

OR TURNOVER

Improving speed without compromising quality



202209 – DFW APIC

YOUR PRESENTER

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DISCLOSURE

- Jim is employed by Diversey. His expenses to present at this meeting (salary) are paid by this company.

LEARNER OBJECTIVES

- Describe the business case for improved operating room cleaning and disinfection
- Identify factors to consider when selecting cleaning products
- Discuss enhanced cleaning procedures.
- Examine tools to implement best practices for cleaning and disinfection



DIVE BRIEF

Medtechs brace for hit as hospitals warn of omicron impact on surgeries

Published Jan. 5, 2022

Business

Patients in pain as omicron wave leads to surgery delays

'It's a bona fide mess right now': Coronavirus cases and staff shortages force hospitals to close beds

Washington Post 20220120

TREATMENTS

Americans get sicker as omicron stalls everything from heart surgeries to cancer care

February 4, 2022 · 5:01 AM ET

NPR

TIME IS A RESOURCE

- Turnover is time between “wheels out” and “wheels in”
 - Goal is typically 20 minutes
- Many factors can affect turnover
- Needed processes
 - Cleaning teams available immediately
 - Cleaning supplies available
 - Defined roles and responsibilities
 - Training on best practices
 - Monitoring thoroughness

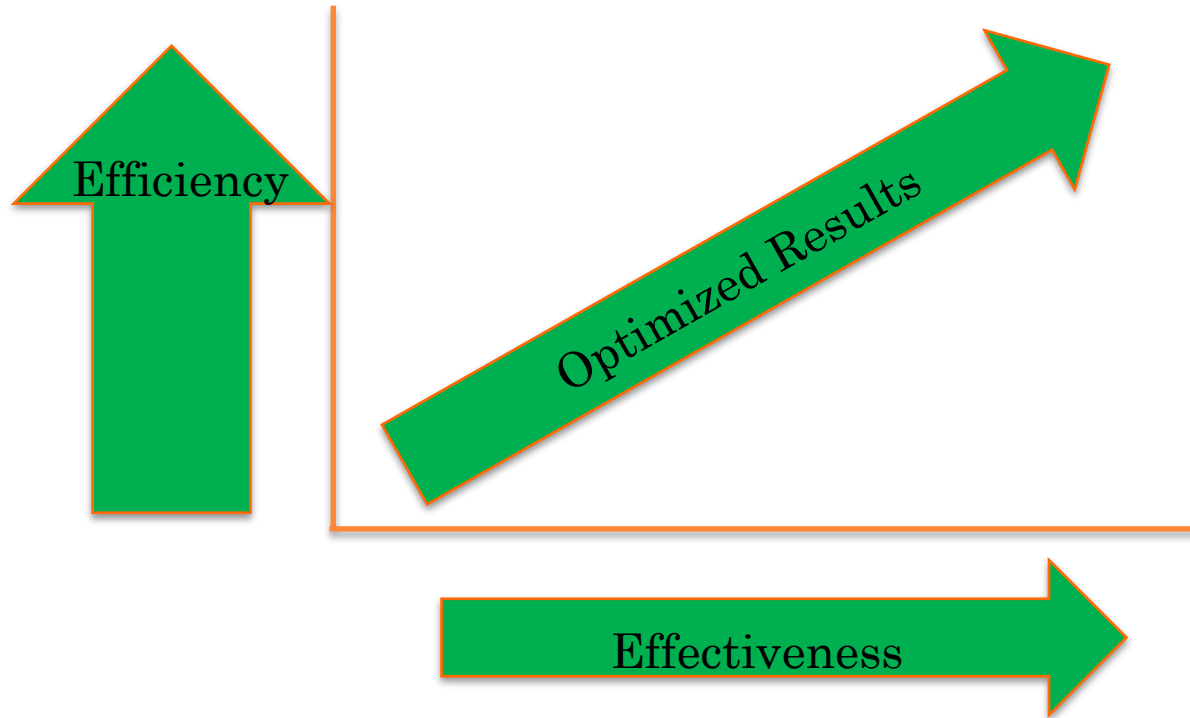


TIME IS MONEY

- How fast can you get the room ready for the next case??



HOWEVER...EFFICIENCY AND EFFECTIVENESS ARE CRITICAL



CLINICAL STUDIES ON PERIOPERATIVE ENVIRONMENTAL CLEANING

- Cleaning is critical to patient experience
 - Patient satisfaction
 - Community reputation
 - Transmission of HAIs
- Studies show only 40% of near patient surfaces are cleaned according to facility policy



OPERATING ROOMS CLEANING COMPLIANCE IS POOR

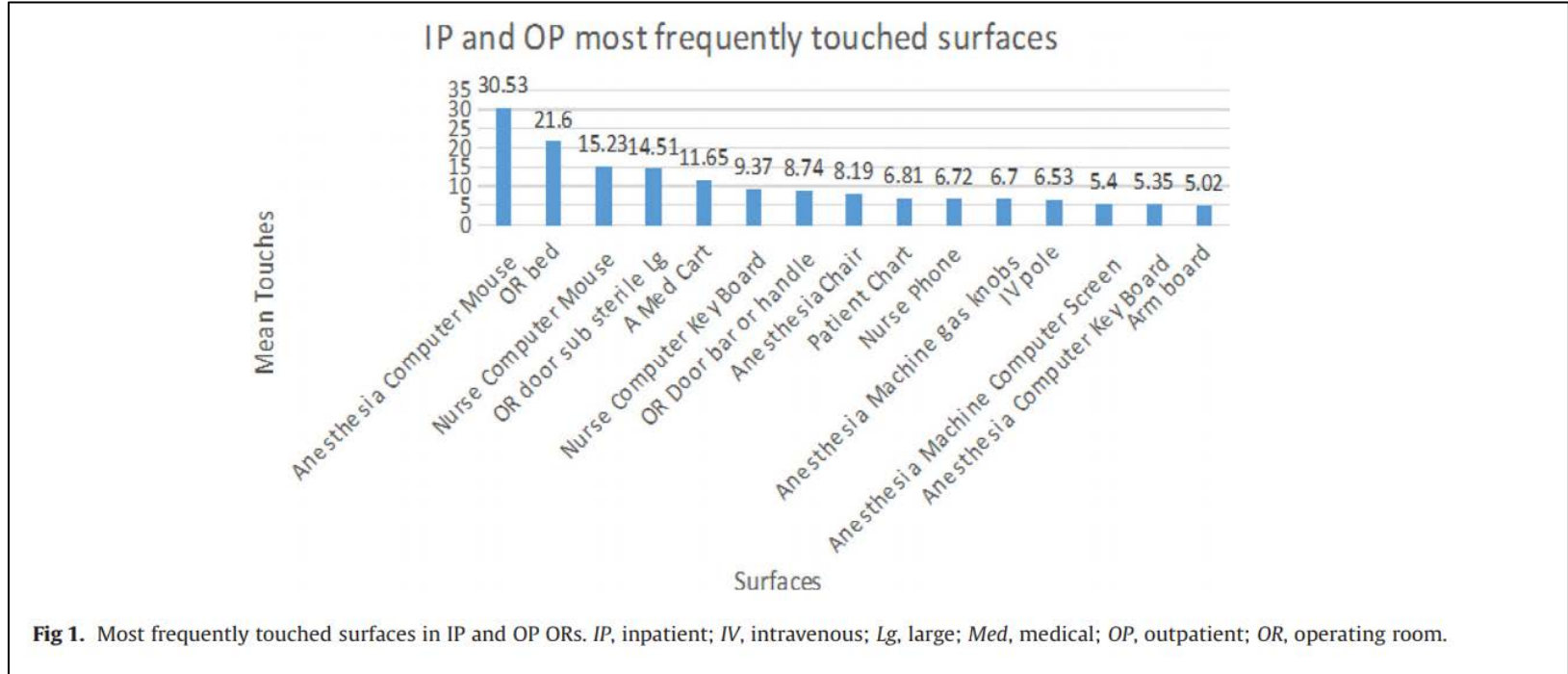
- A 6 hospital study showed that operating room cleaning compliance was ~25%
- Some surfaces were cleaned as frequently as 70%, while others were as infrequently as <10%,
- A lack of consistent cleaning compliance is driving interest in other solutions, such as no touch disinfection.

TABLE 2. Thoroughness of Cleaning

Object	Mean proportion cleaned (%)	Lowest proportion cleaned (%)	Highest proportion cleaned (%)	Standard deviation	95% CI
Main door	34.3	0	72	30.5	2.3 to 66
Main field light	33	0	65	23	9 to 56
Telephone	29.8	13	50	16	13 to 46
Anesthesia machine	28	10	50	17	7.5 to 49
Bovie control	22	0	67	26	0 to 54
Second OR door	21.7	5	65	22	1 to 44
Anesthesia cart	20.6	0	73	31	0 to 59
Main light switch	14.5	3	20	7	7.3 to 22
Second field light	14.2	0	27	12	1 to 34
Storage cabinet handle	5.6	0	17	8	1 to 15
Mean	24.9	9	50	15	9.3 to 40



HIGH TOUCH OR SURFACES



THE IMPACT OF HAIS

- Infections not present at admission
- Each year, approximately 1.7 million HAIs occur in U.S. hospitals, resulting in 99,000 deaths and an estimated \$20 billion in healthcare costs.
- SSIs are the most costly HAI
 - Add ~7-11 days to LOS
- Estimated 40-60% are preventable



CLEANING AND DISINFECTION: ENVIRONMENT

- OR is perceived as cleanest area of hospital, but it may not be due to gaps in cleaning
 - Microorganisms are invisible
 - Unclear roles and responsibilities
 - Incompatible disinfectant
 - Inefficient cleaning protocols



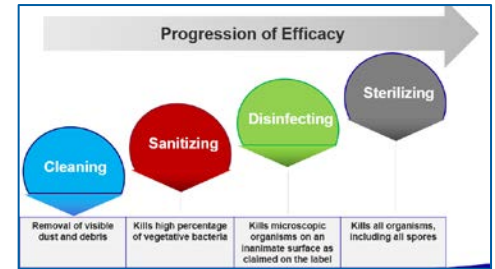
CLEANING AND DISINFECTING: MODALITIES

- Comprehensive, programmatic approach
 - Select the right products to get the job done (i.e. fast-acting, broad spectrum)
 - Ensuring that the contact time is being met
 - Standardized processes to ensure high-touch surfaces are consistently disinfected
 - Best practices to prevent cross-contamination
 - Objective processes to measure program effectiveness



CLEANING VS. DISINFECTION

- Cleaning is the physical removal of soil, organic contamination from device or surface
- Disinfection is a higher level of cleaning
 - Antimicrobial activity
 - Inactivates vegetative microorganisms
 - Does NOT necessarily remove all microbial forms



CHEMICAL DISINFECTANTS

- Used to destroy/suppress growth of harmful microorganisms
- Can contain a large variety of active ingredients
- Forms include
 - Pre-wetted wipes
 - Sprays
 - Liquids
 - Tablets
 - Fogs
 - UV Light



SELECTING DISINFECTANTS



Available Where/
When Needed



Fast and Effective



Cost Effective



Pleasant and Safe



Easy to Use



Compatible with my Assets



Helps reduce HAIs



CRITERIA OF AN IDEAL DISINFECTANT – 5 CONSIDERATIONS

Consideration	Questions to ask?
Kill claims	Does it kill the pathogens needed in your environment?
Kill times and wet contact times	How quickly does the product kill the pathogens? Are the pathogens killed before the disinfectant dries? Ideally, contact time should be greater than or equal to the kill claim.
Safety	Is it safe for the facility and stakeholders? What is the toxicity rating, flammability rating, etc.
Ease-of-use	Acceptable odor, shelf-life, forms of delivery (wipes, spray), water soluble, one step (cleans/disinfects)
Other factors	Supplier support – training and education, overall cost acceptable (product capabilities, cost per use, standardization of disinfectants used)

CONTACT AND KILL TIMES

- EPA registered disinfectants are required
- Total disinfection does not happen on contact
- Contact times are listed on the label
- Ideal disinfectants deliver rapid, realistic contact times

SAFETY AND EASE OF USE

- No one disinfectant is compatible with all surfaces
- Important that disinfectant that will not damage surface from routine use
- Users prefer products that are considered non-hazardous
- Connection between compliance and ease of use



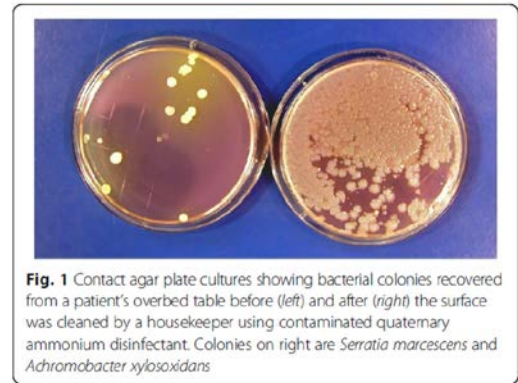
CLEANING PROCESS AND EQUIPMENT

- Environmental cleaning must occur *after* the patient has left to avoid cross-contamination, disease transmission
 - High touch objects
 - Reusable non-critical items
 - Nonporous surfaces
 - Equipment
 - Floors
 - Walls



CLEANING PROCESS AND EQUIPMENT

- 93% of reusable cleaning cloths were found to contain pathogenic bacteria after use
- Cleaning solutions become increasingly contaminated with repeated use
 - Cloths or mops should never be 're-dipped' into the cleaning/disinfecting solution
 - Biofilm can form in mop and cloth buckets if not cleaned and disinfected between uses



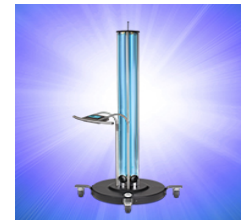
CLEANING PROCESS AND EQUIPMENT

- Disposable pre-wetted wipes
 - 35% higher compliance
 - 23% less cleaning time
 - Cost savings of \$38 / employee / day



UV LIGHT DISINFECTION

- UV disinfection for air, water began in mid-20th century
- No-touch, automated disinfection modality
- Uses 200-280 nanometers of germicidal short-wavelength UV-C light
- Breaks down bond of DNA, RNA
- Typical disinfection cycle of 15 minutes



UV LIGHT DISINFECTION

- Studies showed UV-C significantly reduced *C. difficile* and MRSA
 - Organic matter impeded overall disinfection
 - Manual cleaning should be used in conjunction with UV-C
- UV-C only disinfects line of sight
- Best used after a standard cleaning



MONITORING MODALITIES

- Validating cleaning effectiveness
 - Assures cleanliness of surfaces, equipment
 - Helps reduce the spread of infection
 - Saves money
 - Better cleaning and lower infection rates



MONITORING MODALITIES

- Methods of validating cleaning
 - Visual inspection
 - Culturing
 - ATP testing
 - Fluorescent marking



VISUAL INSPECTION

- Does not show microbial contamination
- US hospital sampling
 - 89% said visual assessment of cleanliness is primary
- Visual inspection limitations
 - Inability to assess actual environment of care cleaning practice
 - Reliance on negative findings for remedial interventions
 - Undue emphasis on cleanliness of floors, walls



VISUAL INSPECTION - CONTINUED

- Visual inspection limitations
 - Poor correlation with microbial contamination
 - Subjective with observer bias
 - Inconsistent, misdirected responses
 - Limited ability to support Accreditation Canada standard
 - Inability to participate in benchmarking



MICROBIOLOGICAL SWAB CULTURING

- Slow
- Expensive
- Limited to agar or swab used
- Can be quantitative



ATP TESTING

- Enzyme that is present in organic cells
- ATP Monitoring can detect amount of organic matter
- Uses special swab to sample surface
- Provides objective metric for personnel training
 - Clean/Dirty
 - No correlation with microbial count



FLUORESCENT MARKING



- High-touch objects are identified with fluorescent marking
- UV light is used after cleaning to determine effectiveness of disinfection
- Studies show improved cleaning of 85% or above when used

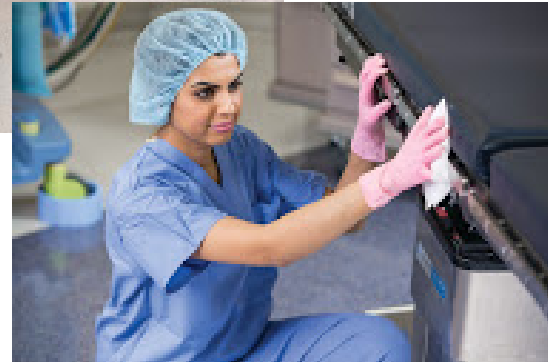
Carling 2010
Goodman 2008
Munoz-Price 2012



TOOLS TO IMPLEMENT BEST PRACTICES



ROLES AND RESPONSIBILITIES



CHECKLISTS

- Enhanced cleaning protocol
 - Created by multidisciplinary team
 - Outline the organizations cleaning procedures
 - Facilitate communication between team
 - Include metrics, benchmarks, goals
- CDC recommends delegation of responsibilities
 - TJC looks for this during survey

Steps	Elements	YES	NO	N/A
1: Prepare for Daily cleaning	Gather all needed supplies			
	Perform hand hygiene			
	Note Precautions signs, put on appropriate Personal Protective Equipment			
2: Remove	Put wet floor sign near room entrance			
	Remove all trash, linen, infectious waste, suction canisters and disposable tubing and equipment			
3: Operating Area	Discard the collected waste into designated containers. Close and properly seal the containers and set them at the operating room door. Place all contaminated laundry in leak-proof containers or bags and label the location where it was used.			
	Clean and disinfect the operating room table			
	Wipe down all horizontal surfaces (i.e. over the operating room table, such as surgical lights, reflectors and arms.			
4: Operating Room Area including High Touch Surfaces (HTS) and room entrance	Break down the operating room table and thoroughly inspect each component, including both sides of the mattress, hand surfaces, and the base of the table. The table should be cleaned from top to bottom finishing with the wheels and casters			
	Anesthesia machine			
	Oversized procedure lights, monitor handles			
	Computer and electrical surgical units			
	Door handles or push plates			
	Equipment (mobile or fixed)			
	Wall mounted hand soap/sanitizer dispensers (if present)			
	Light switches			
	Walls			
	OR bed			
	OR bed attachments and straps			
	Patient monitors and IV poles			
	Point of transfer devices, including straps and attachments			
	Positioning devices			
	Glove box and gown holders			
	Storage cabinets, supply carts, furniture			
	Traffic and linen receptacles			
	Chairs, stools, step stools			
	Tables and Mayo Stands			
	Telephones and mobile devices			
Casters and wheels on any machine				
Other patient equipment, i.e. blood pressure or tourniquet cuffs				
Floors				
5: Refill	Refillish canisters and reusable suction canisters			
6: Inspect	Ensure room is properly cleaned and looks clean/presentable			
	Equipment and furniture properly arranged Report anything that is not working properly			
7: Remove	Remove gloves and perform hand hygiene, replace with new gloves			
8: Clean Floor	Mop the floor in the OR with cleaner/disinfectant, making sure to move equipment around to get all areas, minding dwell time. Finish at the room door			

WORKFLOW EXAMPLES

Operating Room: Between-Case Cleaning Procedures Center Process

Getting Started

1. Enter room
2. Consult hand hygiene bulletin
3. Check room safety and alarm status
4. Defer and remove clean and medical waste
5. Defer and remove linen and medical waste
6. Service suction and tubing
7. Check steps of procedure and change
8. Roll over any table surfaces for clean surface
9. Place net top up in appropriate
10. Perform HIC/Contact tracing log

NOTE: All steps and areas should be handled with extreme caution for your protection.

Clean and Disinfect Operating Room Surfaces and Equipment

NOTE: Consistent with AORN's Infection Control Guidelines, cleaning tasks should be performed in a path that starts in the center of the room and moves toward the perimeter. For clean rooms, the center is the center.

1. Clean hand hygiene bulletin
2. Defer cleaning until room is empty and all medical equipment is in its rest position
3. Defer and log all equipment
4. Clean and disinfect floor
5. Clean and disinfect door handle
6. Light fixtures
7. Telephone, log pads and monitors
8. Overhead light
9. Desk
10. Control panel
11. Supply cart
12. Floor/wall base
13. Hinge doors
14. Bed bases
15. Defer and log
16. Bed and arms
17. TV panel
18. Bed base
19. Sinks and other equipment
20. Bed ends
21. Crib bases
22. View fence
23. Service HIC/Contact tracing log

Finishing the Room

1. Verify code and alarm status
2. Service suction devices
3. Verify status
4. Remove equipment from room
5. Check room
6. Consult hand hygiene bulletin
7. Service net top and remove from room
8. Transport waste and return to collection area
9. Service HIC/Contact tracing log

Patient Room Discharge Cleaning

Patient Area

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Zone 3

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Zone 5

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Restroom Area

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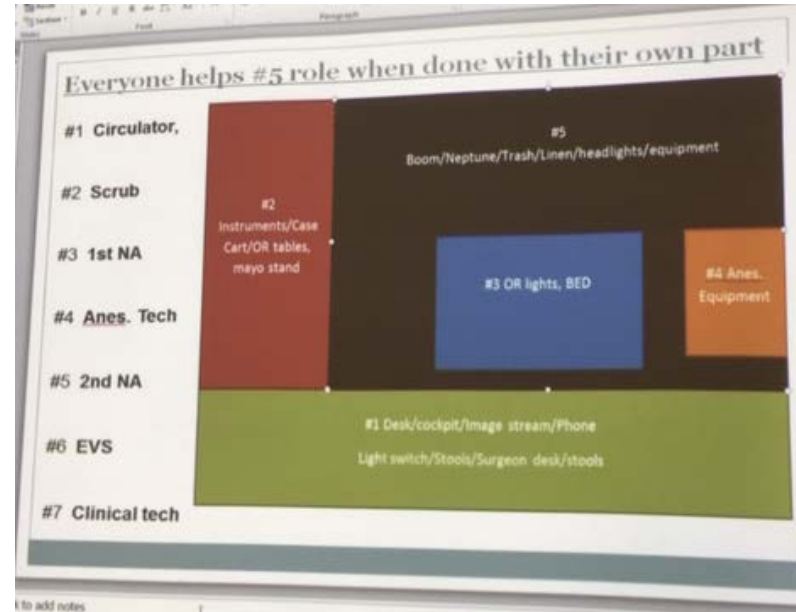
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89. Defer and log
90. Defer and log
91. Defer and log
92. Defer and log
93. Defer and log
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98. Defer and log
99. Defer and log
100. Defer and log



WORKFLOW EXAMPLES

University of Iowa Zone Roles



WORKFLOW EXAMPLES – LEAP FROG

OR Toolkit

- 1) Start with the checklist
- 2) Proceed through numbered list
- 3) Any additional person knows next number

		1	2	3	4
		P	P	P	P
		P	P	P	P
		P	P	P	P
				1	
1: Prepare for Daily cleaning	Gather all needed supplies	P	P	P	P
	Perform hand hygiene	P	P	P	P
	Note Precautions signs; put on appropriate Personal Protective Equipment	P	P	P	P
2: Remove	Remove all trash, linen, infectious waste, suction canisters and disposable tubing and equipment	1	1	1	1
	Discard the collected waste into designated containers. Close and properly seal the containers and set them at the operating room door.	2	2	2	2
	Place all contaminated laundry in leak-proof containers or bags and label the location where it was used.	1	1	1	1
3: Operating Area	Clean and disinfectant the operating room table	3			
	Wipe down all horizontal surfaces i.e. over the operating room table, such as surgical lights, reflectors and arms.	5			
	Break down the operating room table and thoroughly disinfect each component, including both sides of the mattress, head surfaces, and the base of the table. The table should be cleaned from top to bottom finishing with the wheels and casters	6			
	Anesthesia machine		3		
	Overhead procedure lights, monitor handles			3	
	Computer and electrical surgical units			4	
	Blow handles or push plates			5	
	Equipment (mobile or fixed)				3
	Wall mounted hand soap/sanitizer dispensers (if present)				4
	Light switches				5
4: Operating Room Area including High Touch Surfaces(HTS) and room entrance	Walls				6
	OR bed				
	OR bed attachments and straps	7			
	Patient monitors and IV poles	8			
	Patient transfer devices, including straps and attachments	9			
	Positioning devices	10			
	Glove box and gown holders				
	Storage cabinets, supply carts, furniture				
	Trash and linen receptacles				
	Chairs, stools, step stools				
	Tables and Mayo Stands				
	Telephones and mobile devices				
	Casters and wheels on any machine				
	Other patient equipment, i.e. blood pressure or tourniquet cuffs				
	Floors				7 or end
5: Refill	Replenish all liners and reusable suction canisters		4		
6: Inspect	Ensure room is properly cleaned and looks clean/presentable				
	Equipment and furniture properly arranged				
7: Remove	Report anything that is not working properly				
	Remove gloves and perform hand hygiene, replace with new gloves				
8: Clean Floor	Mop the floor in the OR with cleaner/disinfectant, making sure to move equipment around to get all areas, minding dwell time. Finish at the room door.				8



WORKFLOW EXAMPLES - ZONE

Environmental Hygiene Task					
OPERATING ROOM CLEANING CHECKLIST BETWEEN CASE					
1. Prepare for Daily work	Hand hygiene	✓	✓	✓	✓
2. Release	Remove all unnecessary items from the operating room	✓	✓	✓	✓
3. Cleaning Area	Wipe down the operating room surfaces with disinfectant	✓	✓	✓	✓
4. Operating Room	Wipe down the operating room surfaces with disinfectant	✓	✓	✓	✓
5. Disinfectant	Wipe down the operating room surfaces with disinfectant	✓	✓	✓	✓
6. Disinfectant	Wipe down the operating room surfaces with disinfectant	✓	✓	✓	✓
7. Disinfectant	Wipe down the operating room surfaces with disinfectant	✓	✓	✓	✓
8. Disinfectant	Wipe down the operating room surfaces with disinfectant	✓	✓	✓	✓



Add image of disinfectant for Touched surfaces

Add image of disinfectant for Walls & Floors



WORKFLOW EXAMPLES - ZONE

**Operating Room:
Between-Case
Cleaning Procedures**

**GREEN
ZONE**

1
Touched surfaces, Walls



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**Operating Room
GREEN ZONE**

NOTE: Consistent with AORN Guidelines, Diversey recommends following these guiding principles while cleaning: Clean from high to low. Clean less soiled areas first then move to more soiled areas (clean to dirty). Clean the perimeter first then move to the center.

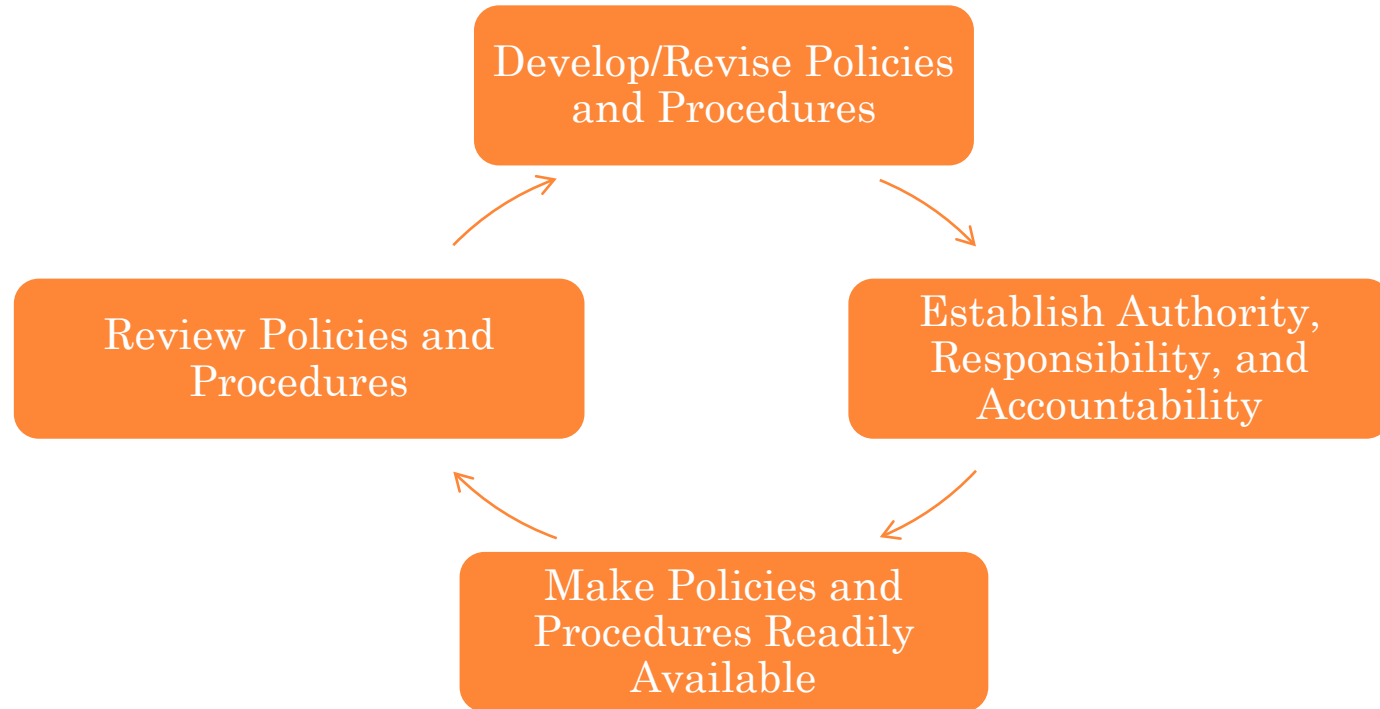
Touched surfaces, Walls

- 1** Gather supplies
- 2** Conduct hand hygiene/ Put on PPE
- 3** Gather and remove all used and soiled linens
- 4** Gather and remove all trash and infectious waste
- 5** Overhead monitors
- 6** IV poles
- 7** Operating room table; break down and clean all components; clean both sides of the mattress and the table base
- 8** Slider board and any patient positioning equipment

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POLICIES AND PROCEDURES



EMPLOYEE ENGAGEMENT AND TRAINING

○ AORN Guidelines

- Perioperative personnel should receive training on
 - Effect of cleaning on HAIs
 - Selection of cleaning products
 - Appropriate steps for cleaning
 - Verification of cleaning processes



CONTINUOUS IMPROVEMENT

Quality assurance and performance improvement programs

- Are problems improving?
- Are problems stabilizing?
- Are problems worsening?



REMAIN VIGILANT TO ENSURE A SAFE AND CLEAN PROCEDURAL ENVIRONMENT!

- Education and training
- Appropriate cleaning equipment and supplies
- Continuous improvement efforts



QUESTIONS?



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