Indiana Department of Health

ENVIRONMENTAL SERVICES

DEANNA PADDACK AND JASON HENDERSON
DISTRICT 5 INFECTION PREVENTIONIST

05/23/22

OUR MISSION:

To promote, protect, and improve the health and safety of all Hoosiers.

OUR VISION:

Every Hoosier reaches optimal health regardless of where they live, learn, work, or play.

Environmental Services—Protectors of Health

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Environmental Services

- Covers a broad range of private and public sector activities along with studying physical, chemical and biological factors that affect the environment and human health.
- Focused on PROTECTING and IMPROVING public health, food safety, air quality and disease prevention in the environment where we live and work.

May include:

- Environmental cleaning and disinfecting
- Environmental epidemiology and testing
- Remediation activities
- Abatement of hazardous contaminants and exposure science
- Fundamental interventions for infection prevention and control

History of EVS

- National Environmental Health Association (NEHA)—Began in the 1930s in California and developed by a group of health professionals interested in the state of the environment. Wrote criteria to include environmental health as a body of knowledge and course of study.

- National Institute of Environmental Health Sciences (NIEHS)—Established in 1960s to conduct scientific and health studies on the relationship between human health and the natural environment. Famous study includes effects of asbestos exposure in lung health in 1967, which led to nationwide regulations on how to abate and remediate asbestos.

History of EVS (cont.)

- Environmental Protection Agency (EPA)—Established in 1970s and focused on clean air act, water pollution and endangered species act that required a list of plant and animal species that are threatened or endangered disrupting the ecosystem. Laws were passed to mitigate the harmful effects of chemical and biological exposures.

- Center for Environmental Health (CEH)—Established in 1980 as a division of CDC and focuses on environmental factors that cause or contribute to disability and disease. Today this division also oversees non-occupational injuries related to environmental causes and develops injury prevention strategies.

Environmental Considerations that Cause Illness and Death

- Viruses
- Organisms
- Fungus

All lead to infection, illness and/or death if not properly disinfected.

EVS is key in stopping transmission of germs and decreasing or eliminating poor outcomes in patients/residents and staff.

Pathogens Survival Times in the Environment

Organism	Duration of Survival
Candida auris	14 - 28 days (measured by colony counts)
Clostridioides difficile	5 months
Acinetobacter sp.	3 days – 5 months
E. Coli	1.5 hours – 16 months
Klebsiella sp.	2 hours - > 30 months
Pseudomonas aeruginosa	6 hours – 16 months
Serratia marcescens	3 days – 2 months
S. Aureus (includes MRSA)	7 days – 7 months

Infections and Outcomes Caused by Organism Transmission

Bacteremia

Pneumonia

Meningitis

Urinary tract infection

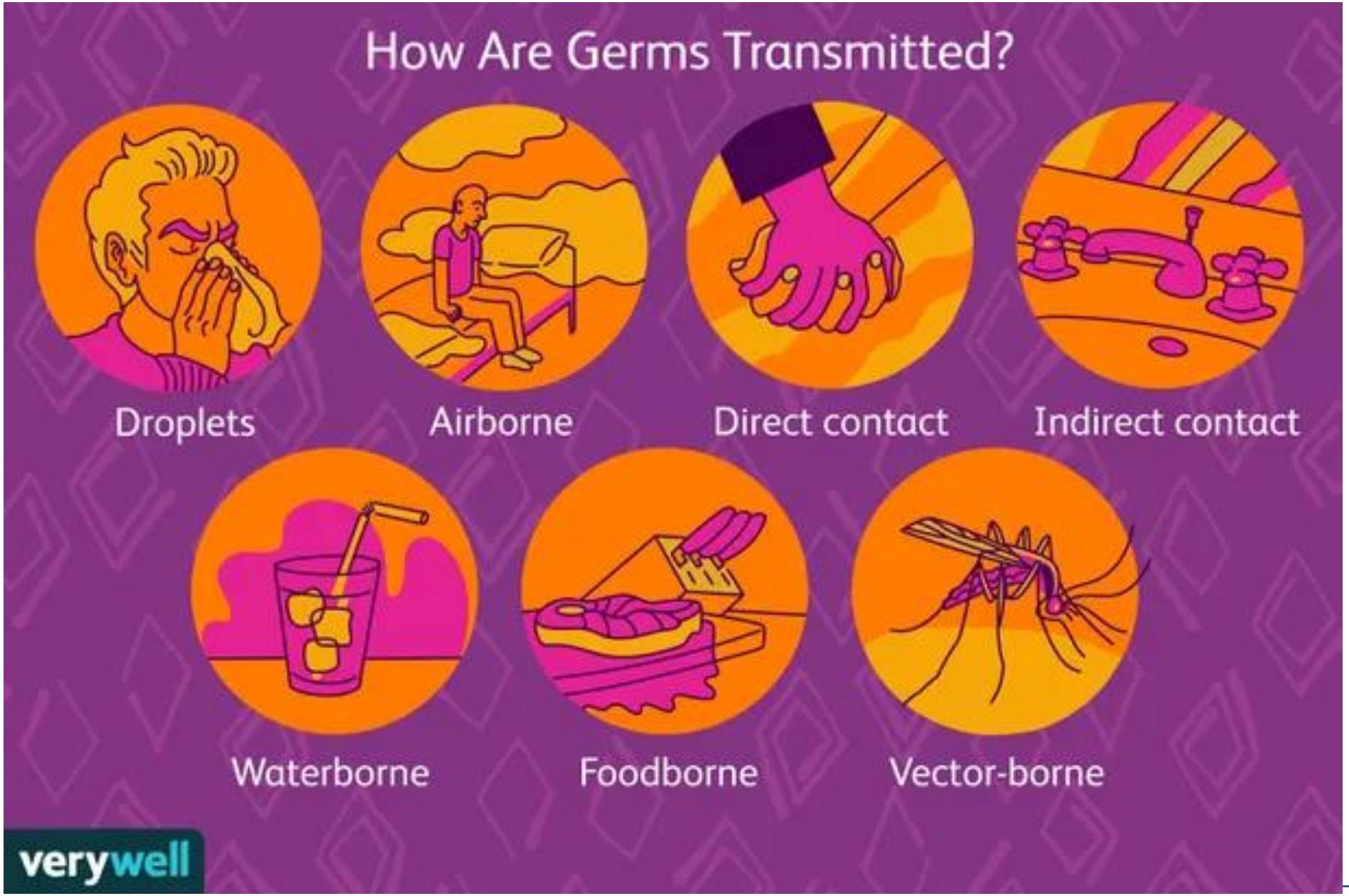
GI infection

Sepsis

Serratia marcescens

Pseudomonas

All leading to expensive treatments, hospitalizations or death



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Multifaceted Approach

- Cleaning
- Disinfecting
- Monitoring
- Feedback
- Budget and collaboration with leadership
- Implementation of WASH infrastructure

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Basic Concepts

Cleaning—**Removal** of visible soil and organisms from objects and surfaces

Disinfecting—**Eliminates** or **destroys** microorganisms on objects except bacterial spores

Sterilization—A process of **killing** all microbial life forms including spores

Levels of Disinfection

- **Low** level kills most bacteria, some viruses and some fungi
- **Intermediate** kills bacteria, most viruses and most fungi
- **High** eliminates all microorganisms

The Spaulding Classification Informs Our Approach to Disinfection and Sterilization

Category (Spaulding Class)	Definition	Examples	Minimum reprocessing requirements*
Noncritical equipment	Objects that touch only intact skin	Blood pressure cuffs, stethoscopes, high-touch environmental surfaces	Low level disinfection
Semi-critical equipment	Objects that touch mucous membranes or non-intact skin	Endoscopes, laryngoscopes, respiratory therapy equipment, vaginal specula	High level disinfection (HLD)
Critical equipment	Objects which enter normally sterile tissue or vascular system	Implants, surgical instruments	Sterilization

*Cleaning is **always** required before disinfection and/or sterilization.

(Rutala WA, HICPAC, 2008)

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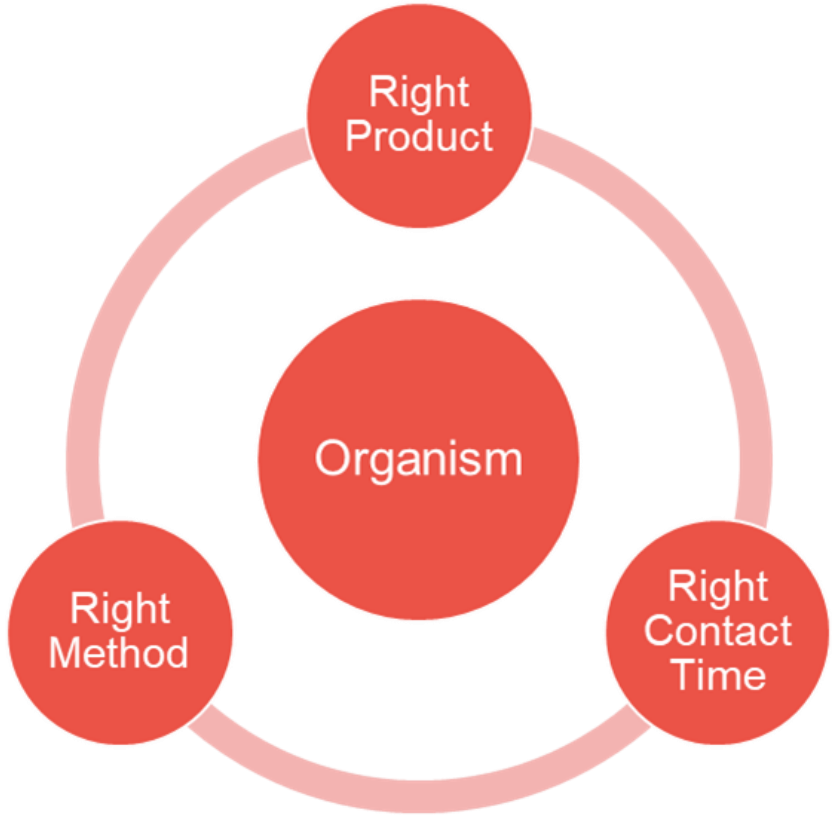
Factors to Consider when Selecting a Disinfectant

- Is it EPA registered (spectrum activity = List K, List N, List P)?
- Is it easy to use (contact time, mixing requirements, steps of delivery, stability)?
- Is it safe (flammable or toxic)?
- Is it compatible on surfaces (computers, screens, plastics, electronics)?
- Is it odorless (doesn't cause irritation to self or others)?
- Is it cost effective (budget considerations)?
- Does it continue to work after application?

3 R's of Cleaning and Disinfecting

Stop and ask.....

Am I using the **right product** for the organism present and cleaning in the **right method** allowing the **right contact/kill time.**



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Steps for Cleaning a Room

- Clean/disinfect your cleaning cart at the beginning of your shift.
- Stock your cleaning cart with all necessary supplies to clean all your rooms (remember to keep chemicals separate from other supplies such as toilet paper).
- Empty trash (tie closed and do not place on the floor).
- Do high dusting throughout the room.
- Clean 1st resident/patient area.
- Clean 2nd resident/patient area.
- Clean light switch and doorknob.
- Clean bathroom and restock supplies as needed.
- Final step—clean the floor.

Things to Remember When Cleaning a Room

- When you change your surface, change the towel you are cleaning with.
- Clean top to bottom and cleanest to dirtiest.
- Start opposite of the bathroom and clean in one direction (clockwise or counter-clockwise).
- If room is semi-private, treat each area as a separate area.
- Remember to do hand hygiene before, during and after cleaning (anytime you change gloves).
- Remember to wear any necessary PPE before entering the room.
- Prioritize high-touch surfaces areas, such as call lights, bed side tables, bed rails, TV remotes.

Stocking Your Supply Cart

- Cleaning towels
- PPE (gloves)
- HH supplies (ABHR)
- Trash bags
- Toilet paper
- Paper towels
- A soiled towel/mop container or bag
- Toilet brush with a dedicated container
- Disinfectant wipes (if used by the facility)
- Cleaning/disinfectant solution (bucket or spray bottle)
- Broom, dustpan, mop bucket with solution and mop heads

Do's and Don'ts

Do's

- Know contact kill time of products.
- Dilute concentrates correctly (if not automated).
- Always keep your cart locked.

Don'ts

- No food/drinks on cart.
- Do not use products from home.
- Do not use products that are not on the EPA registered list.

Things to Consider

- Have color-coded cleaning cloths (example: one color for cleaning, another color for disinfecting).
- If your facility uses microfiber cloths:
  - Know the life expectancy of the cloth being used (how many times the cloth can be washed before it should be replaced).
- Have a cleaning checklist for your EVS staff to ensure cleaning is done completely and uniformly in every room.

Routine Auditing and Observations

Weekly auditing of practices should occur with EVS, infection prevention and/or leadership and should include:

- Performance observations
- Visual assessments of cleanliness
- Tools (fluorescent markers, ATP, UV and visible)

Audits should review:

- Key program elements
- Feedback of practices
- Identification of trends or gaps
- Increases in terminal cleaning of areas

The Environment is More Than Meets the Eye

Figure 1. Pumps lined up outside patient rooms in a hospital ICU (March 2020).

Figure 2. New Franklin center for Rehabilitation and Nursing – Flushing, NY room 1. (http://www.franklinnh.net/adult-day-care/room-1/)

Who Is Accountable for Stopping Transmission?

EVERYONE!!!!!

- Cleaning and disinfection are the responsibility of all staff at all times
- (nurses, doctors, nursing assistants, therapy, EVS and leadership).
- Creating a culture of accountability to stopping disease transmission in the organization is critical to patient, resident and staff health and safety.
- This is beneficial to key stakeholders with cost-saving measures when expensive hospitalizations and treatments are not needed because the environment was properly cleaned and disinfected.

References

Slide 3: http://www.picturequotes.com/if-we-begin-to-diligently-care-for-the-environment-it-will-greatly-improve-human-health-quote-907169
Slide 6: Welsh RM, Bentz ML, Shams A, et al. Survival, Persistence, and Isolation of the Emerging Multidrug-Resistant Pathogenic Yeast Candida auris on a Plastic Health Care Surface. *J Clin Microbiol*. 2017;55(10):2996-3005. doi:10.1128/JCM.00921-17
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Slide 7: https://dermnetnz.org/topics/pseudomonas-skin-infections
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Slide 11: www.cdc.gov/infectioncontrol/pdf/strive/E C101-508.pdf (slide 13)
Slide 14: https://www.ismp.org/resources/clinical-experiences-keeping-infusion-pumps-outside-room-covid-19-patients
https://www.cdc.gov/hai/pdfs/resource-limited/environmental-cleaning-RLS-H.pdf
Slide 22: Figure 2 picture - http://www.franklinnh.net/adult-day-care/room-1/

For Additional Questions:

Deanna Paddack BSN, RN
Infection Preventionist District 5
Epidemiology Resource Center
mobile: 317-464-7710
dpaddack@isdh.in.gov
health.in.gov

Jason Henderson, RN
Infection Preventionist District 5
Epidemiology Resource Center
mobile: 317-719-0776
Jahenderson@isdh.in.gov
health.in.gov