

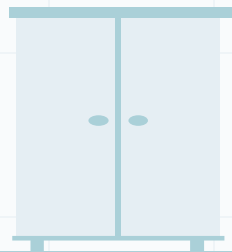
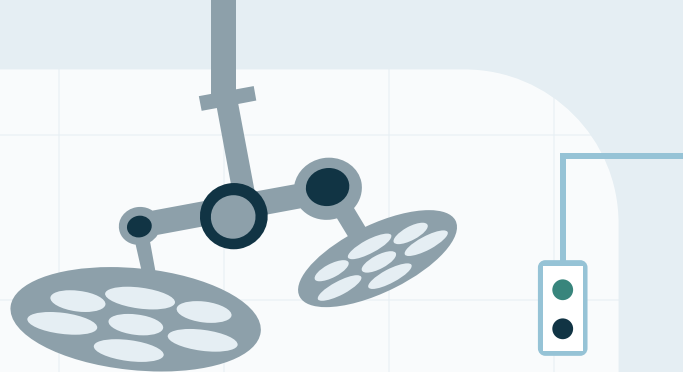


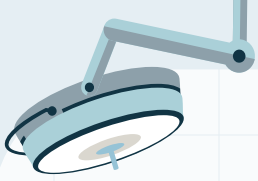
OR TURNOVER

CLEANING & DISINFECTION

Through the Eyes of an IP

Rebecca Battjes MPH, CIC, FAPIC





DISCLOSURE

Rebecca is employed by Diversey. The company pays expenses to develop & present educational content (salary) but has no input into the presentation from a commercial interest.



OBJECTIVES

01

Discuss the IP's role in Operating Room (OR) environmental cleaning & disinfection (C&D)

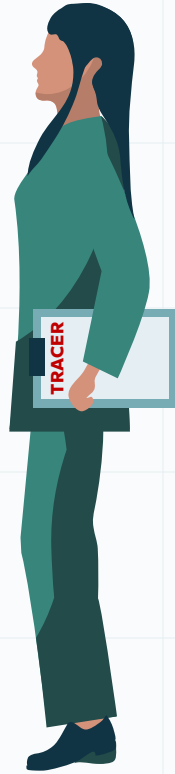
02

Review common OR C&D challenges

03

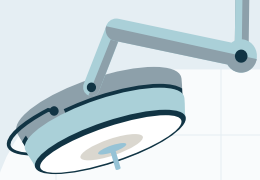
Examine tools to implement best practices for C&D





01

IP ROLE IN OR ENVIRONMENTAL CLEANING & DISINFECTION



KEEPING IT REAL

An IP's first time in an OR can be intimidating.

It's OK to be nervous.

“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



**SURGEONS,
SUBSPECIALISTS,
ANESTHESIOLOGY, OH MY!**



FIRST TIMER TIPS

Learn *Who Does What*

Every facility handles OR in-between case cleaning & disinfection, or turnovers, differently. Is EVS performing turnovers? Is it the clinical team (like in many ASCs)?



Focus on C&D

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

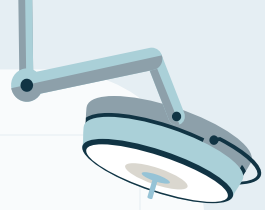
Inform Team Leaders

Unless performing unannounced mock surveys, 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*. Access AORN's sample checklist [here](#).



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; **dirty cleaning tools!**

Hand hygiene & PPE

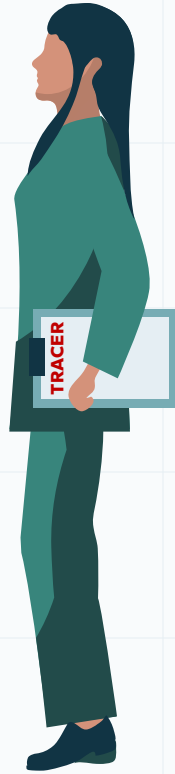
Are cleaners sanitizing hands before donning new gloves? Are they wearing the PPE per facility policy & procedures?

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 of the floor to remove visible blood & body fluids



02

OR

**CLEANING &
DISINFECTION
CHALLENGES**

MAJOR TYPES OF OR CLEANING & 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 . . .

TIME IS A RESOURCE

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

- **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 this turnover time booked into OR schedules?**
- **Is your disinfectant’s contact time > turnover time?**
 - e.g., 10-minute product





WHAT COULD YOU DISINFECT IN 7 MINUTES?

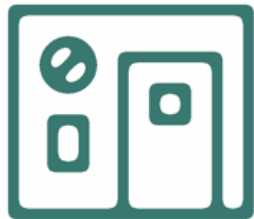
@DRGLAUCOMCFLECKEN



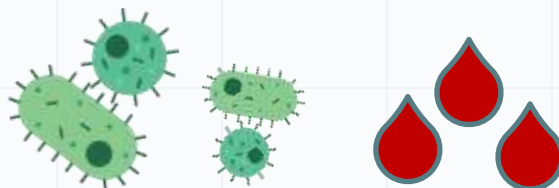


TURNOVER TIME: NOT ALL ROOMS ARE CREATED EQUAL

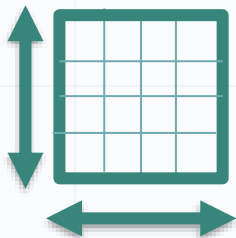
ISOLATION/ENHANCED



LEVEL OF CONTAMINATION



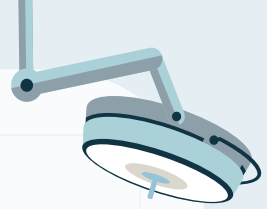
SQUARE FOOTAGE



EQUIPMENT COMPLEXITY

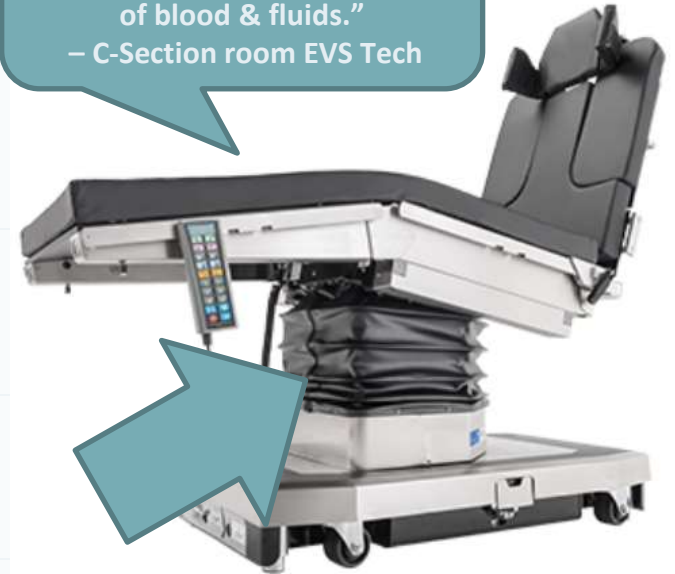


COMPLEXITY OF EQUIPMENT



Disassemble and clean all surfaces of the bed...

"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



AORN WEBINAR: SPECIAL CLEANING PROCEDURES



Enhanced

- Patients with MDROs
- *All items touched* during patient care
- Where:
 - OR/Procedure Rooms
 - Preoperative/Postoperative Areas
- (Siegal et al, 2006)

Specific Pathogens

- *C difficile*
- Airborne transmissible disease (eg, tuberculosis, influenza)
- Creutzfeldt-Jakob disease (CJD)
- Where:
 - OR/Procedure Rooms
 - Preoperative/Postoperative Areas

- **AORN's MDRO list may not match the facility's targeted MDROs.**
- ***Candida auris* added to the list!**

AORN WEBINAR: CLEANING PROCEDURE COMPARISON



Item	Between Case (Y/N)	What to Clean	Enhanced (Y/N)	What to Clean	Terminal (Y/N)	What to Clean
Mounted Equipment (eg, suction or gas regulator, imaging viewer)	Yes, if used	Control panels, switches, knobs, handles	Yes	Control panels, switches, knobs, handles	Yes	All equipment surfaces, including mounting arm
Doors	No		Yes	Handle or push plate	Yes	All surfaces
Storage cabinets	No		Yes	Handles, frequently touched surfaces	Yes	All outside surfaces
Chairs and stools	No		Yes	Arm rests, seat, seatbacks, and adjustment lever	Yes	All surfaces, including wheels and casters

SAFE SURGERY TOGETHER

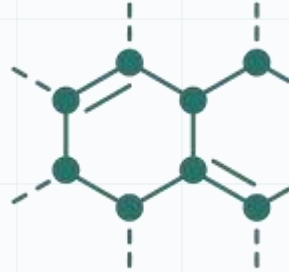


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CLEANING TOOL CHALLENGES



**UNACHIEVABLE
CONTACT TIMES**



**QUAT
BINDING
RISKS**

Boyce
2016



**NO
SPRAYING
IN ORs**

AORN 2020



**CONTAMINATED
CLEANING
CLOTHS**

Sifuentes
2013



CLEANING TOOL CHALLENGES



**NONDEDICATED
CLEANING
TOOLS**



**DRY
CLEANING
TOOLS**



**COMPATIBILITY
& IFUs**



**INEFFECTIVE
CLEANING
TOOLS**

WHY I(Ps) LOATHE COTTON STRING MOPS



- Surprisingly, no “ban” on cotton string mop use.
- **Reusable tools can contribute to contamination! (Dancer 2014)**
- Likely high utilization in resource-limited settings BUT *still* identified in US facilities.

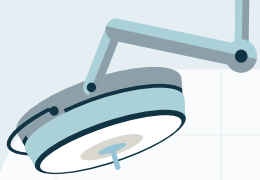
Per CDC HICPAC:

E.1.H.2. - Change the mop head at the **beginning of the day** and also as required by facility policy, or after cleaning up large spills of blood or other body substances. (II)

E.1.H.3 - Clean mops and cloths after use and allow to dry before reuse; or use single-use, disposable mop heads and cloths. (II)

E.1.I. - After the last surgical procedure of the day or night, wet vacuum or mop operating room floors with a single-use mop and an EPA-registered hospital disinfectant. (IB)



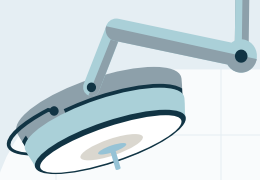


SPEAKING OF FLOORS!



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 ORs cannot fully predict “potential” soil & so disinfect in between all cases.
- To meet disinfectant label IFU, disinfectant should be applied & not disturbed for full contact time!
 - OR staff may be shocked! Be prepared!



SPEAKING OF FLOORS!



- Quat-based disinfectants (very common) inherently leave residue which create **stickiness** & **haziness** over time
 - Regular cleaning with neutral cleaners should restore
 - Contact your disinfectant manufacturer! They can help!
- Do we have access to flooring IFUs??
 - Older buildings, older substrates

**THROUGH THE EYES
OF AN INFECTION
PREVENTIONIST**



DAMAGED SURFACES



DAMAGED SURFACES



DIFFICULT TO CLEAN SURFACES



Positioning devices



Tables & bases



Taped surfaces

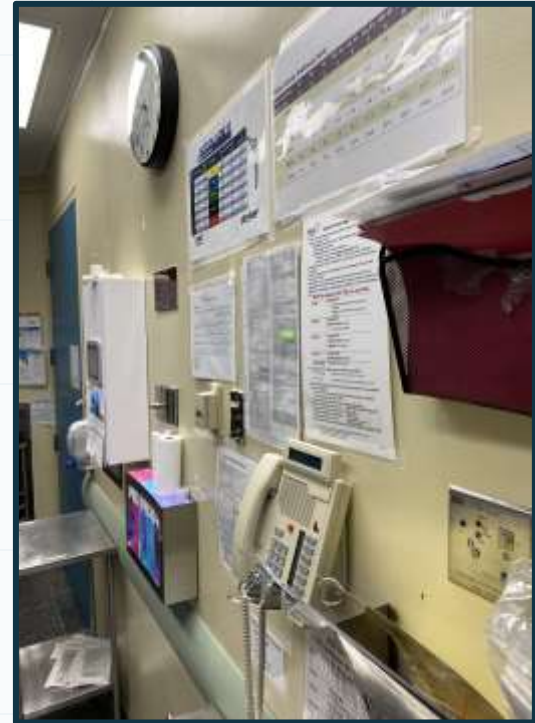


DIFFICULT TO CLEAN SURFACES

4.2.5

Spot clean and disinfect the walls after each surgical or invasive procedure when visibly soiled . . .

PAPER TAPED TO OR WALLS!



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 and other high-touch anesthesia equipment in ATP testing, fluorescent marking and/or visual audits.



Visible dust between keys on an OR keyboard



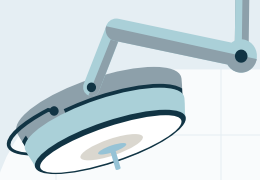
Newer keyboards with no gaps, more cleanable, able to withstand healthcare disinfectants



INAPPROPRIATE WASTE DISPOSAL

**DRAINING OF IV
FLUIDS IN
SCRUB SINK**

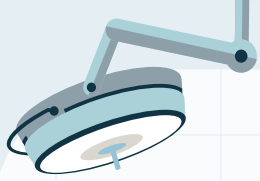




OH ANESTHESIA!



- 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 ASC & LDRP!
- EVS generally does not touch Anesthesia equipment
 - Realistic fears of damaging biomedical equipment (knobs, dials, etc.)
- Does validation program (ATP, fluorescent marking) include anesthesia surfaces?



ANESTHESIA CHALLENGES

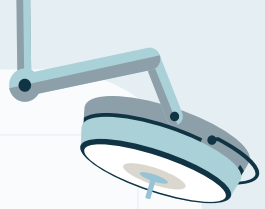




03

**TOOLS TO
IMPLEMENT
BEST PRACTICES**

SELECTING PERIOP PRODUCTS



- Environmental Protection Agency (EPA) registration and hospital-grade rating
- targeted microorganisms
- contact times
- manufacturers' instructions for use (IFU)
- compatibility with surfaces, cleaning materials, and equipment
- patient population (e.g., neonatal)
- cost
- safety
- effect on the environment [Recommendation]

OVERCOMING COMMON CHALLENGES



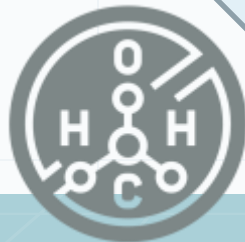
**UNACHIEVABLE
CONTACT TIMES**



QUAT BINDING

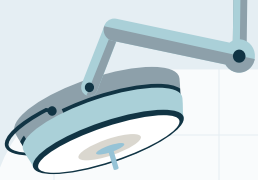


**SPRAY BOTTLES,
CONTAMINATED RAGS & MOPS**



I've been
tested for
QAC
compatibility





DISINFECTANT MANUFACTURER PARTNERSHIPS

Comprehensive training/education, 24-7 customer support, and other resources are key consideration when selecting product (Rutala 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.

PROVIDE RESOURCES!

BEST PRACTICES OPERATING ROOMS



Video on Best
Practices

<http://www.diverse.digital.com/natools/videoHub/800974919.php>

For a Safe, Satisfying Environment of Care

BEST PRACTICES CLEANING AN OR TABLE



Video on OR
Table Cleaning

<http://www.diverse.digital.com/natools/videoHub/799596831.php>

For a Safe, Satisfying Environment of Care



DEFINING OR ROLES & RESPONSIBILITIES

Preoperative 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 linens	6	Door handles	26
Gather and remove all trash and infectious waste	7	Courtesy machine, foot pedal and cords	27
Check sharps containers, if 2/3 full, have container changed	8	Other equipment in transition	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	Map floors	31
Gather pre-moistened with hospital approved disinfectant wipes, place on each item that needs to be cleaned. Place soiled wipes in a lock bucket with a 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 arms	14	Take linen 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
TV 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
Wipe low screen wipers, estimate and wheels	10
Remove PPE/Conduct hand hygiene	11
Don PPE	12
Discard disposable circuit, mask, endotracheal tube, suction tip, tubing, and liner	13
Conduct hand hygiene and don clean gloves	14
Wipe anesthesia machine surfaces with approved hospital disinfectant	15
Wipe PPE with approved disinfectant (use screen wipers)	16
Wipe cables and sensors checking for wire 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
Map waste	9
Ring stands	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
Nurse's desk, monitor (use screen wipers), speakers, printer, keyboard mouse	10
Trauma table machine	11
Mapline	12
Other equipment in transition	13
Remove PPE/Conduct hand hygiene	14

DEFINING OR ROLES & RESPONSIBILITIES

Operating Room Between-Case Cleaning Procedures

Scrub

1. Conduct hand hygiene, don PPE
2. Spot clean ceiling and walls if soiled
3. Remove curtain materials for cleaning
4. Spot clean any visible soil from touch surfaces
5. Remove PPE/Conduct hand hygiene
6. Don PPE
7. Spot clean ceiling and walls if soiled
8. Flat surface tables
9. Flat surface tables
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. Triage machine
12. Bedside
13. Other equipment in hallway
14. Remove PPE/Conduct hand hygiene



Environmental Hygiene Toolkit

OR Cleaning Checklist - Before first case of the day

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



DEFINING OR ROLES & RESPONSIBILITIES



Environmental Hygiene Toolkit OR Between Case Cleaning

Steps	Element	Associate OR Tech	Anesthesia Tech	Scrub	Circular
1: Getting Started	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 pre-map?	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

DEFINING ROLES & RESPONSIBILITIES



2A: Clean and Disinfect Operating Room Surfaces and Equipment

Conduct hand hygiene/Don PPE: eye protection, masks, and gloves when working with chemicals or biohazard waste	X	X	X	X
Gather pre-moistened with hospital approved disinfectant wipes; place on each item that needs to be cleaned. Place soiled wipes in a kick bucket with a clean liner	X			
Light switches	X			X
Overhead surgical lights and arms	X			
Operating room table; break down and clean all components; clean both sides of the mattress and the table base	X			
Spot clean ceiling and walls if soiled	X	X	X	X
Flat surface tables	X		X	X
Mayo stands			X	
Ring stands			X	
Overhead monitors (use screen wipes)	X			
Boom and arms	X			
TV poles	X	X		
Slider board	X			
Waste and linen receptacles including wheels	X			
Step stools	X			
Kick buckets	X			
Nurses desk, monitor (use screen wipes), speakers, phone, keyboard mouse				X
Tourniquet machine				X
X-ray display case	X			
Door handles	X			
Pylons (use screen wipes); exterior and wheels		X		
Cautery machine, foot pedal and cords	X			
Neptune				X
Other equipment in transition	X			X
Remove PPE/Conduct hand hygiene	X	X	X	X
Don PPE	X			
Mop floors	X			

DEFINING OR ROLES & RESPONSIBILITIES



2B: Anesthesia Machine Cleaning	Conduct hand hygiene/Don PPE		X		
	Discard disposable circuit, mask, endotracheal tube, suction tip, tubing, and liner		X		
	Conduct hand hygiene and don clean gloves		X		
	Wipe anesthesia machine surfaces with approved hospital disinfectant		X		
	Wipe Pyxis with approved disinfectant (use screen wipes)		X		
	Wipe cables and sensors checking for wire integrity		X		
	Remove PPE/Conduct hand hygiene		X		
3: Finish the Room	Remove wet floor signs and tools; clean; and replace on work station	X			
	Take liner with soiled wipes to soiled utility	X			
	Remove PPE/ Conduct hand hygiene	X			
	Reline waste and linen receptacles, make sure to clean and disinfect kick bucket	X			
	Replace suction canisters	X			
	Make OR table	X			
	Rearrange equipment as needed	X			
	Inspect work	X			
Conduct hand hygiene/Don PPE	X				

BUILDING ACCOUNTABILITY



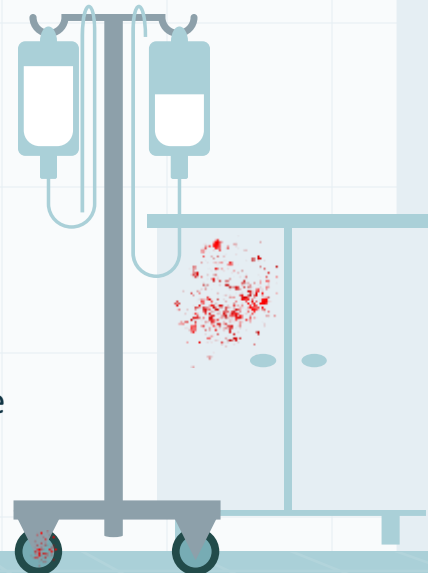
TALK TO OR STAFF!

OR staff are hardwired to follow rules—even if they sometimes break them. They truly want to safest environment for their patients. Ask them if they ever find visible contamination at the start of the day. What are their challenges? Ask, “How can I help?”



ENCOURAGE EVENT REPORTING

Staff may feel ignored or unheard. Encourage safety/event reporting as “near misses” anytime **blood contamination is identified after a terminal clean**. An anonymous option is usually available. Tag infection prevention in reports. If we don’t know what is happening, we cannot help.





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?



PARTNERING WITH C&D TEAM



Use patient stories to educate

Reminding HCP that behind every HAI is a human being can help motivate teams to do the right thing.



Share surgical site infection (SSI) data

Frontline staff do not attend Infection Control Committee (ICC) meetings typically. How are they learning about HAIs potentially linked to the environment?



Review reoccurring OR C&D issues at ICC meetings

Document the issues that are not being addressed. Being transparent may help you achieve your IPC goals during an accreditation or regulatory survey!

KEY RESOURCES



https://apic.org/Resource_TinyMceFileManager/Implementation_Guides/APIC_ImplementationPreventionGuide_Web_FIN03.pdf

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

DIVERSEY IP CONTACTS



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Thanks!

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