PROCESS CLEANING SOLUTIONS
Bringing Science to the Art of Cleaning™

Infection Prevention and Environmental Services (EVS)

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April 14, 2026

Kingston Health Science Centre Hub and Spoke

About Me

- Worked in Infection Prevention And Control (IPAC)
- Worked in hospital EVS
- Employed at Charlotte Products Ltd
- No endorsement
- Once bit into a mop

Agenda

- Disinfectants
- Microbiology
- Indirect contact spread
- EVS requests and challenges
- Conclusions

Disinfectants

What is similar between these two?

There are many factors to consider in the process of cleaning and disinfection.

Question

- Which is more important?

- Cleaning
- Disinfection
- Neither

Cleaning Versus Disinfection

- Two step process
- Cleaning: removing gross soil/visible dirt
- Disinfection: chemical killing of microbes

(Photo: istockphoto.com)

Question

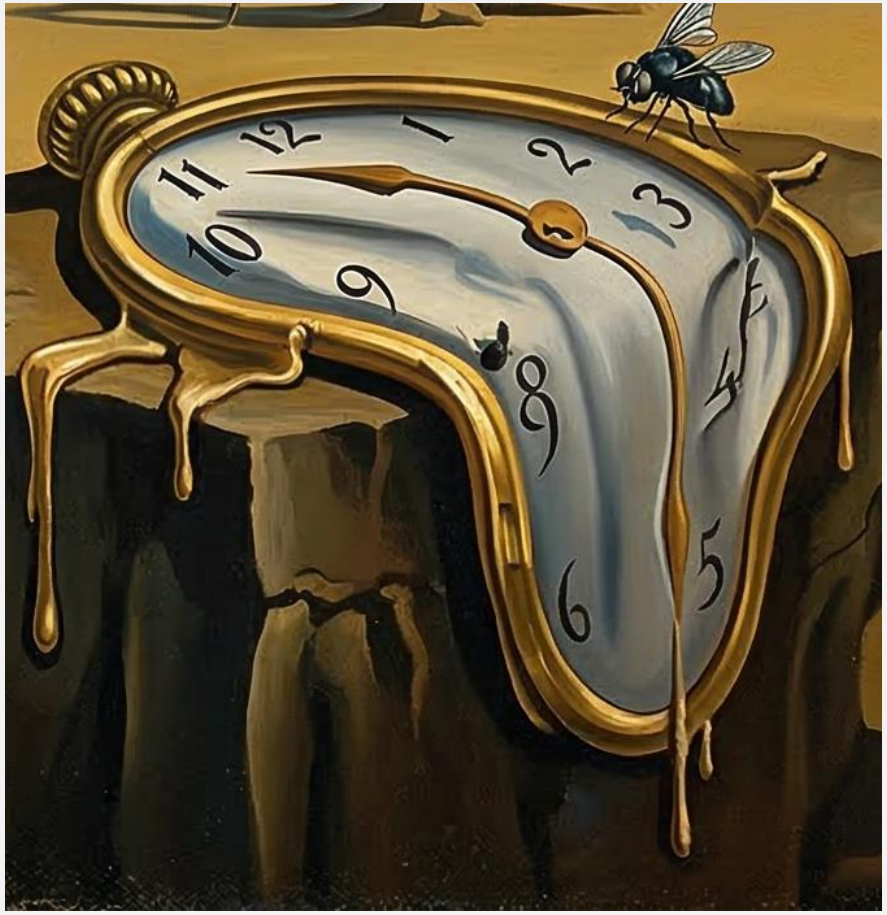
- Are wet contact times and kill times the same?

- Yes
- No

(Rutala & Weber, 2014)

Time – An Important Concept

- Wet contact time ≥ kill time
- Kill time: dose of the poison
- Wet contact time: time surface is wet



(Rutala & Weber, 2014)

Question

- What is more important for disinfection?
    - Concentration/dilution
    - Kill time
    - Chemistry

There are many factors to consider in the science of cleaning and disinfection.

The Properties of an Ideal Disinfectant

Property	Comment
Broad kill claims	Antibiotic resistance (same kill)
Fast acting/stays wet	Wet contact time ≥ kill time
Environment not affect it	Organic matter, biofilms
Non-toxic	Odor, non-flammable
Surface compatibility	Sensitive equipment
Easy to use	Stability, one for all purposes
Economical	$ instead of $$$$

(Rutala & Weber, 2014)

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Disinfectants Summary

- No chemistry is perfect
- Choice of product = circumstance
- Two steps: cleaning and disinfection
- Know the processes and products of EVS

(Rutala & Weber, 2014)

Microbiology

How Microbes Infect

- Inside source
- Outside source
- Contaminated environment
- Vulnerable people
- Infections escalate quickly
  - Sepsis
  - Outbreaks

(https://stockcake.com/i/open-human-hand_1357874_819957)

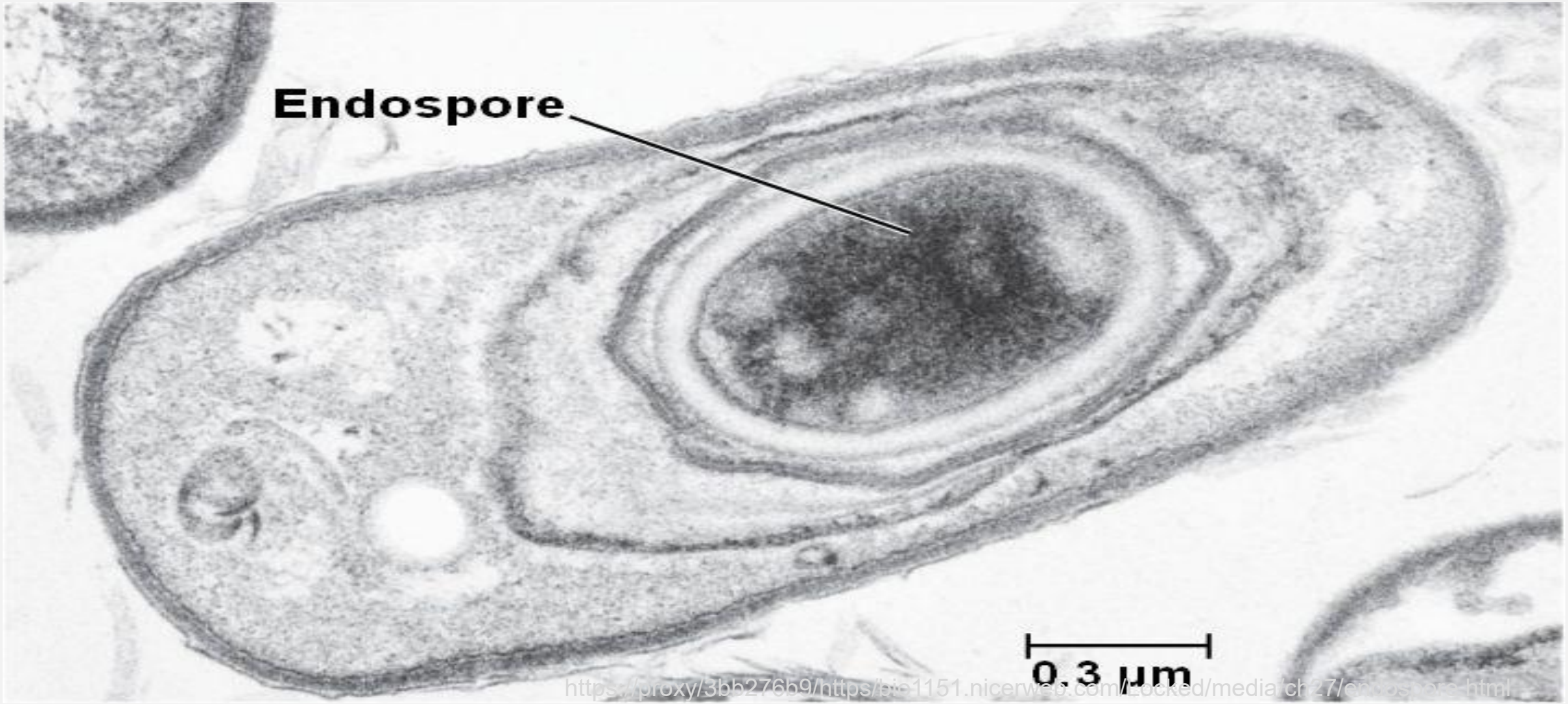
Question

- Which microbe survives the longest on a surface?
    - *Clostridioides difficile*
    - Norovirus
    - Vancomycin Resistant Enterococci (VRE)
    - Methicillin Resistant *Staphylococcus aureus*
    - *Acinetobacter baumannii*

Microbe	Survival Time on Surfaces
Norovirus	2 weeks
Acinetobacter baumannii	4 weeks
MRSA	12 months
Clostridioides difficile	Many months
VRE	46 months

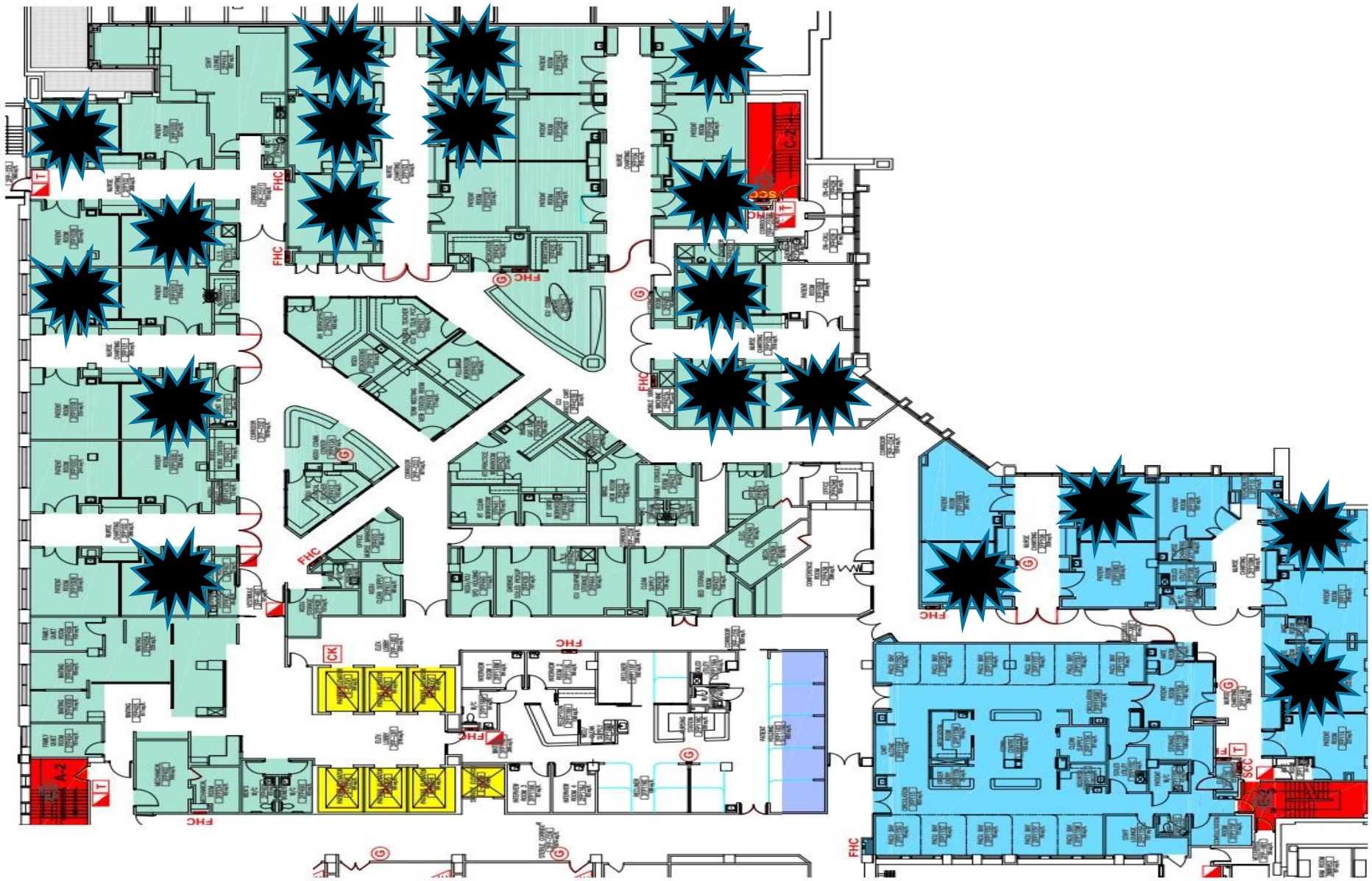
(Katzenberger, R.H., Rösel, A. & Vonberg, RP. Bacterial survival on inanimate surfaces: a field study. *BMC Res Notes* **14**, 97 (2021). https://doi.org/10.1186/s13104-021-05492-0, APIC text)

Spore = Bacterial Bomb Shelter

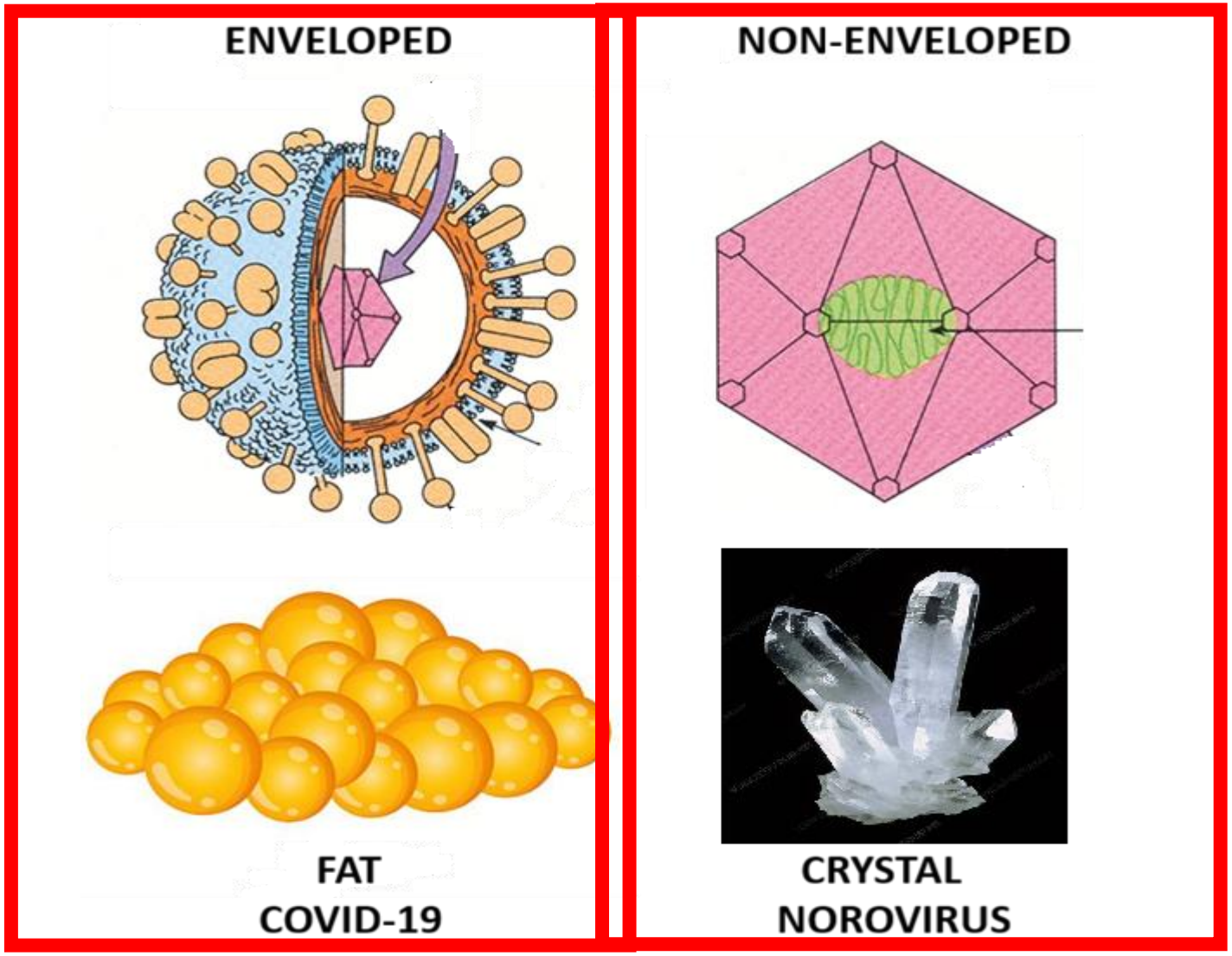


(Carlson et al. 2024; Karst & Baric. 2015; Widdowson et al. 2004)

Clostridiodes difficile Outbreak



Viruses



(Photo modified from: Elsevier Inc, 2022; istockphoto.com, Alla Koala; https://www.sciencephoto.com/media/169938/view/clear-quartz-crystals)

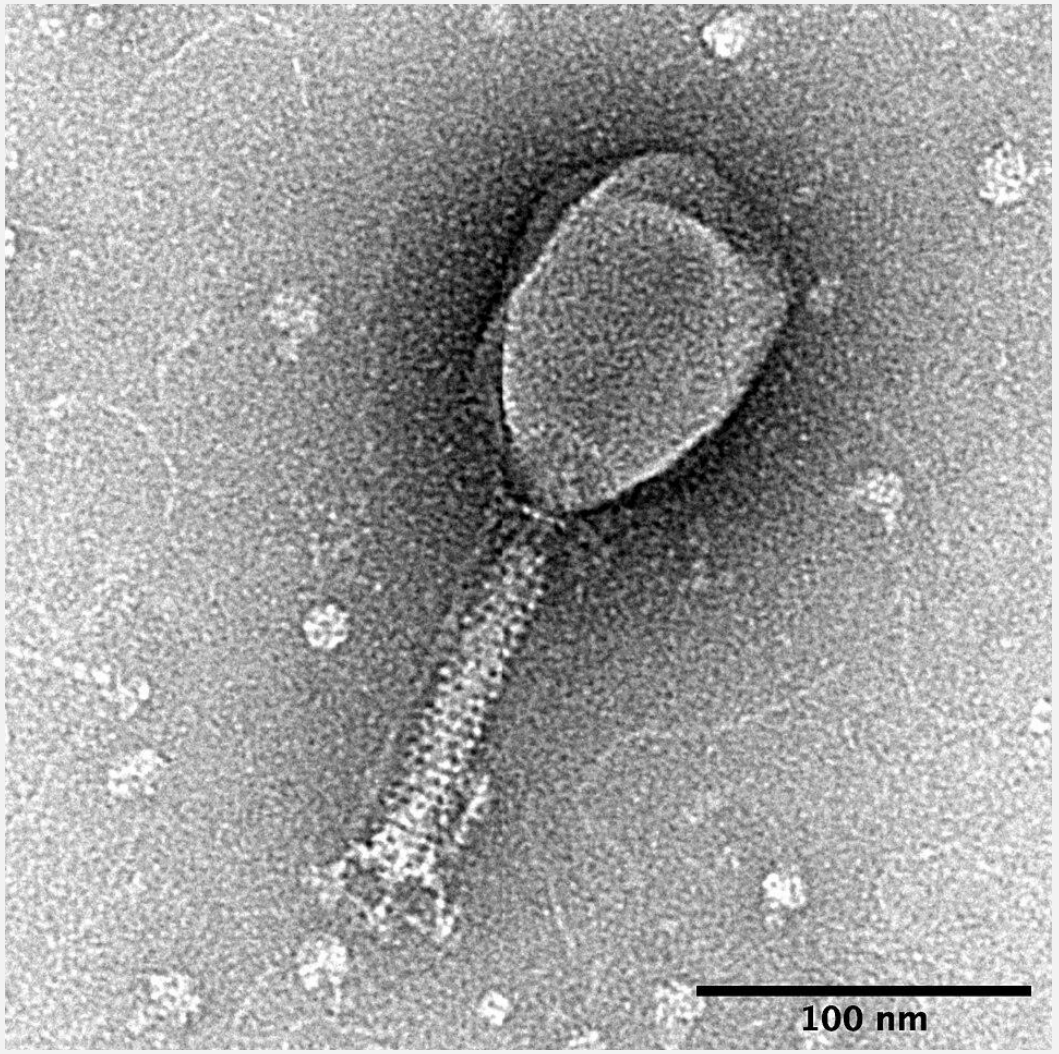
Microbiology Summary

- Fomites have a role in spread
- Vulnerable people
- Risk assessment
- Some microbes harder to kill:
    - Non-enveloped viruses
    - Spores

Indirect Contact Spread

Virus Tracer Study

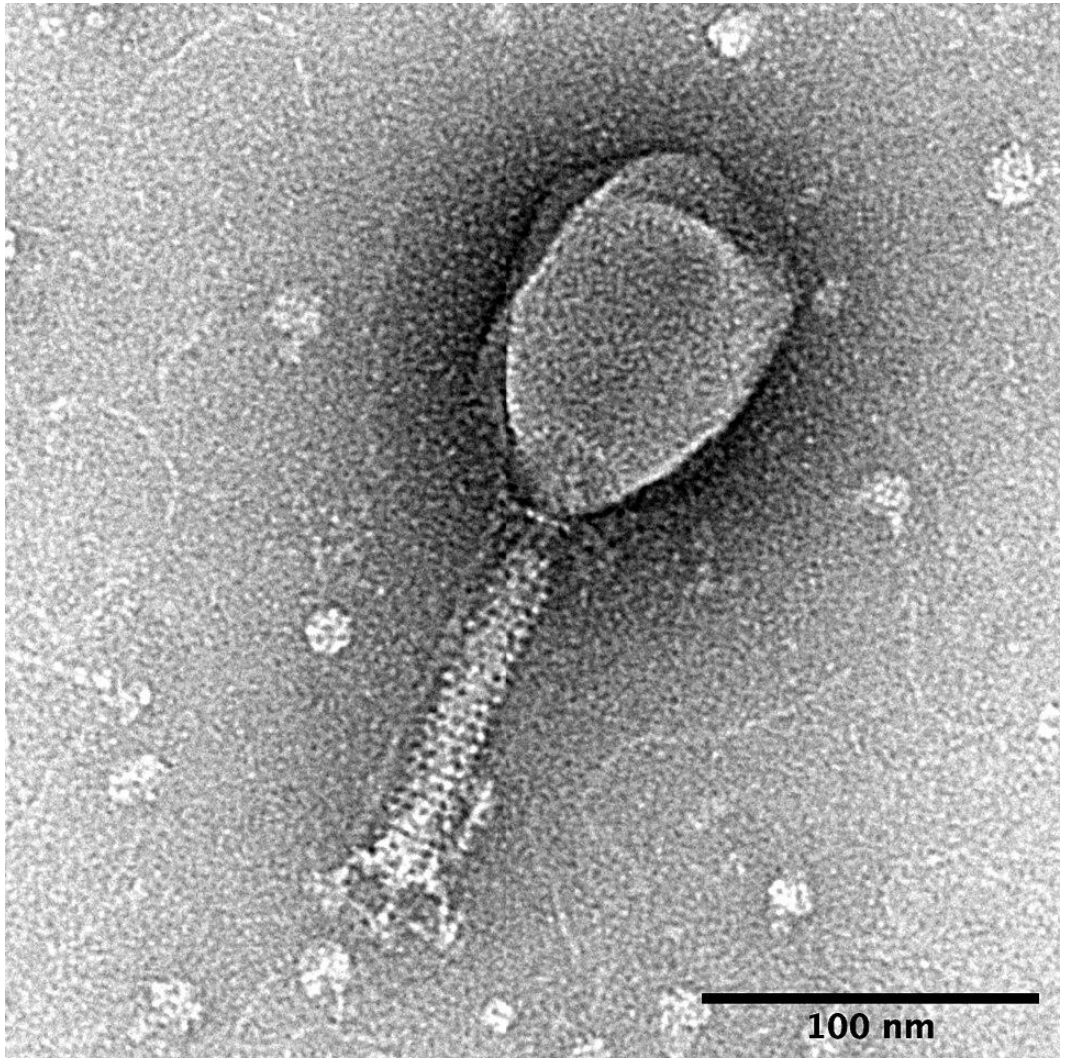
- Ten nursing volunteers
- Sampled palms/fingers
- Samples surfaces



(Sassi et al. 2015; Wikipedia.org)

Surfaces Sampled

- Handrails
- Elevator button
- Door handles
- Call button
- Medicine carts
- Bedside table
- Dinning room
- Nursing station table



(Sassi et al. 2015; Wikipedia.org)

Virus Tracer Findings

- Virus on 49.1% (52/105) surfaces
- Virus on hands
- Virus on both exceeded infectious dose
- Most common = table in nursing station

(Sassi et al. 2015)

Indirect Contact Summary

- Microbes travel on hands
- Microbes recovered from surfaces
- Shared surfaces are a risk

EVS Requests and Challenges

Question

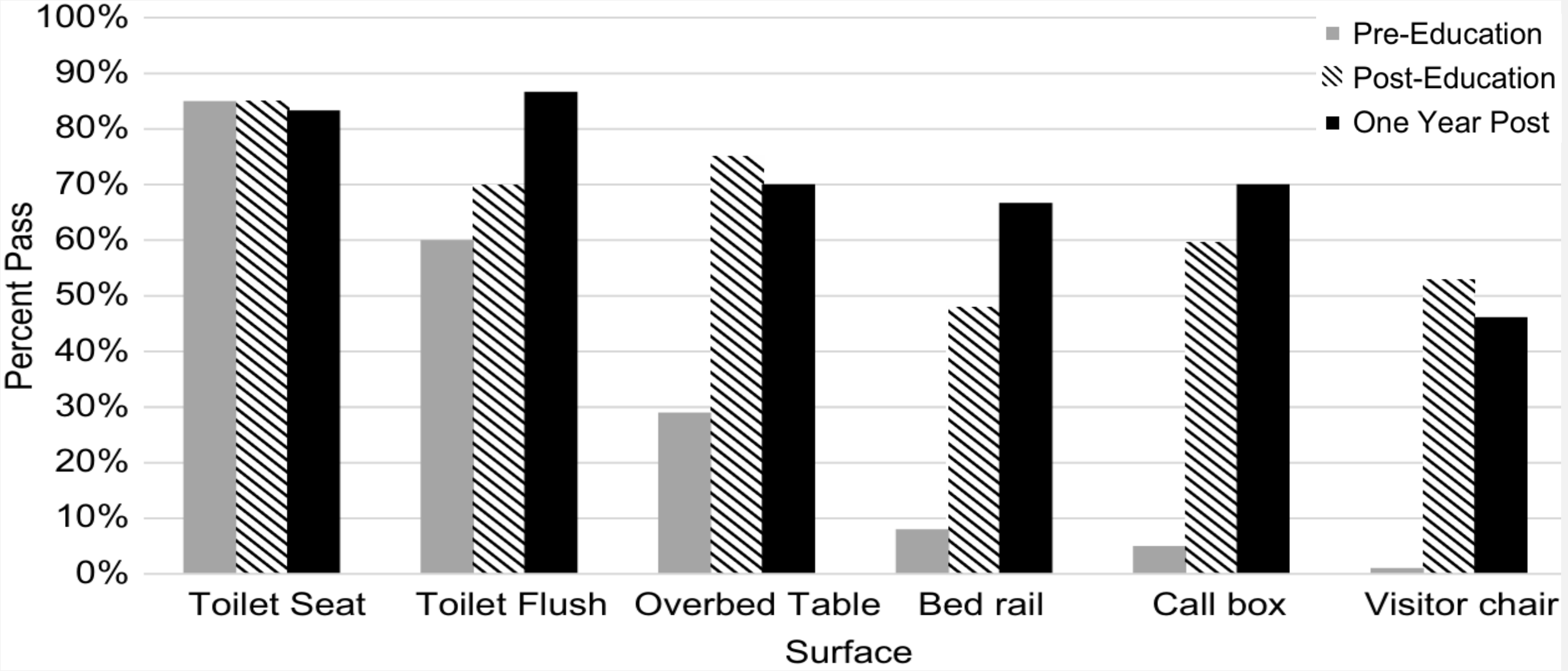
- How often do you talk to the frontline EVS?
    - Daily
    - Every other day
    - Once/week
    - Almost never
    - Never

IPAC and EVS Designed Interventions

- EVS involved in planning/evaluation
- Learning modules (two refreshers)
- Based in experiences
- Problem centered/overcome challenges
- Graphics/videos/role playing/demonstrations

(Martin et al. 2019)

High Touch Surface Testing



(Martin et al. 2019)

Successes

- Empowerment
- EVS and IPAC partnership
- Involved in planning/evaluation
- Utilized existing EVS infrastructure

(Martin et al. 2019)

EVS and IPAC

(Goedken et al. 2022)

Challenges Facing EVS

- Standardization
- Staffing
- Adequate supplies/equipment
- Education opportunities
- Part of health team
- Environmental services technician

(Goedken et al. 2022)

Requests/Challenges Summary

- Not about me without me
- Utilize existing infrastructure
- Not without its challenges

Conclusions

EVS = Infection Prevention

- Dedicated time for training
- Professionalization (Frontline workers)
- Nurture specialized roles
- Representation on committees
- IPAC + EVS

(Goedken et al. 2022)

“Housekeeping is, really should be infection control or the **frontline workers for infection control**, but we get categorized as the term housekeeping when we’re really trying to save lives. As much as the doctors are curing diseases, **we’re trying to prevent the disease from being transmitted**…”

(Goedken et al. 2022)

(https://www.flickr.com/photos/35458915@N08/3693067868/)

Questions

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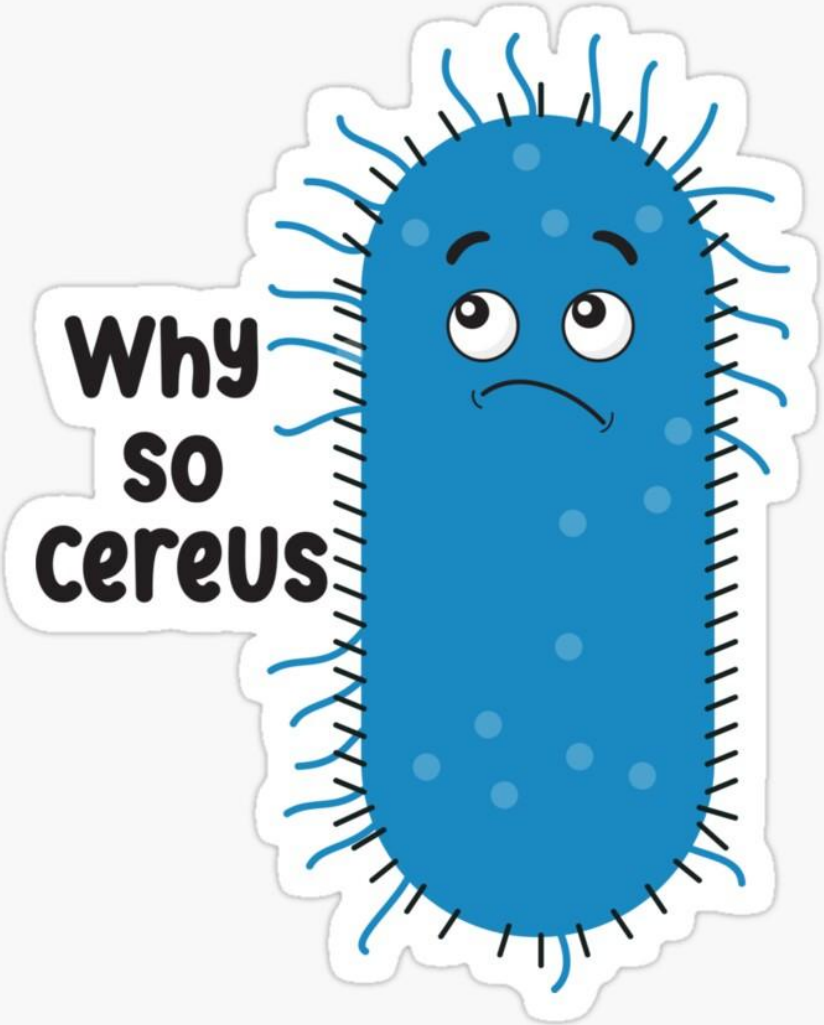

(https://www.redbubble.com/i/poster/Why-So-Cereus-Microbiologists-Microbiology-by-Elhon/96753410.LVTDI)

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