

# ENVIRONMENTAL CLEANING & DISINFECTION IN REHAB & DIALYSIS:

## *Key Considerations for the Infection Preventionist*

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APIC Delaware Valley

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# Disclosure

Rebecca is employed by Diversey—  
A Solenis Company. Her expenses  
to attend this presentation (travel,  
accommodation, and salary) are  
paid by this company. Diversey has  
had no input into this presentation  
from a commercial interest.



*Me, as the Infection Control  
Assistant in 2005*

# TODAY'S OBJECTIVES

1

## CHARACTERISTICS

Review Drs. Rutala & Weber's key considerations for selecting healthcare disinfectants.

2

## COMPLIANCE

Describe regulatory elements of disinfectants, including manufacturer's instructions for use (MIFU) & emerging viral pathogen (EVP) claims language.

3

## PROCEDURES

Provide facility-wide solutions to gaps in environmental cleaning & disinfection.

4

## DIALYSIS & REHAB ENVIRONMENTAL C&D

State 3 challenges to dialysis & rehab environmental cleaning & disinfection.



# SEMINAL PUBLICATION:

## HOW DO WE SELECT THE RIGHT DISINFECTANT?

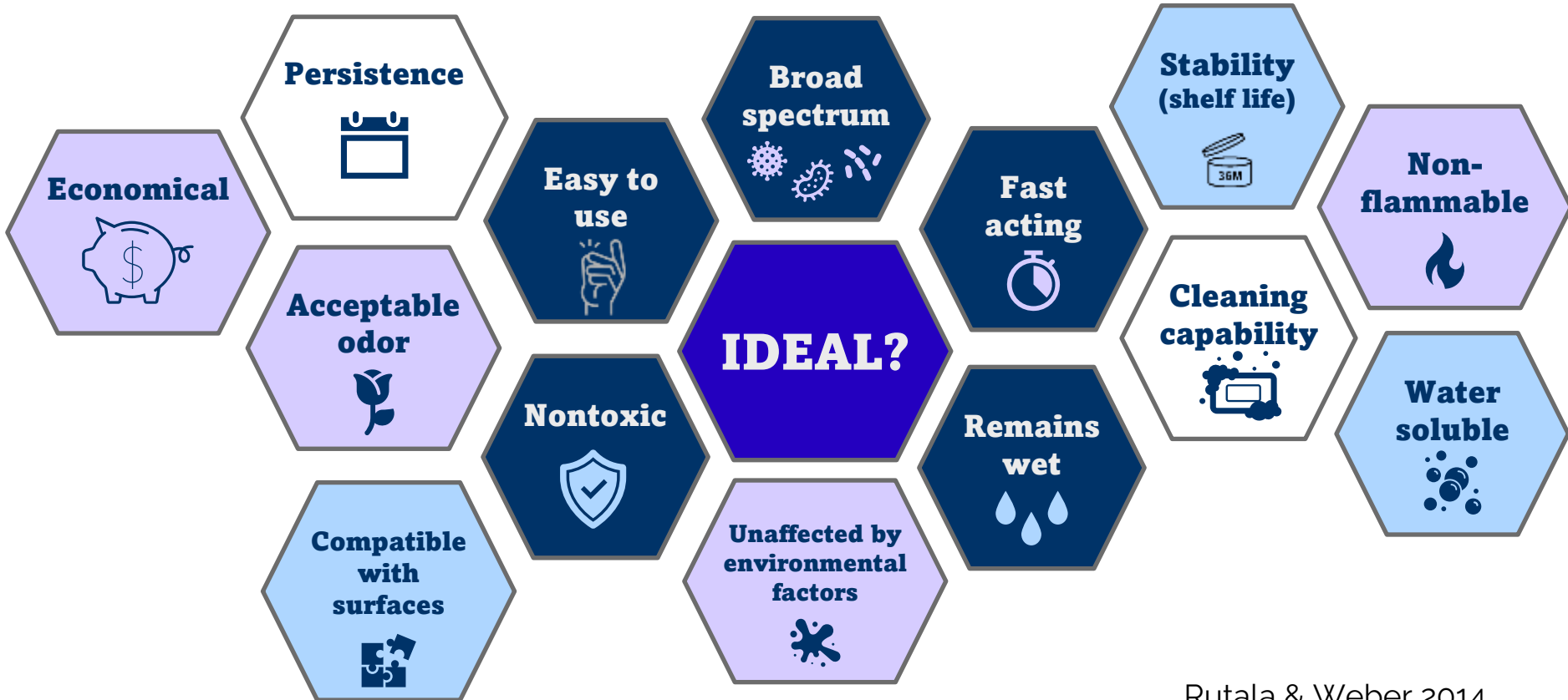
INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JULY 2014, VOL. 35, NO. 7

COMMENTARY

### Selection of the Ideal Disinfectant

William A. Rutala, PhD, MPH;<sup>1</sup> David J. Weber, MD, MPH<sup>1</sup>

# CRITERIA OF THE **IDEAL** DISINFECTANT



**Before choosing  
disinfectants, consider  
who is using what  
disinfectant, where &  
when.**

# PRIMARY DISINFECTION RESPONSIBILITIES IN ACUTE CARE FACILITIES



## Device User/ Clinical

- Determined by facility policy
- Shared portable medical equipment



## Environmental Services

- High-touch surfaces
- Occupied daily room cleaning
- Discharges
- General shared areas
- Generally *not* responsible for shared portable medical equipment



## Central/ Sterile Supply

- Unique/complex equipment reprocessing (e.g., IV pumps)

# PRIMARY DISINFECTION RESPONSIBILITIES IN REHAB & DIALYSIS FACILITIES



## Dialysis technicians

- Specialized training in dialysis-specific protocols (machine interiors, etc)
- May be employed by the facility or outside/ contracted company.
- Very helpful in learning dialysis complexities!



## Environmental Services

- Responsibilities may be unique from acute care facilities.
- Contracted versus facility employed
- May need specialized training in dialysis areas.
- If contracted, what disinfectants are used?



## Rehab Therapists & Assistants

- Responsible for in-between therapy disinfection.
- Can assist in rehab planning for contact isolation patients & residents.
- Typically, highly involved in care plans.





**BUT FIRST:  
CLEANING!**

# CLEANING BASICS

- Items must be **cleaned** using water with detergents or enzymatic cleaners **before processing**.
  - Especially important in areas where visible contamination is likely (e.g., OR, dialysis)
- Cleaning reduces the bioburden and removes foreign material (organic residue and inorganic salts) that interferes with the disinfection/sterilization process.
- Cleaning or decontamination should be done as soon as possible after the items have been used as soiled materials become dried onto the instruments.





# Key Considerations for Selecting YOUR Ideal Disinfectant!

# CRITERIA OF AN IDEAL DISINFECTANT: KEY CONSIDERATIONS

CONSIDERATION	QUESTIONS TO ASK
<b>Kill Claims</b>	Does the product kill the most prevalent healthcare pathogens?
<b>Kill Times and Wet Contact Time</b>	How quickly does the product kill prevalent healthcare pathogens? Ideally, contact time greater than or equal to the kill claim.
<b>Safety</b>	Does the product have an acceptable toxicity & flammability rating?
<b>Ease of Use</b>	Odor acceptable, shelf-life, in convenient forms (wipes, spray) water soluble, works in organic matter, one-step (cleans/disinfects)
<b>Other Factors</b>	Supplier offers comprehensive training/education, 24-7 customer support, overall cost acceptable (product capabilities, cost per compliant use, help standardize disinfectant in facility/system)

# KILL CLAIMS

- Does the product kill the most prevalent healthcare pathogens, including those that:
  - Cause most HAIs?
  - Cause most outbreaks?
  - Are of concern with your team?
    - Use your annual risk assessment & plan!
    - Consider unit/department specific needs

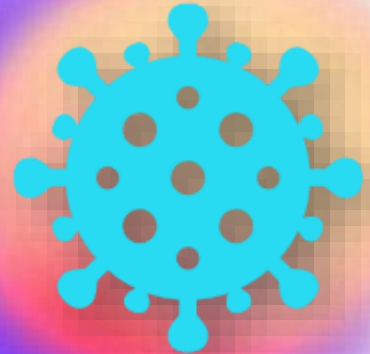


TABLE 3. Most Prevalent Pathogens Causing Healthcare-Associated Infections (HAIs)

Recommended organism (% of HAIs caused)	Why organisms are relevant
<i>Staphylococcus aureus</i> (15.6%)	Most prevalent overall contributors to HAIs (NHSN/CDC) <sup>11</sup>
<i>Escherichia coli</i> (11.5%)	
Coagulase-negative <i>Staphylococcus</i> (11.4%)	
<i>Klebsiella</i> (8.0%)	
<i>Pseudomonas aeruginosa</i> (7.5%)	
<i>Enterococcus faecalis</i> (6.8%)	79% (without yeasts)
<i>Candida albicans</i> (5.3%)	
<i>Enterobacter</i> species (4.7%)	
Other <i>Candida</i> species (4.2%)	
<i>Enterococcus faecium</i> (4.1%)	
<i>Enterococcus</i> species (3.0%)	
<i>Proteus</i> species (2.5%)	
<i>Serratia</i> species (2.1%)	
<i>Acinetobacter baumannii</i> (1.8%)	

~27%

~53%

## Antimicrobial-resistant pathogens associated with adult healthcare-associated infections: Summary of data reported to the National Healthcare Safety Network, 2015–2017

Distribution and Rank Order of the 15 Most Frequently Reported Pathogens Across All Types of Adult Healthcare-Associated Infections (HAIs), 2015–2017

Pathogen <sup>a</sup>	No. (%) Pathogens	Rank
<i>Escherichia coli</i>	62,571 (17.5)	1
<i>Staphylococcus aureus</i>	42,132 (11.8)	2
Selected <i>Klebsiella</i> spp	31,530 (8.8)	3
<i>Pseudomonas aeruginosa</i>	28,513 (8.0)	4
<i>Enterococcus faecalis</i> <sup>b</sup>	28,236 (7.9)	5
Coagulase-negative staphylococci	24,199 (6.8)	6
<i>Enterobacter</i> spp	16,568 (4.6)	7
<i>Enterococcus faecium</i> <sup>b</sup>	13,687 (3.8)	8
<i>Proteus</i> spp	11,463 (3.2)	9
<i>Candida albicans</i> <sup>b</sup>	11,043 (3.1)	10

Weiner-Lastinger LM et al 2020

# OUTBREAKS BY PATHOGEN

## THEN

- *Clostridioides difficile*
- Norovirus
- Aspergillus
- Rotavirus
- Adenovirus

Rutala 2014

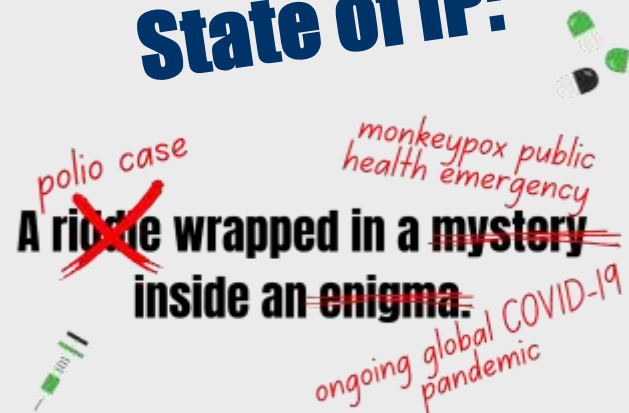
## NOW?

While not all are causing active “outbreaks,” since 2018:

- Hepatitis A
- SARS CoV-2
- Mpox
- *Candida auris*
- Polio
- Ebola

**State of IP:**

*polio case*  
~~A riddle wrapped in a mystery~~  
~~inside an enigma.~~  
*monkeypox public health emergency*  
*ongoing global COVID-19 pandemic*





# VIRAL PATHOGENS

- Enveloped Viruses (Easy to Kill)

- Influenza
- Respiratory Syncytial Virus (RSV)
- Parainfluenza virus
- Human Metapneumovirus
- Hepatitis B and C
- HIV

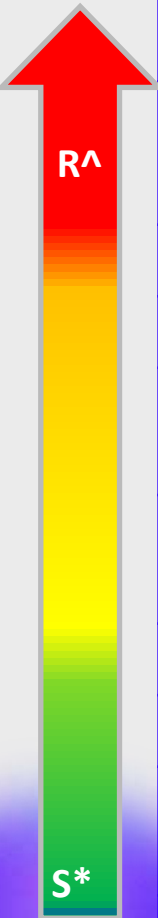
} Colds,  
Mild to  
Deadly

} **BBP, especially  
important for  
dialysis!**



# VIRAL PATHOGENS

- Non-Enveloped Viruses (Not Easy to kill)
    - Norovirus
    - Rhinovirus
    - Enterovirus
    - Hepatitis A
    - \*Adenovirus
    - \*Rotavirus
- } Larger – easier to kill



R<sup>^</sup>

S\*

^Resistant  
\* Sensitive

Organism	Type	Examples
Bacterial Spores	Spore	Bacillus anthracis, Clostridioides difficile
Mycobacteria	Bacteria	M. tuberculosis
Small non-enveloped virus	Virus	Poliovirus, Norovirus, Hep A
Fungal spores	Fungus	Aspergillus, Penicillium, Trichophyton
Gram negative bacteria	Bacteria	E. coli, Klebsiella including <b>CRE</b> , Pseudomonas, Acinetobacter
Fungi (Vegetative)	Fungus	Candida
Large Virus (non-enveloped)	Virus	Adenovirus, Rotavirus
Gram positive bacteria	Bacteria	Staphylococcus including <b>MRSA</b> Enterococcus including <b>VRE</b>
Virus (enveloped)	Virus	HIV, HBV, HCV, Influenza, <b>Mpox</b>

**Antimicrobial  
resistance**

**≠**

**Disinfectant  
resistance**

# CLAIM GAME



# CRITERIA OF AN IDEAL DISINFECTANT: KEY CONSIDERATIONS

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# KILL TIMES & WET-CONTACT TIME



Regulatory & accreditation surveyors ARE TIMING disinfection!

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# PRODUCT SAFETY

## HMIS (Hazardous Material Identification System) rating

- Health, flammability & physical hazard

## Best is 0/0/0 or EPA Toxicity Rating of IV

- Not harmful to health, not flammable, no physical hazard
- No gloves or other PPE (important for **patients, residents, family & visitors**)
- Staff will use gloves as per Standard Precautions

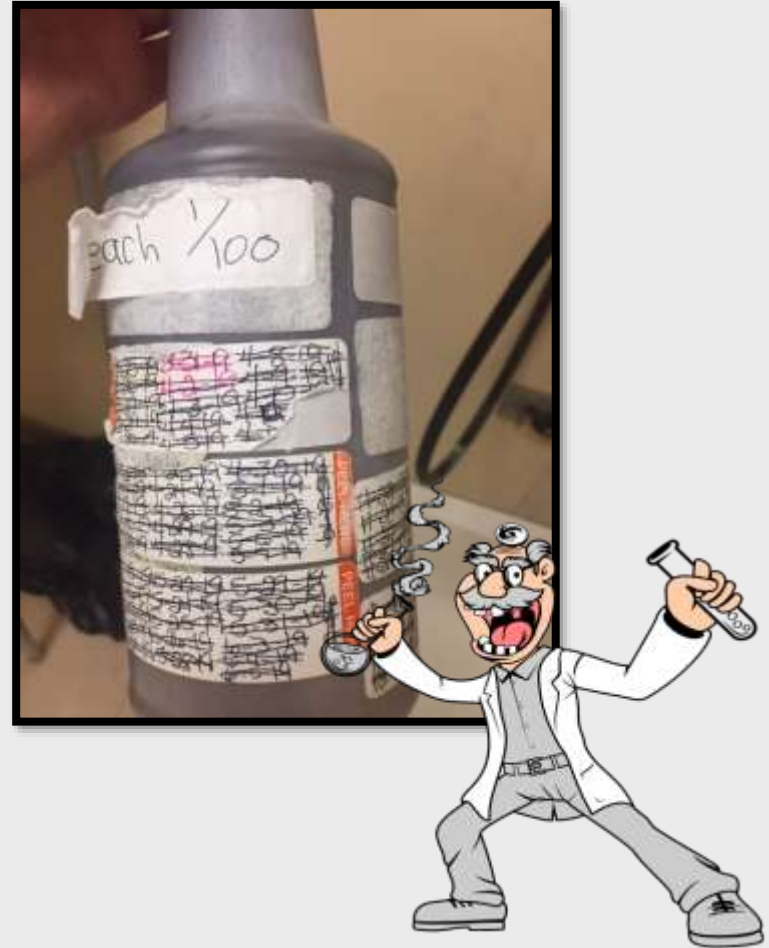


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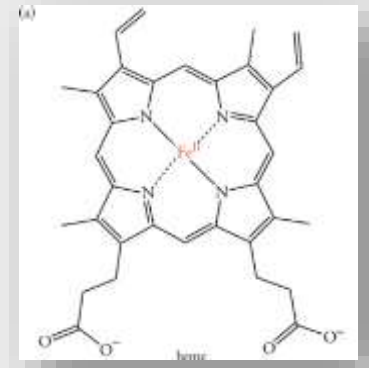
# EASE OF USE

- Acceptable odor
- Shelf life
- Convenience
  - Ready-to-use, liquids, sprays, refills & multiple wipe sizes, etc.
  - Be careful w/ manual mixing!



# QUAT BINDING

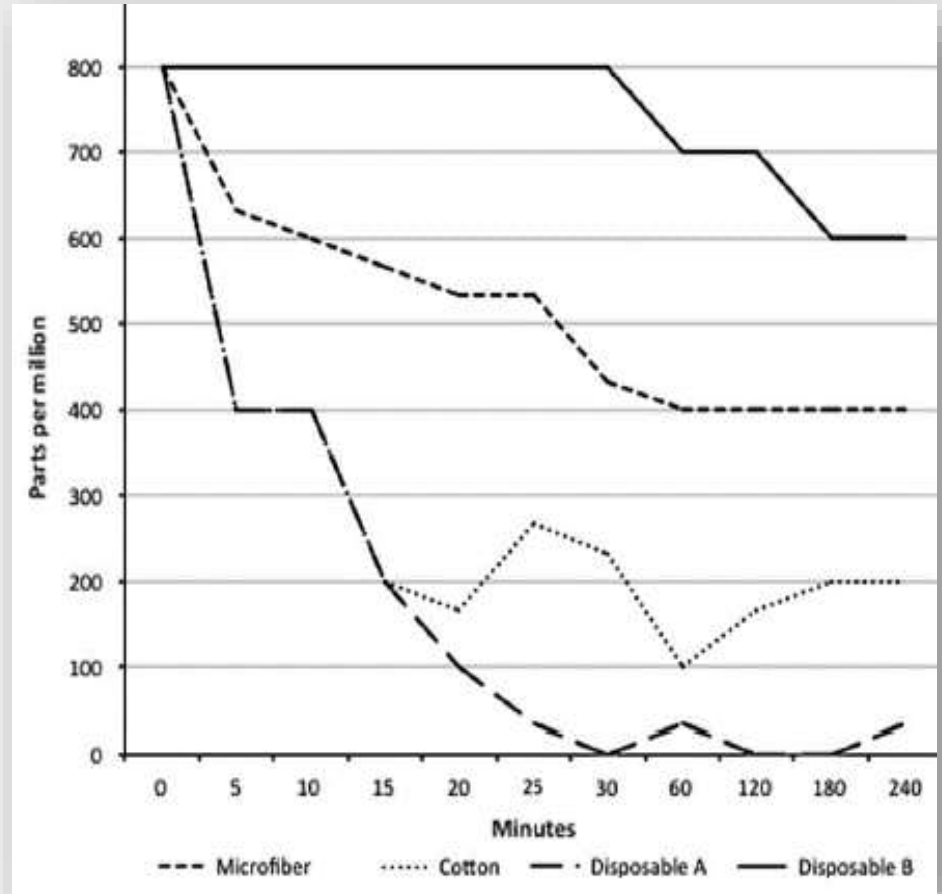
- Some cleaning tool fabrics, such as cotton and microfiber, are known to bind with quaternary ammonium compounds (“quats”). *This is known as “quat binding”*
  - Active ingredients (quat) have a tendency to become attracted to, and absorbed into, microfiber and cotton fabrics
  - Cotton fabrics and most microfibers are negatively charged or anionic
  - Quats are positively charged, or cationic, and are attracted to the negatively charged fabric surfaces



# QUAT BINDING

Microfiber wipers, cotton towels, and 1 of 2 types of disposable wipes soaked in a Quat disinfectant revealed significant binding of the disinfectant.

Boyce 2016





**KEY  
REGULATORY  
CONCERNS**

# MANUFACTURER'S IFUs

- Contentious for **disinfectant suppliers**
  - Newer/improved disinfectants are not included in MIFUs
- Contentious issue for **equipment manufacturers**
  - May have found one disinfectant that works
  - May not have tested a true disinfectant (soap & water, isopropyl alcohol)
- **MOST** contentious for **INFECTION PREVENTIONISTS!**
  - IPs are caught in the middle, spending hours looking for answers.



*Example of a portable hemodialysis machine. Some machine IFUs do not allow high alcohols or bleach.*

# MANUFACTURER'S IFUs

- Check if your disinfectant supplier has a **compatibility specialist/expert** that works with instrument components or provides our solutions to manufacturers!
- FDA expects you to communicate with device manufacturer *first*
- If solution cannot be reached, use FDA's DICE to communicate IFU issues



<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice>




# EPA REGISTRATION

## The List of Lists

<https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants#pathogens>

- [EPA's Registered Antimicrobial Products Effective as Sterilizers \[List A\]](#)
- [EPA's Registered Antimicrobial Products Effective Against \*Mycobacterium tuberculosis\* \(TB\) \[List B\]](#)
- [EPA's Registered Antimicrobial Products Effective Against Norovirus \(Feline calicivirus\) \[List G\]](#)
- [EPA's Registered Antimicrobial Products Effective Against Methicillin-resistant \*Staphylococcus aureus\* \(MRSA\) and/or Vancomycin Resistant \*Enterococcus faecalis\* or \*faecium\* \(VRE\) \[List H\]](#)
- [EPA's Registered Antimicrobial Products for Medical Waste Treatment \[List J\]](#)
- [EPA's Registered Antimicrobial Products Effective Against \*Clostridium difficile\* Spores \[List K\]](#)
- [EPA's Registered Antimicrobial Products Effective Against Ebola Virus \[List L\]](#)
- [EPA's Registered Antimicrobial Products Effective Against Avian Influenza \[List M\]](#)
- [Disinfectants for Use Against SARS-CoV-2 \[List N\]](#)
- [Disinfectants for Use Against Rabbit Hemorrhagic Disease Virus \(RHDV2\) \[List O\]](#)
- [EPA's Registered Antimicrobial Products Effective Against \*Candida auris\* \[List P\]](#)
- [Disinfectants for Emerging Viral Pathogens \(EVPs\) \[List Q\]](#)
- [EPA's Registered Antimicrobial Products Effective Against Bloodborne Pathogens \(HIV, Hepatitis B and Hepatitis C\) \[List S\]](#)






Lists Q & S are new!

# EMERGING VIRAL PATHOGENS: NO ONE CAN PREDICT THE FUTURE



# EPA LIST Q (AS OF 11/6/2023)

Note that EVP language is *not* on the product label–must look at master label or EPA website.

Pathogen	Difficulty to Inactivate	Description
Marburg Virus	Tier 1 (enveloped virus)	Marburg virus disease is a rare disease that is caused by an infection from the Marburg virus. <a href="#">Learn more</a>  . See also: <a href="#">List Q</a> .
Ebola virus	Tier 1 (enveloped virus)	Ebola is a rare disease that is caused by an infection from the Ebola virus. <a href="#">Learn more</a>  . See also: <a href="#">List L</a> and <a href="#">List Q</a> .
Mpox virus	Tier 1 (enveloped virus)	Mpox (formerly monkeypox) is a rare disease that is caused by infection with mpox virus. <a href="#">Learn more</a>  . See also: <a href="#">List Q</a> .
SARS-CoV-2 and variants	Tier 1 (enveloped virus)	SARS-CoV-2 is the virus that causes COVID-19. See also: <a href="#">List N</a> .
Rabbit Hemorrhagic Disease Virus (RHDV2)	Tier 3 (small, nonenveloped virus)	RHDV2 is a highly contagious fatal disease in rabbits. It does not impact human health. See also: <a href="#">List O</a> and <a href="#">List Q</a> .

<https://www.epa.gov/pesticide-registration/disinfectants-emerging-viral-pathogens-evps-list-q>

# PROCEDURES

# ROLES & RESPONSIBILITIES



# CLEARLY DEFINE . . .

- ❑ WHAT?
- ❑ WHO?
- ❑ WHEN?
- ❑ WHERE?
- ❑ HOW?

CLEANING RESPONSIBILITY	ITEM	APPROVED DISINFECTANT	FREQUENCY
C.N.A.	Blood pressure machine	Wipe A	Between patient use
	Feeding pumps	Wipe A	Weekly, PRN & at discharge
	Handheld thermometers	Wipe A	Between patient use
	Shower gurney	Wipe A	Between patient use
	Warming blanket machine	Wipe A	Between patient use
	Shower chairs	Wipe A	Between patient use
EVS	Beds: hand rails	Wipe A	Daily with room cleaning
	Beds: horizontal surfaces	Wipe A	Discharge
	Bedside cabinets	Wipe A	Daily with room cleaning
	Call bell/remote	Wipe A	Daily with room cleaning
	Commode	Wipe A	Daily with room cleaning
	Computer keyboards at Nursing station	Wipe A	Daily
	Privacy curtains	Wipe A	Every 30 days, PRN, and at discharge
	Wheelchairs	Wipe A	Every 30 days & PRN
HIM	Medical record chart	Wipe A	Daily
Lic. Nurse	Bladder scanner	Wipe C	Between patient use
	Glucose meter	Wipe B	Between patient use
	IV pumps while in use and after d/c	Wipe A	Weekly, PRN & at discharge
	Med Carts	Wipe A	Daily and PRN
Rehab	PCA pumps	Wipe A	Discharge
	Rehab equipment	Wipe A	Between patient use
RNA	Hoyer lift	Wipe A	Between patient use
	Scales, patient	Wipe A	Between patient use
RT	Cough assist machine	Product X	Between patient use
	IPV	Wipe A	Between patient use
	I-Stat	Wipe A	Between patient use
	Pulse Oximeters	Wipe A	Between patient use
	Space Lab	Wipe C	Weekly, PRN & at discharge
	Ventilators	Wipe C	Weekly, PRN & at discharge
	Vest machine	Wipe C	Between patient use
	Weich Allyn	Wipe C	Weekly, PRN & at discharge

<https://community.apic.org/viewdocument/cleaning-monitoring-and-medical-equipment-cleaning-responsibilities?CommunityKey=a42080cc-43bc-4706-beba-216aa38f9940&tab=librarydocuments>

# APIC 2022 Noncritical Disinfection Poster

**New Equipment Cleaning Labels**

Please be advised of the new cleaning labels on select medical equipment to assist with proper device cleaning practices:

Sticker SHAPE provides who is responsible for cleaning the device:

- = Central Sterile Services (CSS)
- = Device User
- = Environmental Services (EVS)

Sticker COLOR provides what cleaner to use:

Orange = Bleach Wipes  
Purple = Purple-Top Wipes


**All equipment used in Special Contact rooms should be cleaned with bleach, regardless of the sticker.**

"After pt use" defined as: when the device is to be used on a new patient.  
Please contact Infection Control (864.377) with any questions!

#APIC2022

## Selected Equipment for Labeling

Equipment or Item	Group Responsible	Manufacturer Recommended
IV pump	CSS	Bleach
SCD Pump	EVS	Bleach
Vital Sign Machines	User	Bleach
Wall Mounted Vital Sign Machines	EVS	Bleach
EKG Machine	User	Bleach
PCA	CSS	Bleach
Feeding Pump	EVS	Bleach
Defibrillator on Code Cart	CSS	Quaternary Ammonium
Wall Mounted Patient Monitor/Leads/Pulse Ox/Cuff	EVS	Quaternary Ammonium
Bladder Scanner	User	Quaternary Ammonium
Telemetry Pack	User	Quaternary Ammonium

Dabkowski M. 2022. Improving Cleaning Compliance of Noncritical Equipment with Labels and Auditing. APIC 2022 oral abstract. Accessed securely online as conference attendee at <https://c53ac34983397363b9e2-fa85729df59db74d0fed9dc21ffeaa231.ssl.cf1.rackcdn.com//1884872-1491675-004.pdf>.

# POINT OF CARE DISINFECTION

- It is everyone's job to disinfect, but it is *not* everyone's job to disinfect everything, every time!
- If, during care, you touched it or used it: Disinfect it!
- **Training cards/checklists for ALL who do the cleaning/disinfection.**
  - Bring the IFUs & product to the equipment!





# MUST BE AVAILABLE AT POINT OF CARE!



# TARGETED 5 MOMENTS OF DISINFECTION

**1**

**BEFORE**

Placing food or drink on the over-bed table

**2**

**BEFORE/  
AFTER**

Any aseptic procedure (e.g., wound/line care)

**3**

**AFTER**

Any procedure/task involving feces or respiratory secretions within the bed space

**4**

**AFTER**

Patient/resident bathing

**5**

**AFTER**

Any object used on/by a patient/resident touches the floor.

## REMEMBER:

If it's something used on more than one patient, multiple times a day, EVS cannot be solely responsible for disinfecting it.



**ENVIRONMENTAL  
CLEANING &  
DISINFECTION IN  
DIALYSIS**

# DIALYSIS RISK FACTORS

- Comorbidities
  - Diabetes
  - Hypertension
  - Hyperlipidemia
  - Cardiovascular disease
- AV fistula/grafts not w/o risk
- Peritoneal tubing
- Age/Sex
- Access to healthcare



# DIALYSIS OUTBREAKS

- Adverse drug & device events
- Bacterial & fungal infections
- Chemical intoxication
- Hepatitis
- Peritoneal dialysis
- Water-associated



# DIALYSIS OUTBREAKS

Outpatient hemodialysis facility (58)	2018	PA	108	2	Specific lapses in infection control not identified, however, practices observed at the time of the investigation may have not represented usual facility practices. Case patients were dialyzed in close proximity and cared for by the same staff.	Of these two new acute case-patients identified in 2018, one had HCV virus genetically related to virus from two facility patients with chronic infection who had been part of an earlier 2015 outbreak at this same location, listed below.
Outpatient hemodialysis facility (53)	2017	GA	47	2	Patients were dialyzed in close proximity and cared for by the same staff Lapses identified included environmental cleaning, hand hygiene	
Outpatient hemodialysis facility (33)	2016	unspecified	203	2	Specific lapses in infection control not identified at the time of the investigation	
Outpatient hemodialysis facility (54)	2016	PA	154	2	Breaches in environmental cleaning and disinfection practices identified included: lapses in hand hygiene, mixing of clean and dirty areas, inadequate cleaning of stations between patients	
Outpatient hemodialysis facility (51)	2015	NJ	237	2	Multiple lapses in infection control identified, including hand hygiene and glove use, vascular access care, medication preparation, cleaning and disinfection	

<https://www.cdc.gov/dialysis/reports-news/outbreaks.html>

# DIALYSIS OUTBREAKS

Outpatient hemodialysis facility (51)	2015	NJ	84	2	Multiple lapses in infection control identified, vascular access care, medication preparation, cleaning and disinfection	
Outpatient hemodialysis facility (51)	2015	NJ	98	2	Multiple lapses in infection control identified, including hand hygiene and glove use, vascular access care, medication preparation, cleaning and disinfection	
Outpatient hemodialysis facility (52)	2015	PA	115	3	Multiple lapses in infection control identified, medication preparation close to treatment area	
Outpatient hemodialysis facility (52)	2015	PA	130	3	Multiple lapses in infection control identified, medication preparation close to treatment area	
Outpatient hemodialysis facility (52)	2015	PA	97	2	Multiple lapses in infection control identified, medication preparation close to treatment area, Use of single-dose vials for >1 patient, no separation of dirty and clean areas	(Philadelphia)
Outpatient hemodialysis facility (52)	2015	CA	28	3	Breaches in environmental cleaning and disinfection practices	
Outpatient hemodialysis facility (34)	2014	WA	186	3	Breaches in environmental cleaning and disinfection practices identified included: failure to consistently change gloves and perform hand hygiene	

**DIALYSIS =  
INCREASED  
ENVIRONMENTAL  
RISKS!**

<https://www.cdc.gov/dialysis/reports-news/outbreaks.html>



# CDC AUDIT TOOL

Facility Name: \_\_\_\_\_ Observer: \_\_\_\_\_  
 Date: \_\_\_\_\_ Day: M W F Tu Th Sa Shift: 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> Start time: \_\_\_\_\_ AM / PM

## Audit Tool: Hemodialysis station routine disinfection observations\*

(Use a "√" if action performed correctly, a "Φ" if not performed/ performed incorrectly, if not observed, leave blank. All applicable actions within a row must have "√" for the procedure to be counted as successful.)

\*This audit tool applies when there is no visible soil on surfaces at the dialysis station. If visible blood or other soil is present, surfaces must be cleaned prior to disinfection.

Discipline	All supplies removed from station and prime bucket emptied	Gloves removed, hand hygiene performed	Station is empty before disinfection initiated	New clean gloves worn	Disinfectant applied to all surfaces and prime bucket	All surfaces are wet with disinfectant	All surfaces allowed to dry	Gloves removed, hand hygiene performed	No supplies or patient brought to station until disinfection complete

Discipline: P=physician, N=nurse, T=technician, S=student, O=other

Duration of observation period: \_\_\_\_\_

Number of procedures performed correctly = \_\_\_\_\_

Total number of procedures observed during audit = \_\_\_\_\_

### ADDITIONAL COMMENTS/OBSERVATIONS:

\*\* Ensure the patient has left the dialysis station before disinfection is initiated.



National Center for Emerging and Zoonotic Infectious Diseases  
 Division of Healthcare Quality Promotion

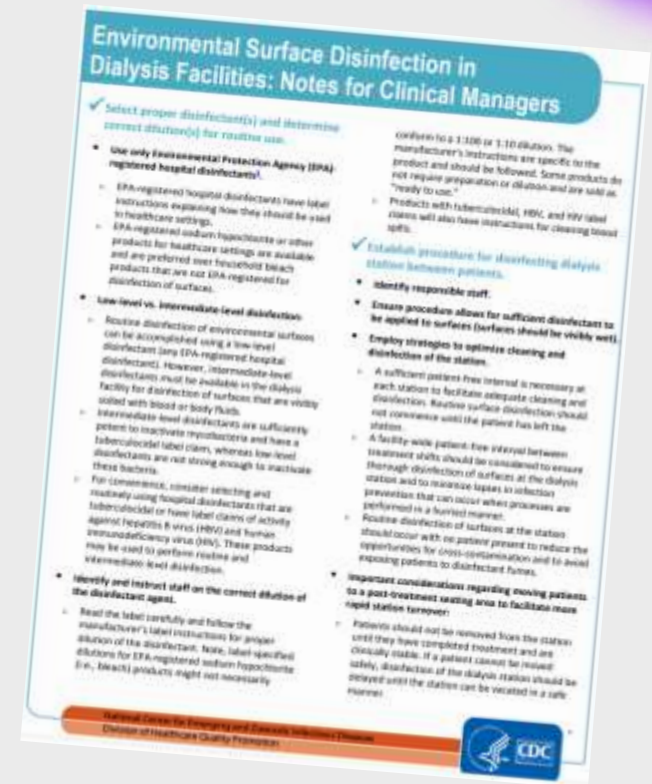


Infection Prevention does NOT own auditing. Engage unit staff in their own performance!

BUT *do* visit HD areas frequently

# CDC'S ENVIRONMENTAL DISINFECTION IN DIALYSIS: NOTES FOR CLINICAL MANAGERS

- Select proper disinfectant(s) and determine correct dilutions, surface compatibility & **IFUs**
  - **Check bleach dilutions**
  - **Don't over bleach!**
- Establish procedures for disinfecting dialysis stations between patients.
- Ensure all staff have been properly trained.
- Ensure staff have access to supplies (PPE, cleaning tools, waste management, etc)



# TOOLS TO BOOST COMPLIANCE

## Clean and Disinfectant Patient Area



### Wipe down high-touch surfaces

Note: Clean in this order to reduce risk of spreading pathogens



1 Clean touch screen and data entry keyboard



2 Dialysis machine top, front and sides



3 Disinfect all surfaces of the emptied priming bucket. Allow the bucket to air-dry before reconnection or reuse.



4 Bicarbonate jugs, conductivity meter (after each patient use) and wall connections



5 Tray table on the recliner if attached, or clean the overchair table if unattached



6 Fully recline the dialysis chair and clean with disinfectant. Clean TV controls and patient call system.



7 Blood Pressure Cuff



8 Stethoscope - after each patient use



9 Glucometer - after each patient use



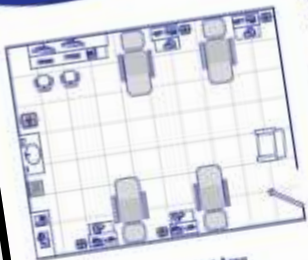
10 Scale - after each patient use



11 Inspect work

# TOOLS TO BOOST COMPLIANCE

## Dialysis Station Cleaning Between Patients



**Getting Started**

**Prepare**

- 1. Gather all needed supplies.
- 2. Perform hand hygiene and don gloves.

**Inspect and Remove**

- 1. Inspect the dialysis station for any items that should be removed.
- 2. Remove all items that are not needed for the next patient.

**Pre-Clean**

- 1. Pre-clean visibly soiled surfaces.

**Clean and Disinfectant Patient Area**

**Wipe down high-touch surfaces**

**Post Clean**

## Dialysis Station Cleaning Checklist Between Patients

Steps	Element	YES	NO
1: Prepare for between patient cleaning	Gather all needed supplies.		
	Perform hand hygiene and don gloves.		
2: Remove	Gather and remove all trash and linen.		
	Discard the collected waste into designated containers. Close and seal properly.		
3: Pre-clean	Remove gloves, perform hand hygiene, and don new gloves.		
	Pre-clean visibly soiled surfaces.		
4: Wipe down high-touch surfaces (in this order to reduce risk of spreading pathogens)	Clean touch screen and data entry keyboard.		
	Disinfect machine top, front and sides.		
	Disinfect all surfaces of the emptied printing bucket. Allow the bucket to air-dry before reconnection or reuse.		
	Disinfect jug, conductivity meter and well connections - after each patient use.		
	Overhead table.		
	Fully recline the dialysis chair and clean with disinfectant.		
	Clean TV cabinet and patient call system.		
	Blood pressure cuff.		
	Stethoscope - after each patient use.		
	Gaucheater - after each patient use.		
5: Post Clean	Scale - after each patient use.		
	Inspect work.		
6: Post Clean	Remove gloves and other PPE.		
	Perform hand hygiene.		

## Dialysis Station Cleaning Checklist End of Day

Steps	Element	YES	NO	NA
1: Prepare for between patient cleaning	Gather all needed supplies.			
	Perform hand hygiene and don gloves.			
2: Remove	Gather and remove all trash and linen.			
	Discard the collected waste into designated containers. Close and seal properly.			
3: Pre-clean	Remove gloves, perform hand hygiene and don new gloves.			
	Pre-clean visibly soiled surfaces.			
4: Wipe down high-touch surfaces (in this order to reduce risk of spreading pathogens)	Clean touch screen and data entry keyboard.			
	Disinfect machine top, front and sides.			
	Disinfect all surfaces of the emptied printing bucket. Allow the bucket to air-dry before reconnection or reuse.			
	Disinfect jug, conductivity meter and well connections - after each patient use.			
	Overhead table.			
	Fully recline the dialysis chair and clean with disinfectant.			
	Clean TV cabinet and patient call system.			
	Stethoscope.			
	Gaucheater.			
	Scale.			
5: Post Clean	Inspect the floor.			
	Align the floor.			
6: Post Clean	Wipe light switch.			
	Clean and wipe down handle.			
7: Post Clean	Remove gloves and other PPE.			
	Perform hand hygiene.			

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If you have any questions, please contact your specialist.

Customized wall charts & checklists available upon request at [www.sdfhc.com](http://www.sdfhc.com).

# DIALYSIS WALL BOXES

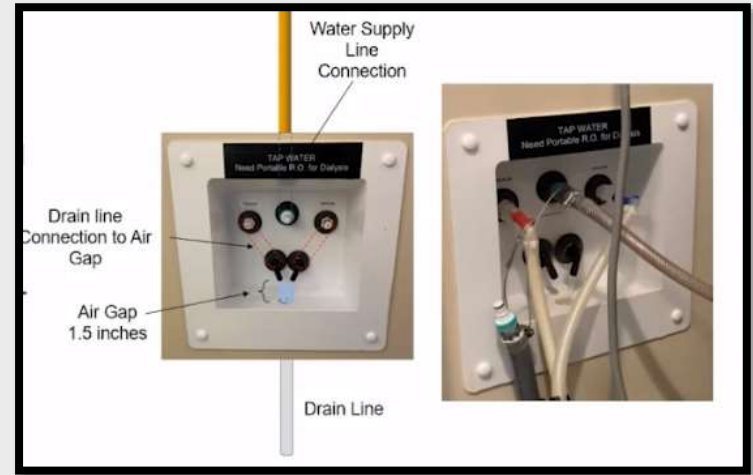
- Staff **unaware** of infectious risks assoc w/ wall boxes & necessary IP&C measures.
- Part of the immediate patient care environment & are considered **contaminated** or **dirty**.
- Wall boxes contain **drains** that are predisposed to the development of **biofilms**.
- May become **clogged**; splashing & foaming at the wall box may occur.
- **Biofilms** in wall box drains may contain opportunistic pathogens that can cause Healthcare-associated Infections (HAIs).
  - Gram negative bacteremia in dialysis patients are a **red flag for water-associated contamination**



<https://www.cdc.gov/dialysis/guidelines/wall-boxes.html>

# DIALYSIS OUTBREAK: WALL BOXES

- Wet with visible pooling of water
- Staff interviews foul odors, clogging, lack of hand hygiene after touching wall boxes
- Every wall box had contamination with PA, SM and E. cloacae
- Sinks were **not** commonly contaminated with above organisms
- WGS confirmed patients & wall boxes
- CVCs, dialyzing later in the day, and increased staff involved in dialysis session were identified risk factors



Novosad 2019: [https://www.ajkd.org/article/S0272-6386\(19\)30797-8/pdf](https://www.ajkd.org/article/S0272-6386(19)30797-8/pdf)

CDC Webinar via YouTube <https://www.youtube.com/watch?v=kzRiS5ZG3Jk>

# DIALYSIS CLEANING & DISINFECTION EDUCATION

Excellent resource!



Cleaning and Disinfection

## Hemodialysis Patient Station

0:03 / 15:21 · C... >

Infection Prevention Education

### Environmental Cleaning and Disinfection: Dialysis

 Oregon Patient Sa...  
2.82K subscribers

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75

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The video player shows a hemodialysis patient station with a dialyzer and patient chair. The video title is 'Environmental Cleaning and Disinfection: Dialysis' and it is from the channel 'Oregon Patient Sa...' with 2.82K subscribers. The video has 75 likes and a share button is visible.

<https://www.youtube.com/watch?v=SJpGSKzHggw>



**VALIDATION**



# VALIDATION METHODS

VISUAL  
AUDIT








FLUORESCENT  
MARKER

ATP



CULTURE

# Validating the Environmental Hygiene Program\*

	Method	Pros	Cons
	Visual audits	Easy to perform, cost effective, engages staff	Difficult to standardize, may be seen as punitive w/o team engagement, Hawthorne effect, IP resources
	Satisfaction surveys	Encourages resident participation, including family & visitors, quantitative measurement	Subjectivity, <b>emphasizes visible cleanliness only, not true disinfection</b> , no benchmarking
	Environmental culture	May be useful during an outbreak or research project, quantitative	Not recommended by CDC as routine measure, <b>high cost</b> , long turn around times, results may not correspond to the outbreak
	ATP	Easy to use & train others, immediate feedback, can be helpful when evaluating new/novel cleaning methods	Detection of organic matter (bioburden) is <b>not reliable predictor</b> of infection risk, <b>high cost of equipment &amp; supplies</b> , storage of swabs
	Fluorescent marking	Very inexpensive, easy to perform, immediate results	Does not identify pathogens, only detects cleaned/not cleaned, may be seen as punitive w/o team engagement

*Modified from Infection Prevention Guide to LTC 2<sup>nd</sup> ed, APIC, 2017.*

**THANKS!**  
**ANY QUESTIONS?**

**CREDITS:** This presentation template was created by **Slidesgo**, including icons by **Flaticon**, and infographics & images by **Freepik**.

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