

Clean Hospitals: The Next Frontier in Infection Control

Prof. Didier Pittet and Dr. Pierre Parneix

Sponsored by the World Health Organization, Infection Prevention and Control Global Unit



clean hospitals: the next frontier in infection prevention

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What is Clean Hospitals ?

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HEALTHCARE ENVIRONMENTAL HYGIENE NETWORK

- ✓ Connecting stakeholders & leading experts from around the world
- ✓ Making hospitals safer through improved environmental hygiene
- ✓ Benefiting public health by lowering rates of healthcare-associated infections, reducing antimicrobial resistance, and protecting hospital staff as well as the larger environment

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- Our activities around HEH** 4
- Setting the agenda for addressing urgent issues in the field
 - Academic Taskforce
 - Stakeholder meetings
 - Board meetings
 - Education
 - Development of training programs for hospitals
 - Research projects and studies
 - Systematic review of the efficacy of HEH interventions
 - A global Environmental Hygiene Self-Assessment Framework
 - Publications
 - White papers & academic papers in peer-reviewed journals
- 

Our activities around HEH (cont.)

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- Specialized industry-led working groups
 - Mapping guidelines for HEH
 - Transposable model for hospital hygiene
 - Fake news and how to respond to it
- Participation to conferences
 - InterClean and the Healthcare Cleaning Forum
 - iClean 2020 Australia
 - International Solid Waste Association (ISWA) World Congress
 - SVS Hygiene Forum
 - International Association for Soaps, Detergents and Maintenance Products (AISE) Healthcare Event



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- Why do we need a day ?
- Why do we need to raise awareness ?
- What we did with hand hygiene previously, and the impact it had

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Why do we need to raise awareness:

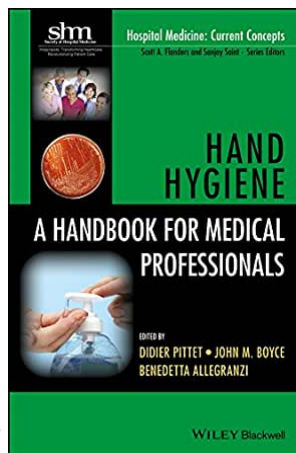
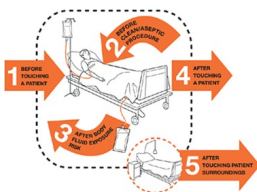
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The healthcare environment's effect on healthcare-associated infections



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25 Years of Hand Hygiene



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Pledges to combat health care-associated infections:

Saving millions of lives every year



<https://www.who.int/infection-prevention/countries/hand-hygiene/statements/en/>



?

\$

How can hospitals save costs in environmental hygiene?

Is cleaning a science?

Do cleaner hospitals really mean safer hospitals?

What is the difference between cleaning and disinfecting?

We asked our stakeholders their most urgent questions about healthcare environmental hygiene

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Questions:

- Q 1: Do cleaner hospitals really mean safer hospitals ?
- Q 2: What is the difference between cleaning and disinfecting ?
- Q 3: How is cleaning a hospital different than cleaning a hotel ?
- Q 4: Does it make economic sense to invest in hospital cleaning programs ?
- Q 5: How can cleaning be a science ?
- Q 6: How do we make sure a surface is clean ?



Questions (cont.):

- Q 7: Do air and water quality matter for controlling infections ?
- Q 8: Is it better to outsource cleaners or train them in house ?
- Q 9: What element of healthcare environmental hygiene should my institution invest in first ?
- Q 10: How can hospitals save costs in environmental hygiene ?
- Q 11: How can I improve team workflows between cleaners and nursing staff ?
- Q 12: Any question ?



Q 1:

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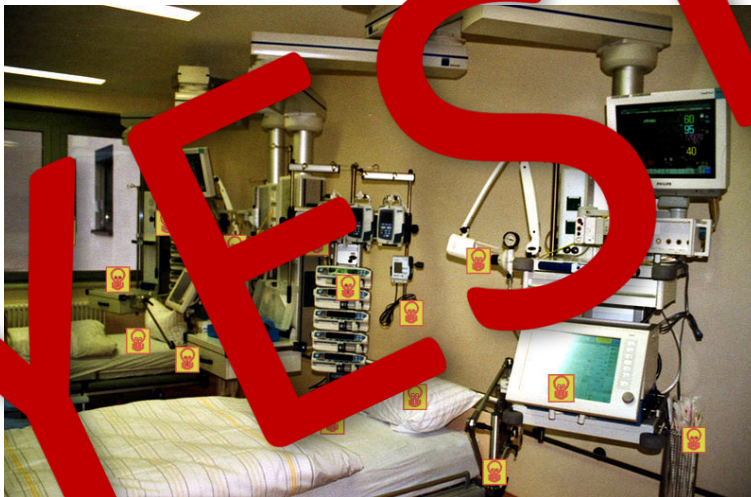
Do cleaner hospitals really mean safer hospitals?



Q 1:

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Do cleaner hospitals really mean safer hospitals?



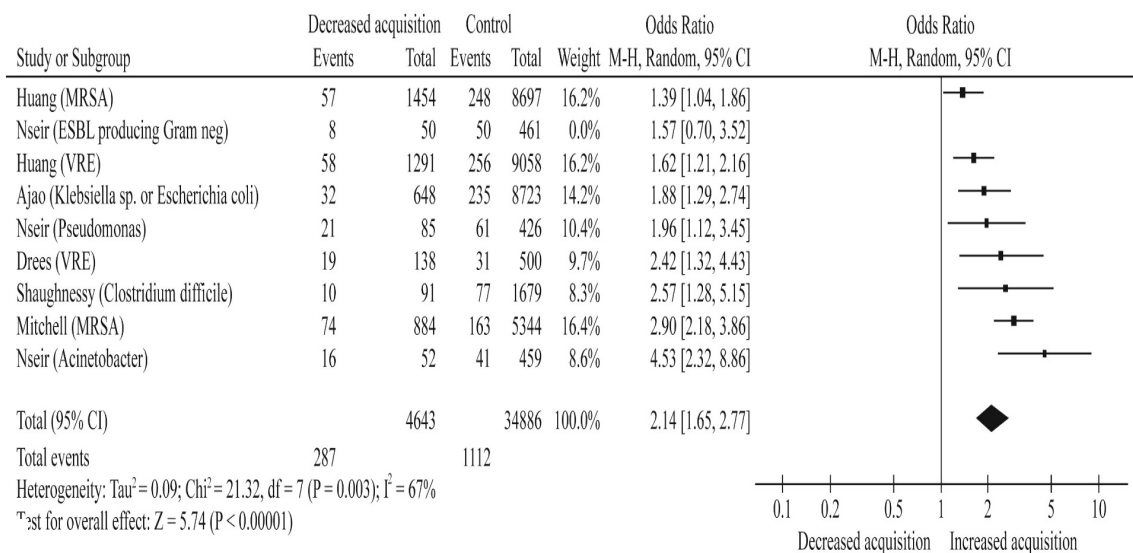
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Survival times and infectious doses retrieved or extrapolated from published studies

Organism	Survival time	Infectious dose
Methicillin-resistant <i>Staphylococcus aureus</i>	7 days→7 mo	4 CFU
<i>Acinetobacter</i>	3 days→5 mo	250 CFU
<i>Clostridium difficile</i>	>5 mo	5 spores
Vancomycin-resistant <i>Enterococcus</i>	5 days→4 mo	<10 ³ CFU
<i>Escherichia coli</i>	2 h–16 mo	10 ² -10 ⁵ CFU
<i>Klebsiella</i>	2 h→30 mo	10 ² CFU
Norovirus	8 h–7 days	<20 virions



Risk of acquisition from prior room occupants by organism



Mitchell, B. G., Dancer, S. J., Anderson, M. & Dehn, E. Risk of organism acquisition from prior room occupants: a systematic review and meta-analysis. *J. Hosp. Infect.* 91, 211–217 (2015).

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Q 2:

What is the difference between cleaning and disinfecting?



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Cleaning vs. Disinfecting

Both reduce microbial contamination, but there is a difference in the amount of reduction

Cleaning- the process of the physical removal dust and dirt (which also removes some microbes)

- Ex. with surfactants or scrubbing

Disinfection- process of killing microbes through mechanical or chemical means

- Ex. with heat or alcohol



Q 3:

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How is cleaning a hospital different than cleaning a hotel?



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Why are hospitals different?

- Difference in vulnerability of population
- Difference in level of contamination from sick patients
- Pathogens in hospitals can differ from those in the community
- Difference in needed level of cleanliness (depending on zones)
- Range of specific environments
- Pathogen transmission patterns, host affinities, microbiological characteristics



Q 4:

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Does it make economic sense to invest in hospital cleaning programs?



Why is it so difficult to figure out?

Costs of not cleaning can affect numerous budgets within a hospital

Need to look at both expenditures and averted expenditures

(including patient days, opportunity costs, staff time, missed surgical revenue, averted infections)

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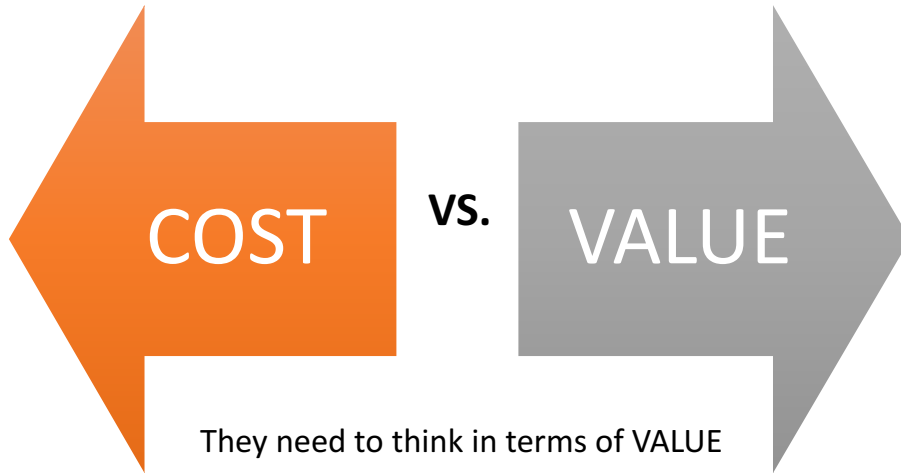
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The cost of hospital cleaning and disinfection

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Hospitals usually think of environmental hygiene in terms of COST



Return on Investment

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For Hand Hygiene return on investment is up to 23x...



How much is return on investment for hospital environmental hygiene?

Increased costs associated with antimicrobial resistance in healthcare-associated infections (some estimates over €85 trillion by 2050)

- A small outbreak with 40 individuals can cost over €1 million)

M Abbas et al. Conflicts of interest in infection prevention and control research. Intensive Care Med Press; 2108.

Pittet D, et al. Cost implications of successful hand hygiene promotion. Infect Control Hosp Epidemiol. 2004;25:264–266.

Graves Nicholas. Hand Hygiene. Hoboken, NJ, USA: John Wiley & Sons, Inc.; 2017. The Economic Impact of Improved Hand Hygiene; pp. 285–293.

Craig D, et al. Economic evaluations of interventions to prevent healthcare-associated infections literature review. 2017.

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The real question is....

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What is the cost of NOT cleaning?



Investing in quality is worth it



Q 5:

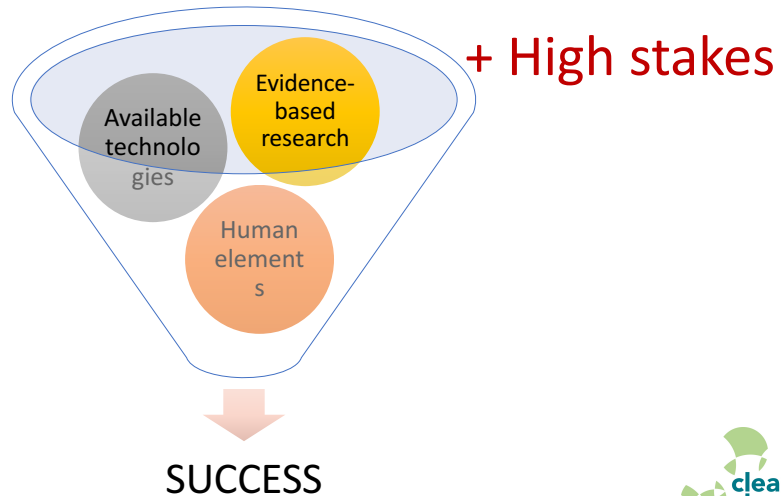
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How can cleaning be a science?



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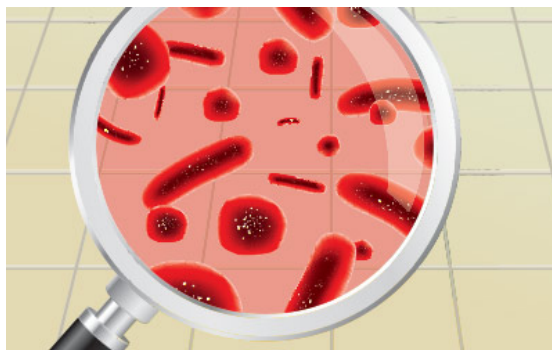
Environmental hygiene in healthcare is complex because:



Q 6:

How do we make sure a surface is clean?

First decide how clean you want that surface to be



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Ways of inspecting the healthcare environment

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- Visual inspection
- Cultures
- Fluorescent markers
- ATP meters



Q 7:

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Do air and water quality matter for controlling infections?



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Air and water

Depends on:

- The microbe present and how it can be transmitted
 - Ex. tuberculosis or *Legionella spp.* disease
- The vulnerability of the patient
- The need of a particular environment
 - Ex. a patient room vs. an operating theater



Risk Zones at HUG

ZONE 1 – LOW Risk

Administrative rooms, entryways, hallways

ZONE 2 – MODERATE Risk

Patient rooms, daycare areas, laboratories

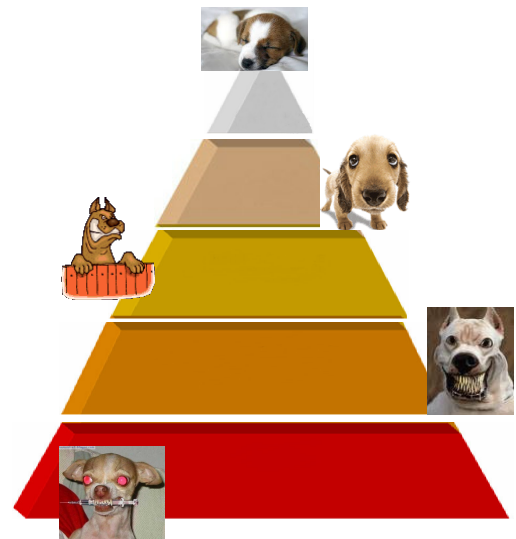
ZONE 3 – HIGH Risk

Intensive care rooms, post-anesthesia care unit

ZONE 4 – VERY HIGH Risk

Rooms of transplant patients, operating theaters

ZONE 5 – CLEAN-ROOMS



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Q 8:

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Is it better to outsource cleaners or train them in house?

Q 8:

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Is it better to outsource cleaners or train them in house?

Trick question:



Q 8:

Is it better to outsource cleaners or train them in house?

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Trick question:



A: You get what you pay for

Outsourcing vs. In-house

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- Pros
 - Can cost less
 - More flexible workforce
 - Generally ok for non-critical areas
- Cons
 - Not your workforce
 - Little control over training
 - Issues with quality management



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Q 9:
What element of
healthcare
environmental hygiene
should my institution
invest in first?



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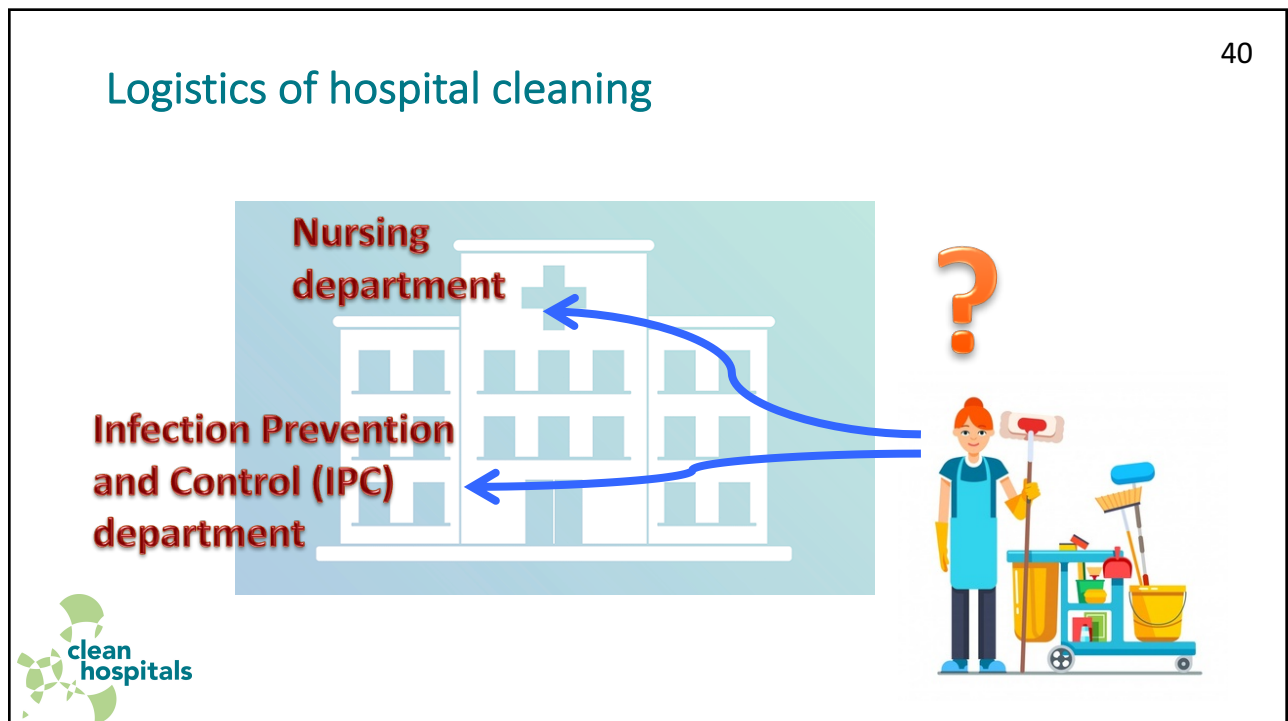
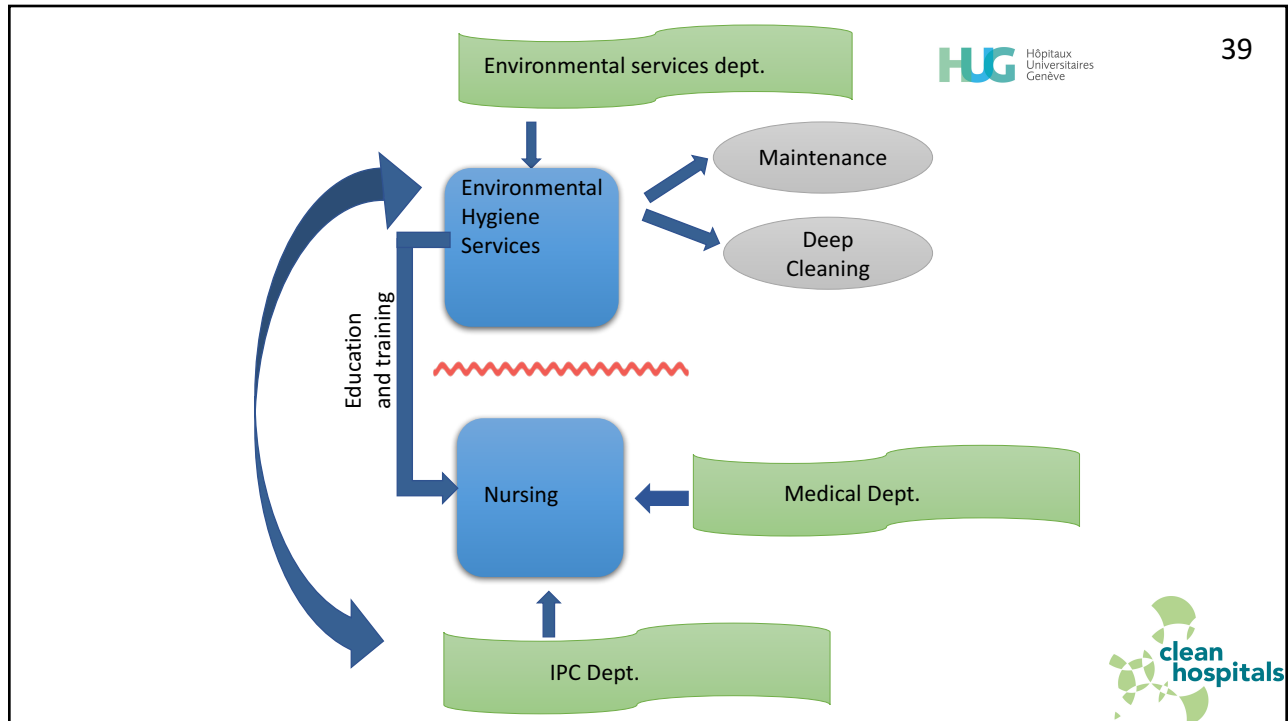
What should my institution invest in first?

- First training, and then good products
- A good cleaner can get better results with a simple detergent than spraying disinfectant on a soiled surface
- It is crucial the environmental services department work closely with infection prevention and control

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Q 10:

How can hospitals save costs in environmental hygiene?



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Key Elements

- Decide which elements need which level of cleaning
- Calculate the cost/benefit of HEH in their institution
- Keep staff longer, educate and motivate them
- Decide when fancy/high-tech machinery is necessary or not

Q 11:

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How can I improve team workflows between cleaners and nursing staff?



*Everyone needs to know their job, and everyone is crucial to the outcome.
Social identities can be fostered by the institution*

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Who does what?



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Optimizing HEH personnel performance



- Good education
- Clear protocols
- Direct communication
- Quality control
- Constructive feedback
- A humanistic approach

*Important to remember that this is a stressful time for everyone, especially essential HCWs
Be sensitive to the concerns of stressed populations
Team cohesion and empowerment is more important than ever*



Q 12:
Any more questions ?

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Members



Collaborating Partners



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October 22, 2020	<u>PREVENTING THE TRANSMISSION OF COVID-19 IN THE HOME</u> Speaker: Mary McGoldrick , Home Health Systems, Inc.
October 22, 2020	<i>(Postponed to 2021)</i> <u>DISCOVERING AND TRANSFORMING THE INNER ICP</u> <u>EDUCATOR: EXPLORING CORE ELEMENTS OF AN INNOVATIVE PROFESSIONAL'S EXPERIENCE</u> Speaker: Dr. Gwyneth Meyers , Alberta Health Services
October 29, 2020	<i>(FREE Teleclass)</i> <u>CLEANING UP AFTER RODENTS IN HEALTHCARE SETTINGS</u> Speaker: Dr. Marcia Anderson , Environmental Protection Agency
November 5, 2020	<u>INFECTION PREVENTION AND CONTROL IN HOME HEALTHCARE - FINDINGS FROM TWO LARGE MULTI-METHOD STUDIES</u> Speaker: Prof. Jingling Shang , Columbia University
November 12, 2020	<u>INFLUENZA DIAGNOSIS, TRANSMISSION AND CONTROL IN AN EVERYDAY HOSPITAL SETTING</u>

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