XII SIMPOSIO INTERNACIONAL EN RESISTENCIA BACTERIANA “DIAGNOSTIC STEWARDSHIP” Y CONTROL DE LAS INFECCIONES

Febrero 24 al 26 de 2021
New Strategies in Cleaning and Disinfection

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Former Director, Hospital Epidemiology, Occupational Health and Safety, UNC Health Care, Chapel Hill, NC (1979-2017)
DISCLOSURES
2020-2021

• Consultations
  ■ PDI (Professional Disposable International)

• Honoraria
  ■ PDI
New Strategies in Cleaning and Disinfection

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• Strategies in Cleaning and Disinfection
  ■ Environmental contamination leads to HAIs
  ■ Best practices for surface disinfection (non-critical surface disinfection bundle)
  ■ New strategies
    ◆ Wipes, disinfectant contact time
    ◆ Inactivation of C. auris, CRE, SARS-CoV-2
    ◆ C. difficile-sporicidal disinfectant for all discharges
    ◆ UV
    ◆ Continuous room decontamination
Environmental Contamination Leads to HAIs


- Evidence environment contributes
- Role-MRSA, VRE, C. difficile
- Surfaces are contaminated ~25%
- EIP survive days, weeks, months
- Contact with surfaces results in hand contamination
- Disinfection reduces contamination
- Disinfection (daily) reduces HAIs
- Rooms not adequately cleaned
Admission to Room Previously Occupied by Patient C/I with Epidemiologically Important Pathogen

• Results in the newly admitted patient having an increased risk of acquiring that pathogen by 39-353%  
• For example, increased risk for *C. difficile* is 235% (11.0% vs 4.6%)  
• Exposure to contaminated rooms confers a 5-6 fold increase in odds of infection, hospitals must adopt proven methods for reducing environmental contamination (Cohen et al. ICHE. 2018;39:541-546)
Acquisition of EIP on Hands of Healthcare Providers after Contact with Contaminated Environmental Sites and Transfer to Other Patients
Acquisition of EIP on Hands of Patient after Contact with Contaminated Environmental Sites and Transfers EIP to Eyes/Nose/Mouth
New Strategies in Cleaning and Disinfection

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    - Continuous room decontamination
**Best Practices for Surface Disinfection: Disinfection of Noncritical Surfaces Bundle**

NL Havill AJIC 2013;41:S26-30; Rutala, Weber AJIC 2019;47:A96-A105

- Develop **policies** and procedures
- Select cleaning and disinfecting **products**
- Educate **staff**-environmental services and nursing
- Monitor **compliance** (thoroughness of cleaning, product use) and feedback
- Implement “no touch” room decontamination technology and monitor compliance
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Clean/disinfect at least daily with List N (one-step cleaning and disinfection)
ALL “TOUCHABLE” (HAND CONTACT) SURFACES SHOULD BE WIPED WITH DISINFECTANT

“High touch” objects only recently defined (no significant differences in microbial contamination of different surfaces) and “high risk” objects not epidemiologically defined.
Review of Wipes to Disinfect Hard Surfaces
Boyce JM. Am J Infect Control. 2021

Advantages
• Avoids improper dilution
• Avoids human errors (double dip)
• Ratio of disinfectant-wipe standard
• Lower risk of contamination
• Effectively removes microbial contaminants
• Greater compliance by environmental service personnel
• Lower employee time costs
• No laundering

Disadvantages
• Inappropriate disposal into toilets
• Potential environmental impact
• Storage area needed
• Supply costs
Each chemical disinfectant requires a specific length of time it must remain in contact with a microorganism to achieve complete inactivation.

This is known as the “kill time” (or “contact time”) and the registered kill times for each microorganism will be clearly listed.

There are only two papers in the peer-review literature that assessed EPA-registered disinfectants that are directly on point to the question will hospital disinfectants kill hospital pathogens in 1 minute.
## EFFECTIVENESS OF DISINFECTANTS AGAINST MRSA AND VRE


### TABLE 2
**DISINFECTANT ACTIVITY AGAINST ANTIBIOTIC-SUSCEPTIBLE AND ANTIBIOTIC-RESISTANT BACTERIA**

<table>
<thead>
<tr>
<th>Product</th>
<th>VSE</th>
<th>VRE</th>
<th>MSSA</th>
<th>MRSA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.5 min</td>
<td>5 min</td>
<td>0.5 min</td>
<td>5 min</td>
</tr>
<tr>
<td>Vesphene IIse</td>
<td>&gt;4.3</td>
<td>&gt;4.3</td>
<td>&gt;4.8</td>
<td>&gt;4.8</td>
</tr>
<tr>
<td>Clorox</td>
<td>&gt;5.4</td>
<td>&gt;5.4</td>
<td>&gt;4.9</td>
<td>&gt;4.9</td>
</tr>
<tr>
<td>Lysol Disinfectant</td>
<td>&gt;4.3</td>
<td>&gt;4.3</td>
<td>&gt;4.8</td>
<td>&gt;4.8</td>
</tr>
<tr>
<td>Lysol Antibacterial</td>
<td>&gt;5.5</td>
<td>&gt;5.5</td>
<td>&gt;5.5</td>
<td>&gt;5.5</td>
</tr>
<tr>
<td>Vinegar</td>
<td>0.1</td>
<td>5.3</td>
<td>1.0</td>
<td>3.7</td>
</tr>
</tbody>
</table>

**Log<sub>10</sub> Reductions**

Abbreviations: MRSA, methicillin-resistant *Staphylococcus aureus*; MSSA, methicillin-susceptible *S aureus*; VRE, vancomycin-resistant *Enterococcus*; VSE, vancomycin-susceptible *Enterococcus*.

Data represent mean of two trials (n=2). Values preceded by “>” represent the limit of detection of the assay. Assays were conducted at a temperature of 20°C and a relative humidity of 45%. Results were calculated as the log of Nd/No, where Nd is the titer of bacteria surviving after exposure and No is the titer of the control.
Bactericidal (S. aureus) Efficacy of EPA-Registered Towelettes
West, Teska, Oliver, AJIC, 2018

- Drying time curve based on surface wetness; bold-contact time (180s); dashed-dry (~260s)
- Wet time is not crucial for complete disinfection (wet or dry ~4.5 log_{10} reduction); 30s for log_{10} reduction
Strategies in Cleaning and Disinfection

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  - Wipes, disinfectant contact time
  - Inactivation of *C. auris*, CRE, SARS-CoV-2
  - *C. difficile*-sporicidal disinfectant for all discharges
  - UV
  - Continuous room decontamination
Germicidal Activity against Carbapenem/Colistin-Resistant Enterobacteriaceae Using a Quantitative Carrier Test Method

Hajime Kanamori,a,b William A. Rutala,a,b Maria F. Gergen,a Emily E. Sickbert-Bennett,a,b David J. Webera,b

aDepartment of Hospital Epidemiology, University of North Carolina Health Care, Chapel Hill, North Carolina, USA
bDivision of Infectious Diseases, University of North Carolina School of Medicine, Chapel Hill, North Carolina, USA

ABSTRACT Susceptibility to germicides for carbapenem/colistin-resistant Enterobacteriaceae is poorly described. We investigated the efficacy of multiple germicides against these emerging antibiotic-resistant pathogens using the disc-based quantitative carrier test method that can produce results more similar to those encountered in health care settings than a suspension test. Our study results demonstrated that germicides commonly used in health care facilities likely will be effective against carbapenem/colistin-resistant Enterobacteriaceae when used appropriately in health care facilities.

KEYWORDS carbapenem-resistant Enterobacteriaceae, Klebsiella pneumoniae carbenemase, colistin-resistant Enterobacteriaceae, mcr-1, germicides, disinfectants, antiseptics, efficacy
Efficacy of Disinfectants and Antiseptics against Carbapenem-Resistant Enterobacteriaceae

- \( \geq 3 \log_{10} \) reduction (CRE, 1m, 5% FCS, QCT)
  - 0.20% peracetic acid
  - 2.4% glutaraldehyde
  - 0.5% Quat, 55% isopropyl alcohol
  - 58% ethanol, 0.1% QUAT
  - 28.7% isopropyl alcohol, 27.3% ethyl alcohol, 0.61% QAC
  - 0.07% o-phenylphenol, 0.06% p-tertiary amylphenol
  - ~5,250 ppm chlorine
  - 70% isopropyl alcohol
  - Ethanol hand rub (70% ethanol)
  - 0.65% hydrogen peroxide, 0.15% peroxyacetic acid
  - Accelerated hydrogen peroxide, 1.4% and 2.0%
  - Quat, (0.085% QACs; not K. pneumoniae)
Deadly, drug-resistant Candida yeast infection spreads in the US

*Candida auris* causes multidrug-resistant infections that can result in organ failure

Kataryna Kon/Science Photo Library
Candida auris is a globally emerging pathogen that is often resistant to multiple antifungal agents.

In several reports, C. auris has been recovered from the hospital environment.

CDC has recommended daily and post-discharge disinfection of surfaces in rooms of patients with C. auris infection.

No hospital disinfectants are registered for use specifically against C. auris, and its susceptibility to germicides is not known.
Efficacy of Disinfectants and Antiseptics against *Candida auris*

Rutala, Kanamori, Gergen, Sickbert-Bennett, Weber, ICHE 2019

- ≥3 log\(_{10}\) reduction (C. auris, 1m, 5% FCS, QCT)
  - 0.20% peracetic acid
  - 2.4% glutaraldehyde
  - 0.65% hydrogen peroxide, 0.14% peroxyacetic acid
  - 0.5% Quat, 55% isopropyl alcohol
  - Disinfecting spray (58% ethanol, 0.1% QUAT)
  - 28.7% isopropyl alcohol, 27.3% ethyl alcohol, 0.61% QAC
  - 0.07% o-phenylphenol, 0.06% p-tertiary amylphenol
  - 70% isopropyl alcohol
  - ~5,250 ppm chlorine
  - Ethanol hand rub (70% ethanol)
  - Accelerated hydrogen peroxide, 1.4%
  - Accelerated hydrogen peroxide, 2%
Efficacy of Disinfectants and Antiseptics against *Candida auris*

Rutala, Kanamori, Gergen, Sickbert-Bennett, Weber, ICHE 2019

- $\leq 3 \log_{10}$ (most $<2 \log_{10}$) reduction (*C. auris*, 1m, 5% FCS, QCT)
  - 0.55% OPA
  - 3% hydrogen peroxide
  - Quat, (0.085% QACs)
  - 10% povidone-iodine
  - ~1,050 ppm chlorine
  - 2% Chlorhexidine gluconate-CHG
  - 4% CHG
  - 0.5% triclosan
  - 1% CHG, 61% ethyl alcohol
  - 1% chloroxylenol
Contamination of SARS-CoV-2 RNA by PCR on environmental surfaces and medical devices have been documented. Rate varies from 0-75% (median 12.1%).
# Role of Healthcare Surface Environment in SARS-CoV-2 Transmission


<table>
<thead>
<tr>
<th>SARS-CoV-2 RNA</th>
<th>Sink</th>
<th>BP monitor</th>
<th>Infusion pump</th>
<th>Keyboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed rail</td>
<td>Bedside table</td>
<td>Floor</td>
<td>ECG monitor</td>
<td>Fluid stand</td>
</tr>
<tr>
<td>Chair</td>
<td>Toilet seat</td>
<td>Oxygen regulator</td>
<td>Hand sanitizer</td>
<td>Phone</td>
</tr>
<tr>
<td>Doorknob</td>
<td>Toilet bowl</td>
<td>Oxygen mask</td>
<td>Trash can</td>
<td>Door</td>
</tr>
<tr>
<td>Light switches</td>
<td>Stethoscope</td>
<td>CT scanner</td>
<td>Self-service printer</td>
<td>Glass window</td>
</tr>
<tr>
<td>Call button</td>
<td>Pulse oximetry</td>
<td>Ventilator</td>
<td>Desktop</td>
<td>PPE storage area</td>
</tr>
<tr>
<td>Centrifuge</td>
<td>Biosafety cabinet</td>
<td>Infant bed</td>
<td>Air outlet</td>
<td>Ambu bag</td>
</tr>
<tr>
<td>TV remote</td>
<td>Bed sheet</td>
<td>Urinary catheters</td>
<td>TV</td>
<td>Beepers</td>
</tr>
<tr>
<td>Elevator buttons</td>
<td>Ventilator tubing</td>
<td>Glove boxes</td>
<td>Touch screen</td>
<td>All surfaces in nurse’s station</td>
</tr>
</tbody>
</table>

All surfaces in nurse’s station
Pt 1 and 2-2/48-4% (closed suction to ventilator) pt 3-13/28-46% (high-flow oxygen therapy via nasal cannula, non-invasive ventilation). Found viable virus (7/28-25%) only on surfaces within droplet distance (bedside table, remote control, bed rails, bedsheets, mask, nasal prongs, floor near patient). All air samples negative.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Patient 1</th>
<th>Patient 2</th>
<th>Patient 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>–</td>
<td>ND</td>
<td>–</td>
</tr>
<tr>
<td>Air outlet fan</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Air inlet fan</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Nasal prong/endotracheal tube</td>
<td>30.95</td>
<td>31.36</td>
<td>33.93</td>
</tr>
<tr>
<td>Intravenous pole</td>
<td>32.33</td>
<td>33.02</td>
<td>34.28</td>
</tr>
<tr>
<td>Computer</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Medication cart</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Window</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Window frame</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Blind curtain</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Wall 1</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Wall 2</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Floor near the patient¹</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Floor far from the patient²</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Bed rails</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Bedsheet</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pillows</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Faucet handle</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Door knob</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Call button</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Restraint</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Blood pressure cuff</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Ambu mask/NIV mask</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Ventilator</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Patient monitor</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Bedside table</td>
<td>ND</td>
<td>ND</td>
<td>–</td>
</tr>
<tr>
<td>High-flow oxygen generator</td>
<td>ND</td>
<td>ND</td>
<td>–</td>
</tr>
<tr>
<td>Telephone</td>
<td>ND</td>
<td>ND</td>
<td>–</td>
</tr>
<tr>
<td>Remote controller</td>
<td>ND</td>
<td>ND</td>
<td>–</td>
</tr>
<tr>
<td>Thermometer</td>
<td>ND</td>
<td>ND</td>
<td>–</td>
</tr>
<tr>
<td>Cup</td>
<td>ND</td>
<td>ND</td>
<td>–</td>
</tr>
</tbody>
</table>
Decreasing Order of Resistance of Microorganisms to Disinfectants/Sterilants


Most Resistant

- Prions
- Spores (*C. difficile*)
- Mycobacteria
- Non-Enveloped Viruses (norovirus, adeno)
- Fungi
- Bacteria (MRSA, VRE, *Acinetobacter*)

Most Susceptible

- Enveloped Viruses (SARS-CoV-2)
Role of Healthcare Surface Environment in SARS-CoV-2 Transmission

• CDC recommends that an EPA-registered disinfectant on the EPA’s List N that has qualified under the emerging pathogen program for use against SARS-CoV-2 be chosen for the COVID-19 patient care.

• List N has >500 entries and 32 different active ingredients (Quats, chlorine, etc)
Exposure time > 1 min

<table>
<thead>
<tr>
<th>Germicide</th>
<th>Use Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl or isopropyl alcohol</td>
<td>70-90%</td>
</tr>
<tr>
<td>Chlorine</td>
<td>100ppm (1:500 dilution)</td>
</tr>
<tr>
<td>Phenolic</td>
<td>UD</td>
</tr>
<tr>
<td>Iodophor</td>
<td>UD</td>
</tr>
<tr>
<td>Quaternary ammonium (QUAT)</td>
<td>UD</td>
</tr>
<tr>
<td>QUAT with alcohol</td>
<td>RTU</td>
</tr>
<tr>
<td>Improved hydrogen peroxide (HP)</td>
<td>0.5%, 1.4%</td>
</tr>
<tr>
<td>PA with HP, 4% HP, chlorine (C. difficile)</td>
<td>UD</td>
</tr>
</tbody>
</table>

UD=Manufacturer's recommended use dilution; others in development/testing-electrolyzed water; polymeric guanidine; cold-air atmospheric pressure plasma (Boyce Antimicrob Res IC 2016. 5:10)
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    ◆ UV
    ◆ Continuous room decontamination
Asymptomatic carriers contribute to C. difficile transmission

1. Curry SR. Clin Infect Dis 2013 (29% of hospital-associated CDI cases linked to carriers by MLVA); 2. Blixt T. Gastroenterol 2017;152:1031 (exposure to carriers increased CDI risk); 3. Longtin Y. JAMA Int Med 2016 (screening for and isolating carriers reduced CDI by 63%); 4. Samore MH. Am J Med 1996;100:32 (only 1% of cases linked to asymptomatic carriers - roommates and adjacent rooms - by PFGE/REA); 5. Eyre DW. PLOS One 2013;8:e78445 (18 carriers: no links to subsequent CDI cases); 6. Lisenmyer K. Clin Infect Dis 2018 (screening and isolation of carriers associated with control of a ward outbreak); 7. Paquet-Bolduc B. Clin Infect Dis 2018 (unit-wide screening and isolation of carriers not associated with shorter outbreak durations vs historical controls); 8. Donskey CJ. Infect Control Hosp Epidemiol 2018 (14% of healthcare-associated CDI cases linked to LTCF asymptomatic carriers); 9. Kong LY. Clin Infect Dis 2018 (23% of healthcare-associated CDI linked to carriers vs 42% to CDI patients and 35% asymptomatic carriers)
Interventions focused on CDI rooms

Sporicidal disinfection only in CDI rooms

Interventions addressing CDI cases and asymptomatic carriers

Sporicidal disinfection in CDI and non-CDI rooms
The percentage of rooms contaminated with *Clostridium difficile* was significantly reduced during the period with a sporicidal product was used (5% vs 24%). Results suggest sporicidal disinfectant in all postdischarge rooms could potentially be beneficial in reducing the risk for *C. difficile* transmission from contaminated surfaces.
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    - C. difficile-sporicidal disinfectant for all discharges
    - UV
    - Continuous room decontamination
These interventions (effective surface disinfection, thoroughness indicators) not enough to achieve consistent and high rates of cleaning/disinfection

No Touch

(supplements but do not replace surface cleaning/disinfection)
“NO TOUCH” APPROACHES TO ROOM DECONTAMINATION
(UV/VHP~20 microbicidal studies, 12 HAI reduction studies; will not discuss technology with limited data)
Enhanced Disinfection Leading to Reduction of Microbial Contamination and a Decrease in Patient Col/Infection

Anderson et al. Lancet 2017;289:805; Rutala et al. ICHE 2018;38:1118-1121

Comparing the best strategy with the worst strategy (i.e., Quat vs Quat/UV) revealed that a reduction of 94% in EIP (60.8 vs 3.4) led to a 35% decrease in colonization/infection (2.3% vs 1.5%). Our data demonstrated that a decrease in room contamination was associated with a decrease in patient colonization/infection.

<table>
<thead>
<tr>
<th></th>
<th>Standard Method</th>
<th>Enhanced method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quat</td>
<td>Quat/UV</td>
</tr>
<tr>
<td>EIP (mean CFU per room)</td>
<td>60.8</td>
<td>3.4</td>
</tr>
<tr>
<td>Reduction (%)</td>
<td>94</td>
<td>81</td>
</tr>
<tr>
<td>Colonization/Infection (rate)</td>
<td>2.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Reduction (%)</td>
<td>35</td>
<td>17</td>
</tr>
</tbody>
</table>

Comparing the best strategy with the worst strategy (i.e., Quat vs Quat/UV) revealed that a reduction of 94% in EIP (60.8 vs 3.4) led to a 35% decrease in colonization/infection (2.3% vs 1.5%). Our data demonstrated that a decrease in room contamination was associated with a decrease in patient colonization/infection.
This technology ("no touch"-microbicidal and ideally, HAI reduction per peer-reviewed literature) should be used (capital equipment budget) for terminal room disinfection (e.g., after discharge of patients on Contact Precautions).
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Continuous Room Decontamination Technologies for Disinfection of the Healthcare Environment
Weber, Rutala et al. AJIC. 2019;47:A72; Rutala et al. ICHE 2019

- Visible light disinfection through LEDs
- Dry/dilute hydrogen peroxide
- Self-disinfecting surfaces (e.g., copper)
- Far UV 222 nm
- Bipolar ionization
- Multijet cold air plasma
- **Continuously active disinfectant** (CAD) or persistent disinfectant that provides continuous disinfection action
  - Allows continued disinfection (may eliminate the problem of recontamination)
  - Patients, staff and visitors can remain in the room
Why do we need to consider continuous room decontamination technology?

To reduce microbial contamination
(associated with suboptimal CD practices and recontamination)
• Test surface inoculated ($10^5$), treated with test disinfectant, allowed to dry.

• Surface will undergo “wears” (abraded under alternating wet and dry conditions [24 passes, 12 cycles]) and 6 re-inoculations ($10^{\geq3.75}$, 30min dry) over 48hr

• At the end of the study and at least 48 hours later, the ability of the test surface to kill microbes (99.9%) within 1 min is measured using the last inoculation ($10^6$)
A novel disinfectant studied using an EPA protocol (wears/re-inoculations) demonstrated continuous antiviral activity (i.e., >4.5 log$_{10}$ reduction) in 1 minute after 48 hours for a human coronavirus, 229E.

<table>
<thead>
<tr>
<th>Carrier Treatment with Wears and Re-inoculations</th>
<th>Contact Time</th>
<th>Mean Viral Recovery Titer per Carrier (log$_{10}$)</th>
<th>Log$_{10}$ Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (sterile water, n=3)</td>
<td>1 minute</td>
<td>6.00 ± 0.25</td>
<td>N.A.</td>
</tr>
<tr>
<td>Test disinfectant (n=3)</td>
<td>1 minute</td>
<td>≤ 1.50 ± 0.00</td>
<td>&gt;4.50</td>
</tr>
</tbody>
</table>
• Comply with the manufacturer’s treatment time/contact time/kill time for wipes and liquid disinfectants.
• Consider no-touch methods (e.g., UV devices) when available as an adjunct to chemical disinfection for terminal disinfection as data demonstrate reduction of microbial contamination and colonization/infection due to epidemiologically-important pathogens despite less scientific and clinical evidence on inactivation of SARS-CoV-2
• No recommendation for using a method of continuous room disinfection as there is insufficient evidence of effectiveness
New Strategies in Cleaning and Disinfection

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- Strategies in Cleaning and Disinfection
  - Environmental contamination leads to HAIs
  - Best practices for surface disinfection (non-critical surface disinfection bundle)
  - New strategies
    - Wipes, disinfectant contact time
    - Inactivation of C. auris, CRE, SARS-CoV-2
    - C. difficile-sporicidal disinfectant for all discharges
    - UV
    - Continuous room decontamination
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• The contaminated surface environment in hospital rooms is important in the transmission of healthcare-associated pathogens (MRSA, VRE, C. difficile, Acinetobacter).

• In general, emerging pathogens are susceptible to currently available disinfectants and technologies (e.g., disinfectants, UV).

• New disinfection technologies (e.g., continuously active disinfectant, UV) and practices (e.g., sporicide for CDI) could reduce risk of infection associated with devices and surfaces.
THANK YOU!
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