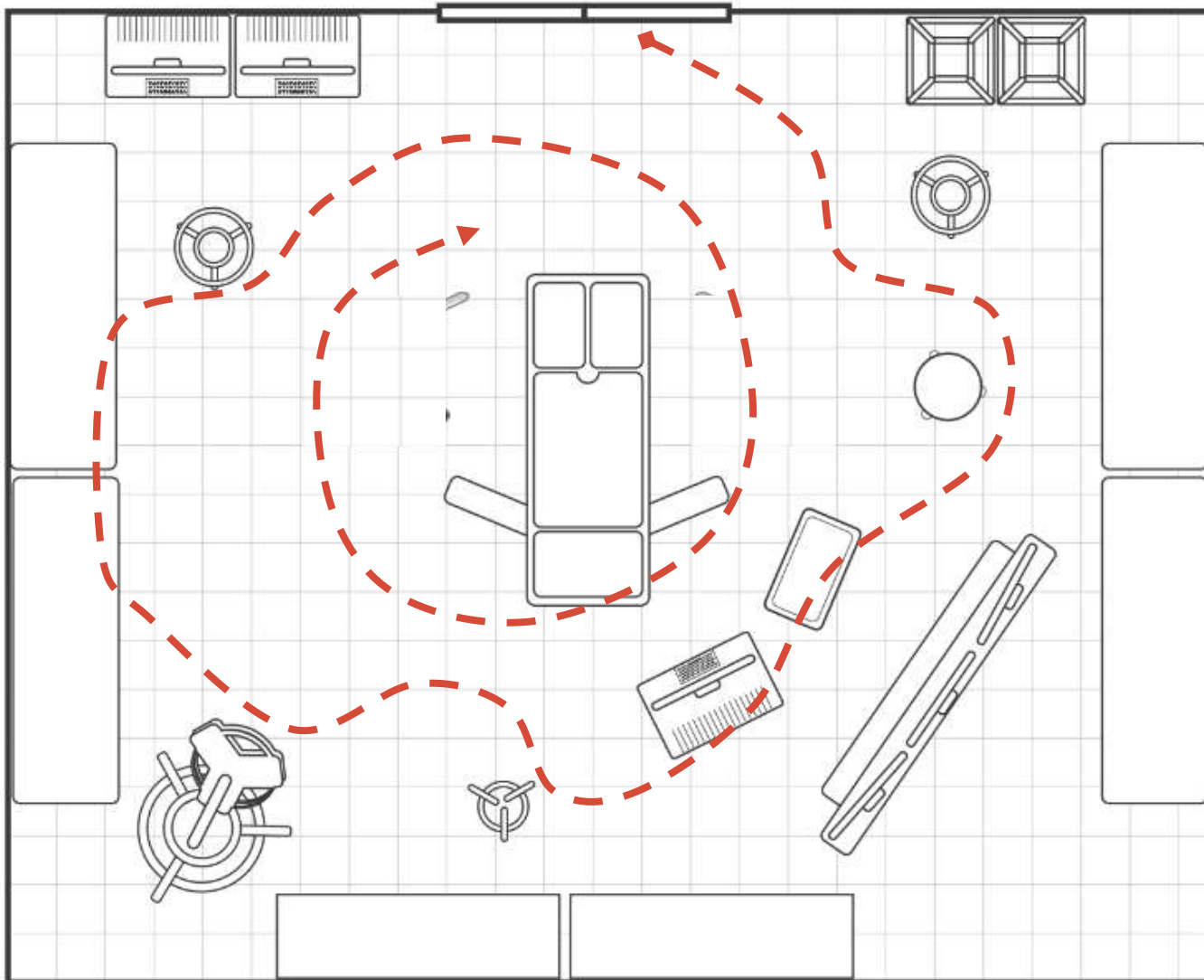


# IP ROLE IN OR TURNOVER OBSERVATIONS

OBSERVATION	REAL WORLD EXAMPLES
Pattern of C&D: High to low	Are the overhead lights & booms handled before the OR table?
Pattern of C&D: (Counter) Clockwise	Did you witness any object/surface cleaned twice or by two different people?
Cross contamination	Double dipping cloths or mops; carrying a wipe from a visibly soiled surface to a non-visibly soiled surface; <b>dirty cleaning tools!</b>
Hand hygiene & PPE	Are cleaners sanitizing hands before donning new gloves? Are they wearing the PPE per facility policy & procedures?
Contact time achievement	Does the disinfectant dry too quickly? Are surfaces over saturated?
Blood spills	Work clean to dirty, but messier cases may require pre-mopping floor to remove visible blood & body fluids



# TEAM CLEANING IS COMMON



- Ensure cleaning activities do not begin until after the patient has left the room.
- Typically, several cleaners are present for an OR turnover.
  - Periop aids vs EVS vs Anesthesia vs other?
- Our approach **focuses more on processes** than each individual object, given observation challenges.
- Understand everyone's roles & responsibilities.
- Being consistent during cleaning leads to less errors.

# WILL THERE BE BLOOD?

*While no promise can be made, some cases may be messier than others*

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## HIGH LIKELIHOOD OF CONTAMINATION



- Trauma (gunshot wounds, motor vehicle collisions, stabbings, etc.)
- Orthopedics & joint cases
  - Expect hammering, drilling & sawing!
- Open heart cases
- Cesarean sections

## LOW LIKELIHOOD OF CONTAMINATION



- Ophthalmology
- Minimally invasive procedures
- Laparoscopy
- Arthroscopy
- Robotic-assisted



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**OR EQUIPMENT,  
MACHINES AND  
SURFACES**

# GET YOUR SMARTPHONES READY!

- Scan the QR code.
- Click the link.
- Select your answer.
- Photo details can be magnified in Slido.
- Answers are anonymous.
- You will not need to rescan QR codes if browser is kept open.



# COMMON EQUIPMENT



**Mayo Stands**



**Ring Stands**



**Back Table and  
Other Flat  
Surface Tables**



**Step Stools**



**Kick Buckets**

# COMMON EQUIPMENT AND MACHINES



**Lights**



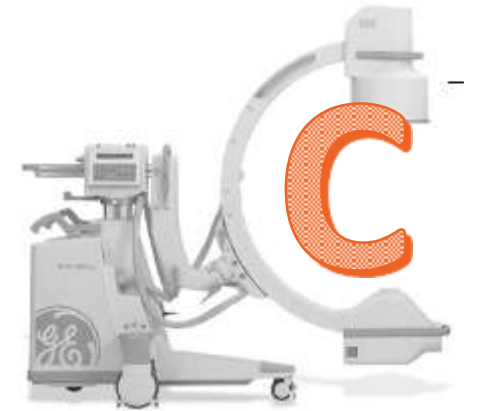
**Surgical booms**



**Monitors**



**Medication  
Dispensing  
Systems**

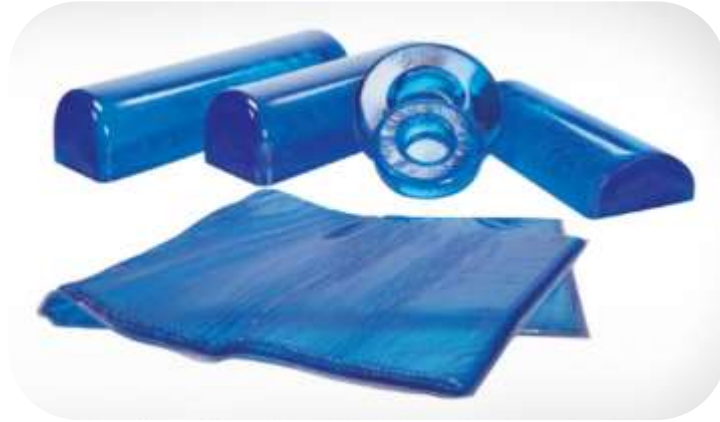


**C-arms &  
other  
imaging  
equipment**

# GEL & FOAMs



**Gel  
positioners**



**Foam  
positioners**



**Reusable return  
electrode pad**

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# COMMON CHALLENGES IN OR ENVIRONMENTAL HYGIENE

# TIME IS A PRECIOUS RESOURCE

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Turnover time = time between “wheels out” & “wheels in”

- C&D is not the only aspect of a turnover
- C&D cannot begin before patients leaves the room!
- Diversey IP average observations = 7 minutes!
- IP peers guess 15 - 20 min
- Foster (2012) reported 15 – 40 min, avg of 28.5 min
- **Is your disinfectant’s contact time > turnover time?**
  - 10-minute products could be a patient & occupational safety issue, plus a regulatory/accreditation citation



**@DRGLAUCOMCFLECKEN**

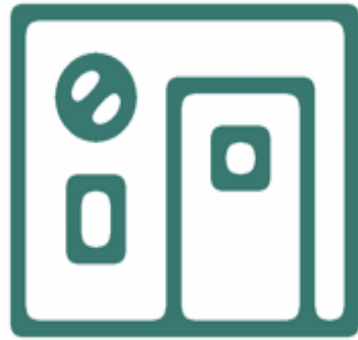
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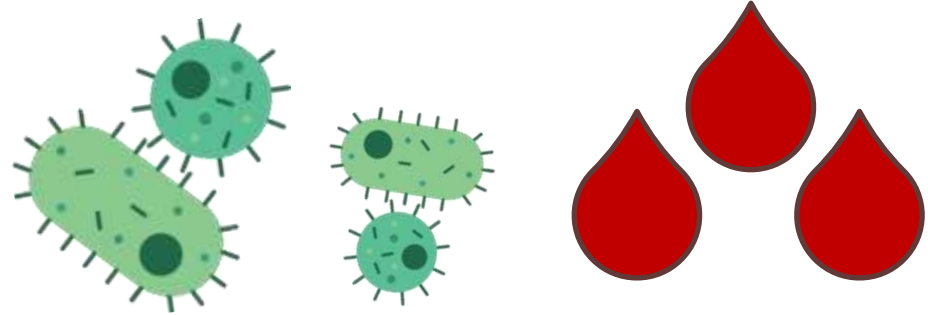
<https://youtu.be/AiGUvp-2W1k?si=XD8YHFY5tjkjaVm0>

# TURNOVER TIME: NOT ALL ROOMS ARE CREATED EQUAL

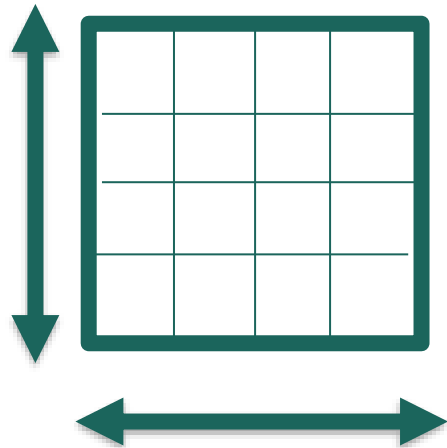
**ISO/SPECIAL PATHOGEN**



**LEVEL OF CONTAMINATION**



**SQUARE FOOTAGE**



**EQUIPMENT COMPLEXITY**



# COMPLEXITY OF EQUIPMENT

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“Some cases, it takes me over 20 minutes *just to get into all of these folds*, which can be full of blood & fluids.”  
– C-Section room EVS Tech



# DIFFICULT TO CLEAN SURFACES

## KEYBOARDS

Develop a consistent process to clean and disinfect all keyboards in the procedure/OR rooms.

While not required by a regulatory agency, covers may support more thorough cleaning & disinfecting.

Recommend to include keyboards in ATP testing, fluorescent marking and/or visual audits.



*Visible dust between keys on an OR keyboard*



*Newer keyboards with no gaps, more cleanable, able to withstand healthcare disinfectants*

# ANESTHESIA WORK AREAS

- Anesthesia equipment & carts have been found to be significantly contaminated items in ORs (Muñoz-Price 2019).
- Workstation & equipment may not be disinfected in between cases.
  - Something to wait & watch for, especially in **Ambulatory Surgery & Labor & Delivery!**
- EVS generally does not touch Anesthesia equipment!
  - Realistic fears of damaging biomedical equipment (knobs, dials, etc.)
- Does your OR validation program (ATP, fluorescent marking) include anesthesia surfaces?

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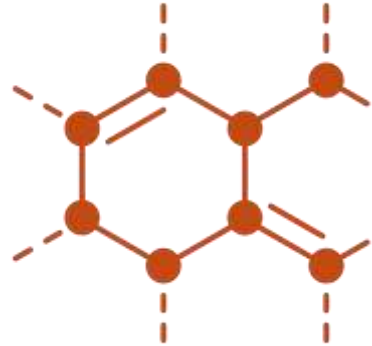


# CLEANING TOOL CHALLENGES

# CLEANING TOOL CHALLENGES



**UNACHIEVABLE  
CONTACT  
TIMES**



**QUAT  
BINDING  
RISKS**

*Boyce et al,  
2016*



**NO  
SPRAYING  
IN ORs**

*AORN  
2020*



**CONTAMINATED  
CLOTHS, MOPS &  
BUCKETS**

*Sifuentes 2013;  
Wiencek 2018*



**INCORRECTLY  
DILUTED  
DISINFECTANTS**

*Boyce et al 2016;  
Cadnum et al 2024*

# CLEANING TOOL CHALLENGES



## **NONDEDICATED CLEANING TOOLS**

Including adjunct tech, floor care equipment, etc. If it cannot be dedicated, C&D prior to reentry.



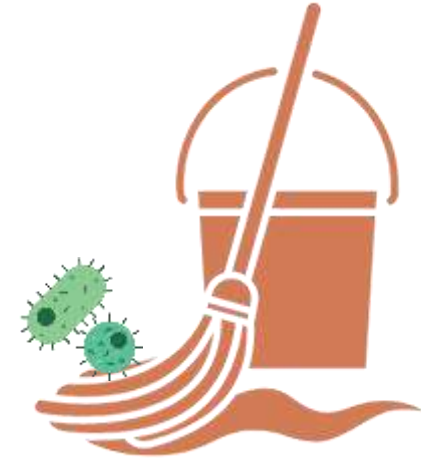
## **DRY CLEANING TOOLS**

Examples include bristled brooms, dry dusters



## **COMPATIBILITY & IFUs**

Expect highly complex & sophisticated equipment



## **INEFFECTIVE CLEANING TOOLS**

Examples include cotton string mops, high linting cotton cloths, blue OR towels, etc.

# COTTON STRING LOOP MOPS



- Surprisingly, no “ban” on cotton string mop use.
  - BUT changing bulky mop heads in-between cases is logistically impossible
  - Inferior to microfiber mops in microbial removal, ergonomics & laundering (Rutala et al, 2007)
- Reusable tools can contribute to contamination! (Dancer 2014)
- Likely higher utilization in resource-limited settings BUT *frequently* identified in North American ORs.

# AORN & FLOORS

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Floors represent a unique challenge in ORs.

- 2.8: Always consider floors in the perioperative practice setting to be contaminated.
- 4.2.4: Clean and disinfect the floor with a mop *after each surgical or invasive procedure when visibly soiled or potentially soiled by blood or body fluids* (e.g., splash, splatter, dropped item).
  - Most US ORs cannot fully predict “potential” soil & so disinfect in between all cases.
  - In Canada, sanitizing claims are sufficient per ORNAC.
- To meet disinfectant label IFU, disinfectant should be applied & undisturbed for full contact time!
  - OR staff may be shocked! Be prepared!



AORN 2020

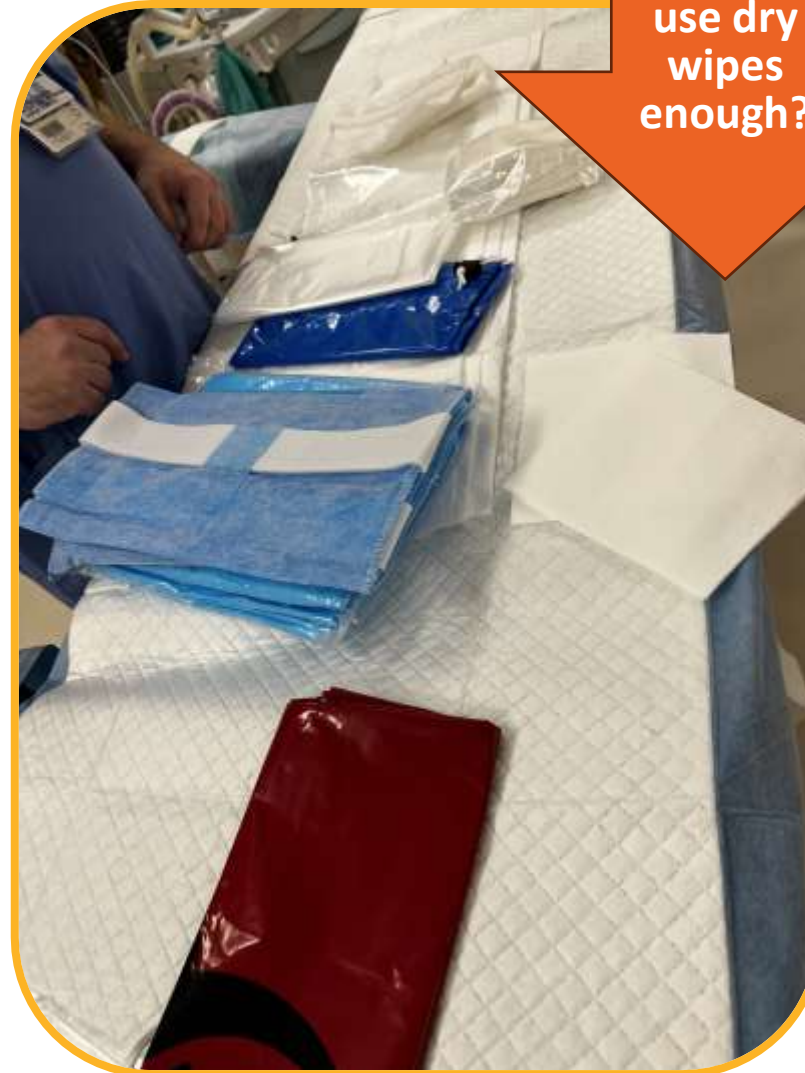
# MORE ON OR FLOORS

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- Quat-based disinfectants (very common) inherently leave residue which create stickiness & haziness over time
  - Regular cleaning with neutral cleaners should restore
- Chlorine-based disinfectants will leave salt residues that may require immediately rinsing.
- Contact your disinfectant manufacturer for assistance! Many have flooring experts!
- Do we ever have access to flooring IFUs??
  - Older buildings, older substrates

# BUNDLES & KITS ARE NOT ALWAYS BETTER

- Cleaning tools may be bundled or customized into kits
  - Table drapes, single use cloths and mops, waste bags, etc.
- Attractive solution for turnover teams
- Ensure supplies are not wasted
- **Check quantity and quality of cleaning tools!**



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# IF TIME IS MONEY, ARM THE OR WITH RELIABLE TOOLS



- Determine **frequency of end-use solution testing** w/ proper PPM strips
  - ORs = HIGHEST RISK
  - Not dictated by EPA, CMS, CDC, etc.
- **Label** ALL secondary containers (mop & rag buckets, bottles, etc.)
- Containers should be **cleaned, rinsed & allowed to *dry daily*** (not happening!)
- No **topping off** or **double dips!**



- Wipes can be **cost effective & more efficient** (Wiemken 2014) & **sustainable** (Daggett 2017).
- No mixing = no errors.
- Grab & go! Use for most surfaces except floors, walls, ceilings.
- **No laundry-associated microbial contamination risks** (Sifuentes et al 2013)
- Proven efficiency & accessibility among our clinical teams, why not EVS and OR?

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# TOOLS AND BEST PRACTICES

# DISINFECTANT MANUFACTURER PARTNERSHIPS



- Some major disinfectant manufacturers provide customized training and education materials & resources.
- Comprehensive training/education, 24-7 customer support, and other resources are key consideration when selecting product (Rutala & Weber, 2014)
- AORN best practices customized in a one-stop-shop, integrating current products in-use.
- AORN 2020 EC update 2.2 states an interdisciplinary team must identify high-touch objects & surfaces
  - **Outsiders can assist, but ultimately procedures are the facility's responsibility.**

# DEFINING OR ROLES & RESPONSIBILITIES\*

## Peroperative Aide

Element	Order	Element	Order
Gather supplies	1	Slider board	21
Place wet floor sign at room entrance	2	Waste and linen receptacles including wheels	22
Conduct hand hygiene, don PPE	3	Step stools	23
Inspect Room - identify and report any room issues	4	Kick buckets	24
Inspect floor does it need a pre-map?	5	X-ray display case	25
Gather and remove all used and soiled liners	6	Door handle	26
Gather and remove all trash and infectious waste	7	Cautions and do not touch cords	27
Check sharps containers; if 2/3 full; have container changed	8	Reposition equipment as needed	28
Spot clean any visible soil from low touch surfaces	9	Remove PPE/Conduct hand hygiene	29
Remove PPE/Conduct hand hygiene	10	Don PPE, eye protection, masks, and gloves when working with chemicals or biohazard waste	30
Conduct hand hygiene, don PPE	11	Mop floors	31
Gather pre-moistened with hospital approved disinfectant wipes; place on cart; mop floor to be cleaned. Place soiled wipe in kick bucket and clean liner.	12	Remove PPE/Conduct hand hygiene	32
Light switches	13	Remove wet floor signs and tools; clean; and replace on work station	33
Overhead surgical lights and camera	14	Take liner with soiled wipes to soiled utility	34
Operating room table; break down and clean all components; clean both sides of the mattress and the table base	15	Remove PPE/Conduct hand hygiene	35
Spot clean ceiling and walls if soiled	16	Reline waste and linen receptacles, make sure to clean and disinfect kick bucket	36
Flat surface tables	17	Replace suction canisters	37
Overhead monitors (use screen wipes)	18	Make OR table	38
Boom and arms	19	Rearrange equipment as needed	39
IV poles	20	Inspect work	40
		Conduct hand hygiene, don PPE	41

## Anesthesia Tech

Element	Order
Conduct hand hygiene, don PPE	1
Inspect Room - identify and report any room issues	2
Gather and remove all trash and infectious waste	3
Remove suction containers for cleaning	4
Spot clean any visible soil from low touch surfaces	5
Remove PPE/Conduct hand hygiene	6
Don PPE	7
Spot clean ceiling and walls if soiled	8
TV poles	9
Pylxis (use screen wipes); exterior and wheels	10
Remove PPE/Conduct hand hygiene	11
Don PPE	12
Discard disposable circuit, mask, endotracheal suction tip, tubing, and liner	13
Conduct hand hygiene and don gloves	14
Wipe anesthesia machine surfaces with hospital disinfectant	15
Wipe Pylxis with hospital disinfectant (screen wipes)	16
Wipe cables and check for integrity	17
Remove PPE/Conduct hand hygiene	18

## Scrub

Element	Order
Conduct hand hygiene, don PPE	1
Inspect Room - identify and report any room issues	2
Remove suction containers for cleaning	3
Spot clean any visible soil from low touch surfaces	4
Remove PPE/Conduct hand hygiene	5
Don PPE	6
Spot clean ceiling and walls if soiled	7
Flat surface tables	8
Monitors	9
TV poles	10
Remove PPE/Conduct hand hygiene	11

## Circular

Element	Order
Conduct hand hygiene, don PPE	1
Inspect Room - identify and report any room issues	2
Remove suction containers for cleaning	3
Spot clean any visible soil from low touch surfaces	4
Remove PPE/Conduct hand hygiene	5
Don PPE	6
Light switches	7
Spot clean ceiling and walls if soiled	8
Flat surface tables	9
Nurses desk, monitor (use screen wipes), speakers, phone, keyboard mouse	10
Tourniquet machine	11
Neptune	12
Other equipment in transition	13
Remove PPE/Conduct hand hygiene	14

\*Examples only

# Environmental Hygiene Toolkit \*

## OR Cleaning Checklist - Before first case of the day

Steps	Element	Circular
<b>Prior to the first surgery of the day, before any surgical supplies are brought into the OR</b>		
<b>Damp Dust all horizontal surfaces</b>		
<b>Working from Top to Bottom</b>	Overhead lights	X
	Tables/all flat surfaces	X
	Other pieces of furniture	X
	Other flat pieces of equipment	X
<b>Mop</b>	Damp mop floors with disinfectant	X

Steps	Element	Associate OR Tech	Anesthesia Tech	Scrub	Circular
<b>1: Getting Started</b>	Gather supplies	X			
	Place wet floor sign at room entrance	X			
	Conduct hand hygiene, don PPE	X	X	X	X
	Inspect Room - identify and report any room issues	X	X	X	X
	Inspect floor does it need a mop?	X			
	Gather and remove all used and soiled linens	X			
	Gather and remove all trash and infectious waste	X	X		
	Remove suction containers for cleaning		X	X	X
	Check sharps containers; if 2/3 full; have container changed	X			
	Spot clean any visible soil from low touch surfaces	X	X	X	X
	Remove PPE/Conduct hand hygiene	X	X	X	X

\*Examples only













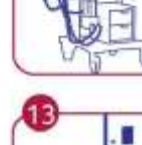

## Operating Room Between-Case Cleaning Procedures

### Scrub

- 1  Conduct hand hygiene, don PPE
- 2  Inspect Room - identify and report any room issues
- 3  Remove suction containers for cleaning
- 4  Spot clean any visible soil from low touch surfaces
- 5  Remove PPE/Conduct hand hygiene
- 6  Don PPE
- 7  Spot clean ceiling and walls if soiled
- 8  Flat surface tables
- 9  Mayo stands
- 10  Ring stands
- 11  Remove PPE/Conduct hand hygiene

## Operating Room Between-Case Cleaning Procedures

### Circular

- 1  Conduct hand hygiene, don PPE
- 2  Inspect Room - identify and report any room issues
- 3  Remove suction containers for cleaning
- 4  Spot clean any visible soil from low touch surfaces
- 5  Remove PPE/Conduct hand hygiene
- 6  Don PPE
- 7  Light switches
- 8  Spot clean ceiling and walls if soiled
- 9  Flat surface tables
- 10  Nurses desk, monitor (use screen wipes), speakers, phone, keyboard mouse
- 11  Tourniquet machine
- 12  Neptune
- 13  Other equipment in transition
- 14  Remove PPE/Conduct hand hygiene

\*Examples only

# DON'T FORGET ABOUT C-SECTION ORs!

## LOCATION

Consider other areas where high-risk procedures occur (hybrid cath labs? Interventional radiology? C-section rooms?)



## PRODUCTS

If a different team tackles C-section ORs, they may use different EPA-registered disinfectants with longer contact times & incompatibility issues.



## TRAINED TEAMS

If trained environmental aides or scrub techs are covering in-between case C&D in the OR, they aren't doing in non-OR spaces.

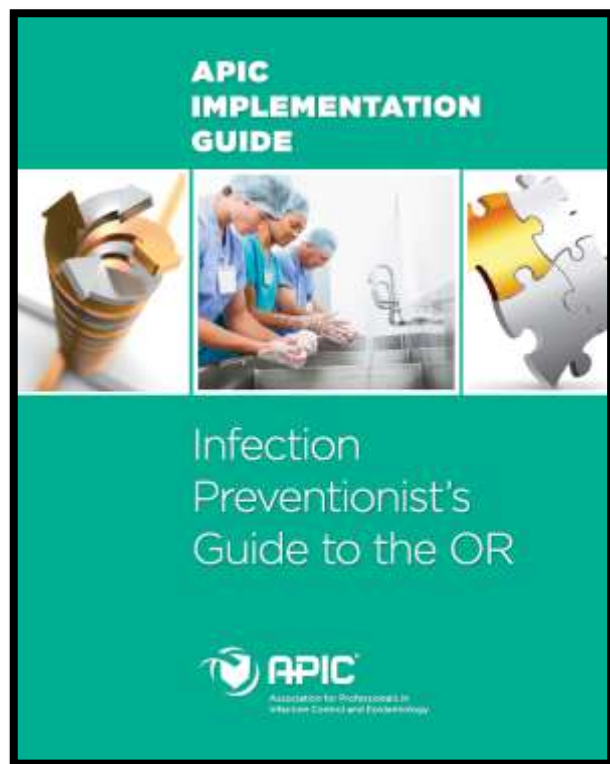


## OB VS OR TRAINING?

OB nurses do not necessarily get the same level of training as OR clinical staff do. Are OB teams familiar with AORN standards? Is an OR educator available to cross-train & educate?



# KEY RESOURCES



[https://apic.org/Resource /TinyMc eFileManager/Implementation Guides/APIC ImplementationPreventionGuide Web FIN03.pdf](https://apic.org/Resource/TinyMc/eFileManager/Implementation%20Guides/APIC%20ImplementationPreventionGuide%20Web%20FIN03.pdf)

<https://www.aornguidelines.org/>

# VYDIA AND REBECCA'S OR CHECKLIST

OR Environmental Cleaning & Disinfection: Waste & Soiled Linen Management			
Segregation: There are separate containers for soiled linen (often blue), general trash (often clear bags) and biohazard waste (always red).	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
Handling: Waste bags, including soiled linens, are handled from the top and carried away from the body.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
Handling: Waste bags are not compressed with hands due to exposure risk.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
Handling: IV fluids are not drained into scrub sinks that could promote the development & growth of wet biofilms.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD

OR Environmental Cleaning & Disinfection: General Cleaning Procedures			
<b>Observer: Note deviations from the preferred order of cleaning &amp; disinfection in ORs. Best practice is to clean from high to low, clean to dirty, and in a consistent pattern (clockwise or counterclockwise). Pay close attention to the number of cloths/wipes used and contact time achievement.</b>			
<b>Pre-cleaning of gross visible soil:</b> Visible blood or body fluids are cleaned & disinfected prior to other activities.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
<b>General:</b> Rooms are well organized with supplies stored in a manner to prevent contamination & not crowded with unused equipment.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>High to low:</b> OR lights and booms are cleaned before the OR table.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>High to low:</b> Tables, stools, IV poles & other equipment are cleaned from top to bottom without moving from the wheels/base upward.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>High to low:</b> The OR table was cleaned from top to bottom, without moving from the wheels/base upward.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Pattern:</b> If more than one cleaner present, cleaners understand one another's role & do not ask one another if surfaces are clean or dirty.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Pattern:</b> The same surface was not cleaned by two (or more) different people.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Cross contamination:</b> Cloths/wipes are not brought from a dirty surface, including the floor, to a clean one.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Cross contamination:</b> Used cleaning cloths/mops are not dipped into cleaning/disinfectant solution (i.e., no double dipping observed).	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Cross contamination:</b> Clean & sterile supplies are not brought into the room before cleaning & disinfection is complete.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Surfaces:</b> Surfaces are wetted for the entire disinfectant contact time (as listed on the label).	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Surfaces:</b> Surfaces, including gel/foam positioning devices, are in good condition without tears, holes, cracks, or rust.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD
<b>Surfaces:</b> Surfaces, including walls and equipment, are free from tape and signage that could impede cleaning and disinfection.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> UTD



<https://drive.google.com/file/d/1XU2RNUB6bhFq2qeBQhKexqIFPd3ggLNN/view?usp=sharing>

# IN SUMMARY

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- Perioperative areas are exceptionally complex, filled with equally complex equipment & surfaces.
- OR environmental cleaning is very dynamic, involving many team members—**defined roles & responsibilities are critical!**
- The best way to build confidence is via experience! We learn something new with every assessment.
- In the facility's highest risk areas, arm cleaning teams with the most effective & efficient tools possible!



# THANK YOU! QUESTIONS?



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