

Väteperoxid-Sporicidal ånga



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Disposition

- Bakgrund
- Egna erfarenheter
- Studiebesök
- Litteraturgenomgång
- Slutsatser
- diskussion

Ny infektionsklinik i Malmö 2010



Provrum



Generella metoder-No touch decontamination

- Historik
- Industriell användning
- Vad innebär det?

Varför ”No touch”?

- Smitta från föregående patient på ett rum
- Smitta till patienterna från miljön
- Städning är inte standardiserad
- Kvarstående smittämnen trots städning

Varför No touch

- Ej tillräcklig effekt av:
 - Handhygien
 - städning,
 - Antibiotika stewardship
 - Enkelrum, Isolering
 - **Alltid som komplement**

”No touch decontamination”

- **UV-ljus**, UVC, PX- UV

rel snabbt ca 1 tim, ofarligt
skuggeffekter

- **Ozon**

Toxiskt, lukt, negativ påverkan på apparatur, yttlig
effekt

- **H₂O₂**

Mest effektivt, Aerosol aHP o ånga HPV

Patogener

- MRSA
- VRE
- A.Baumanii
- C.Difficile
- Norovirus

Cell destruction H₂O₂

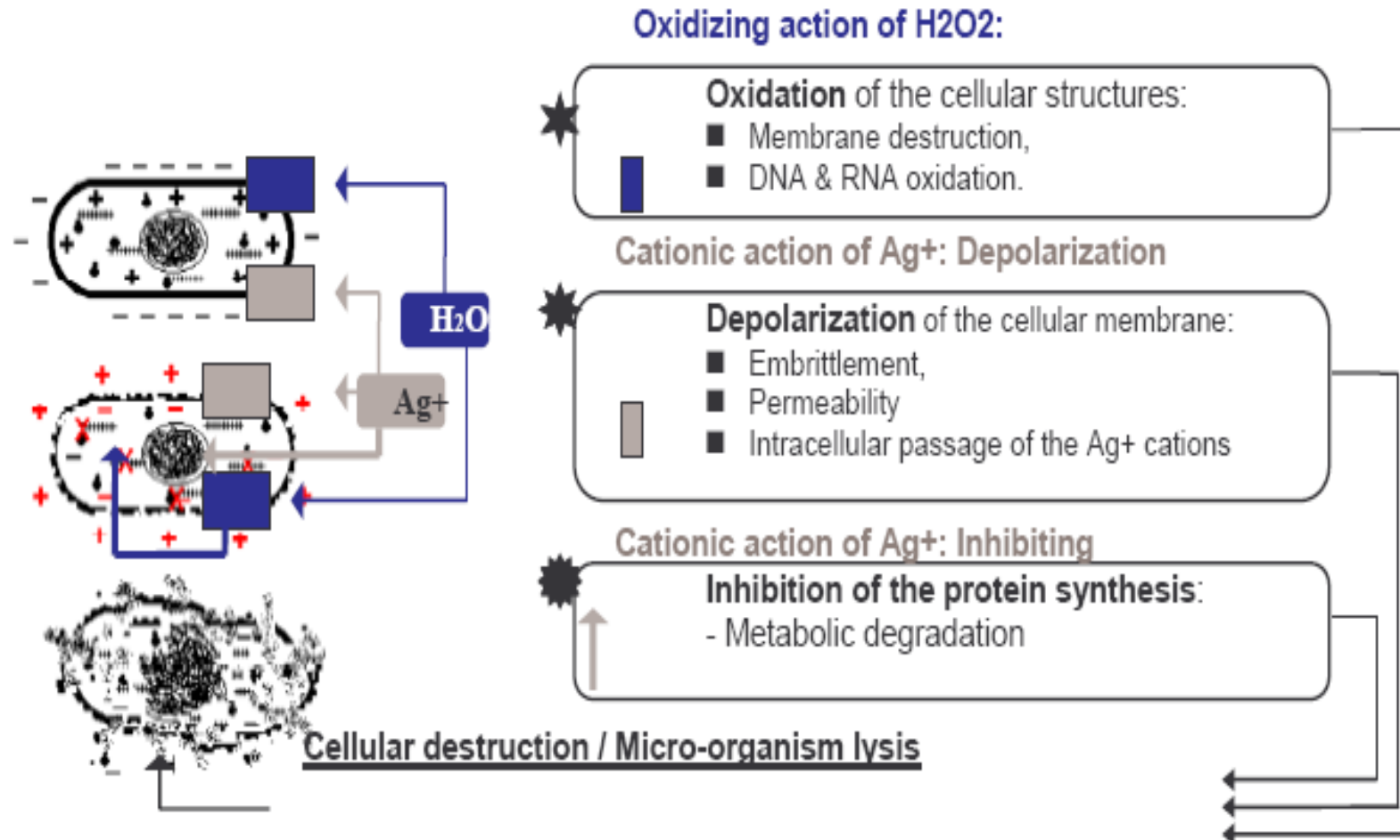
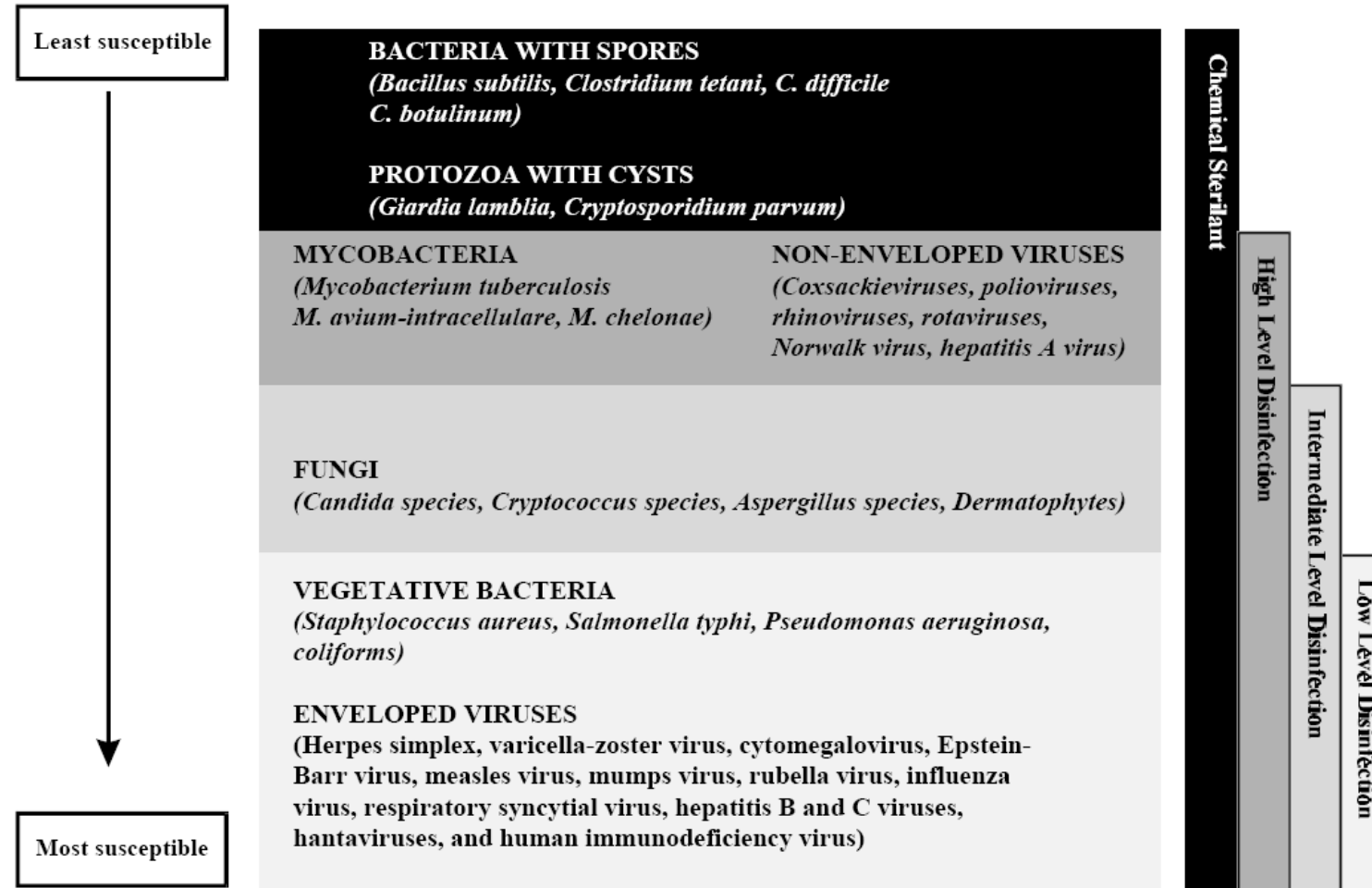


Figure 1.
Classes of Microorganisms Ranked in Descending Order from Least to Most Susceptible to Chemical Disinfectants



Väteperoxid NTD -2 system

- HPV-ånga
- aHP-aerosol

Study

Holmdahl *et al.* A head-to-head comparison of hydrogen peroxide vapor and aerosol room decontamination systems. *Infect Control Hosp Epidemiol* 2011;32:831-836.

Hydrogen peroxide vapour (HPV)

Teknik & process

- Mobil HPV generator (e.g. *Bioquell Q 10*) + nedbrytningsenhet. Producerar HPV från en 30% H_2O_2 vätske lösning
- Distribuerad som vapour (*gas*). (400 ppm)
- HPV bryts ner till vatten och syre
- < 2 tim cykel för enkelrum



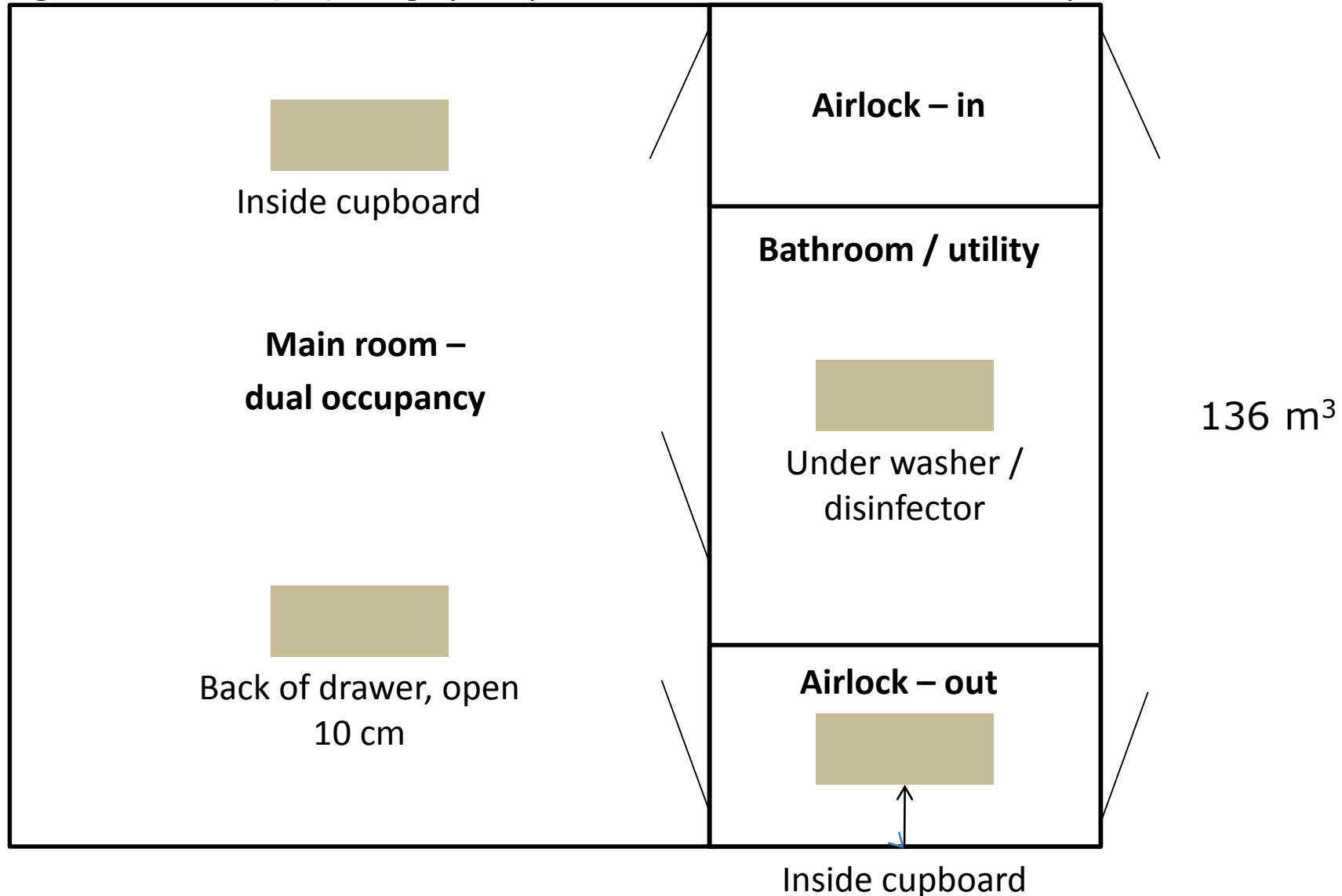
Aerosolised hydrogen peroxide (aHP)

- Teknik och process
- Portabla H_2O_2 aerosolisers (e.g. *Bakteriefritt* ~ASP Glosair 400, Steris BioGienie,).
- 5-6% väteperoxid lösning och 50-60ppm **silver** plus stabiliserare (fosforsyra).
- Aerosoliserade droppar – *ej gas* partikelstorlek (8-12 μm).
- *Passiv nedbrytning*
- >2 tim cykel för ett enkelrum

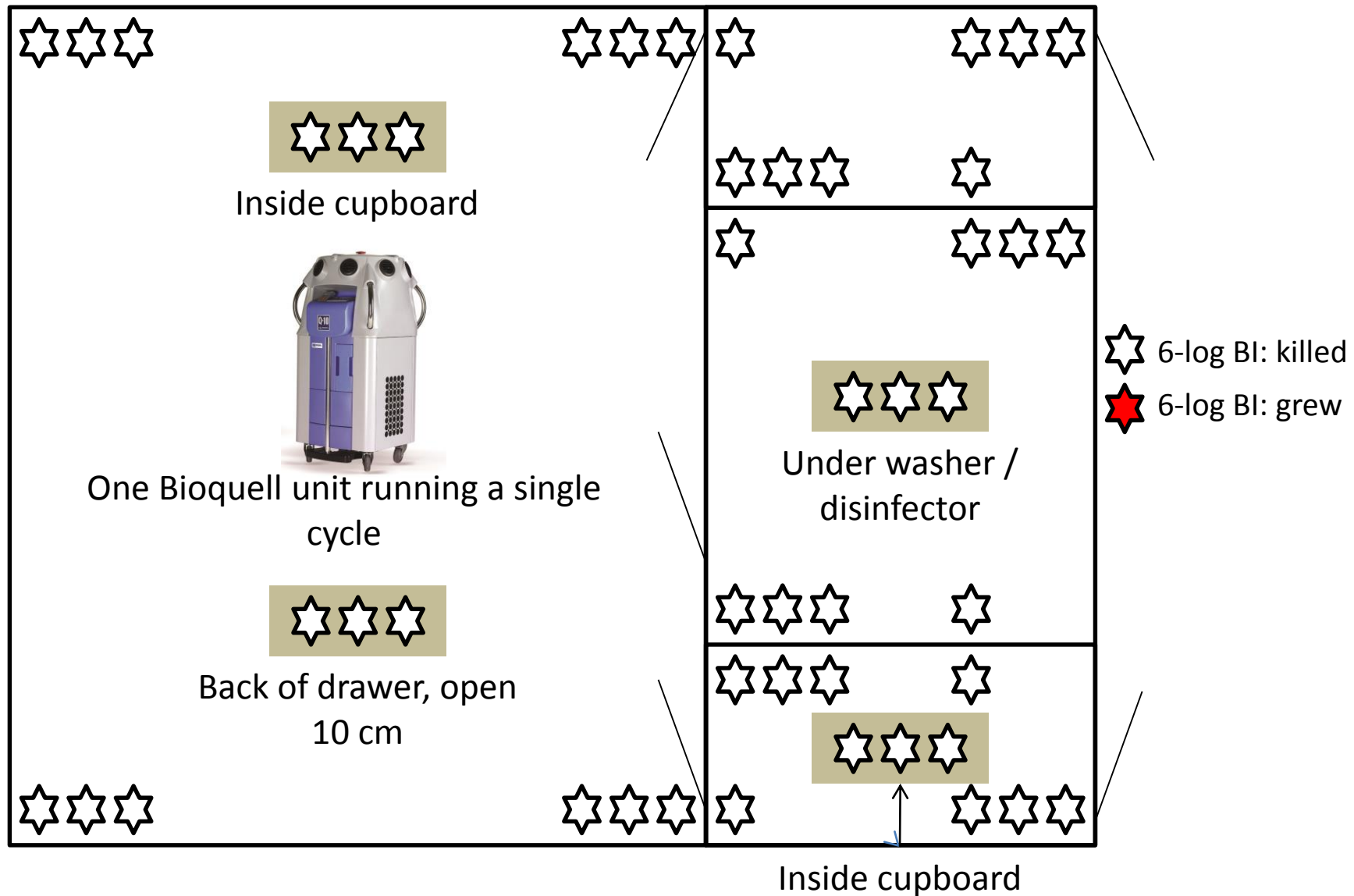


Bioquell HPV vs. Bakteriefritt ASP (Malmö, Sweden)

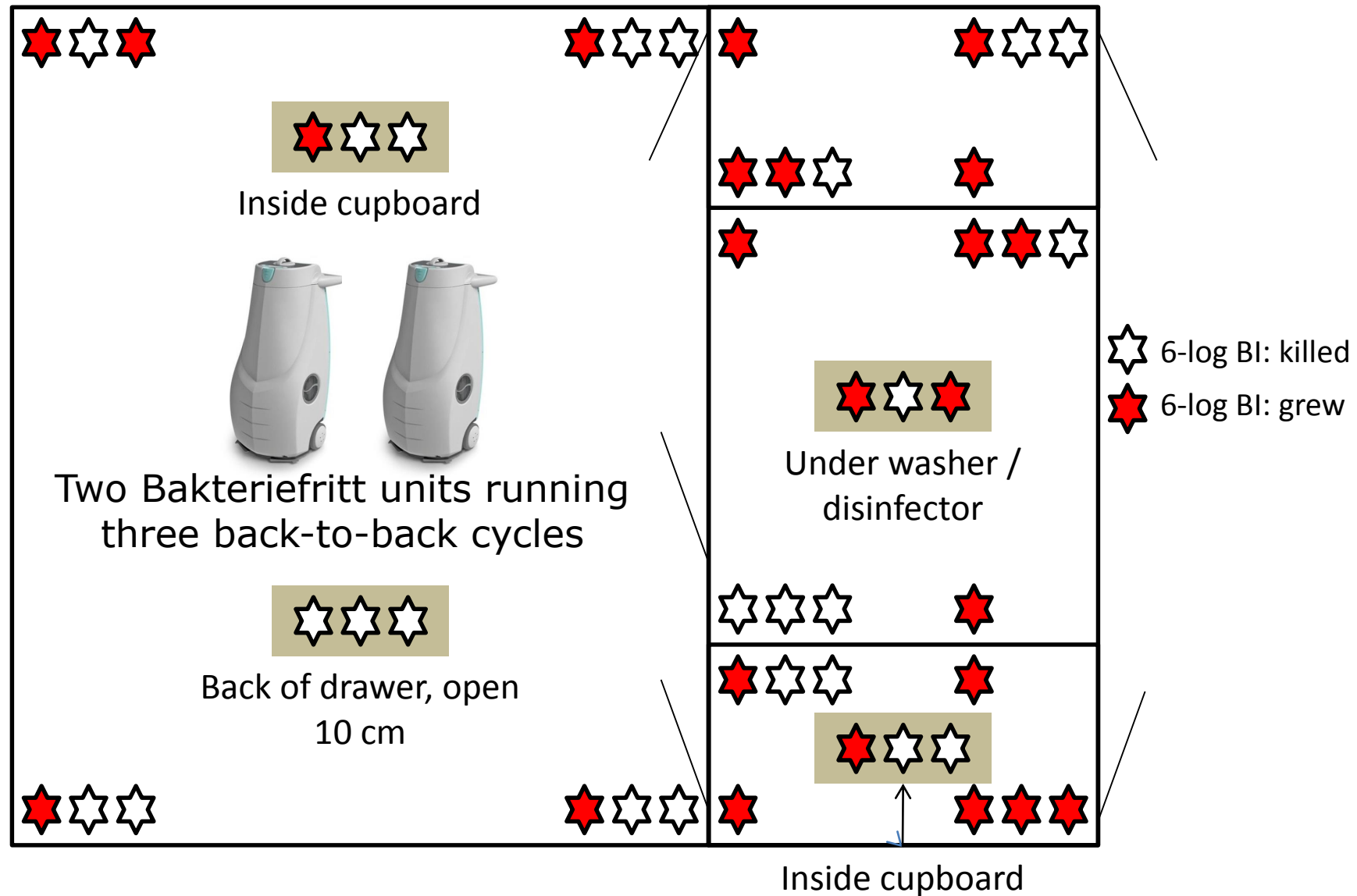
biological indicators (BIs) 6-log Tyvek-pouched *Geobacillus stearothermophilus*



Bioquell HPV



Bakteriefritt aHP



Royal Marsden



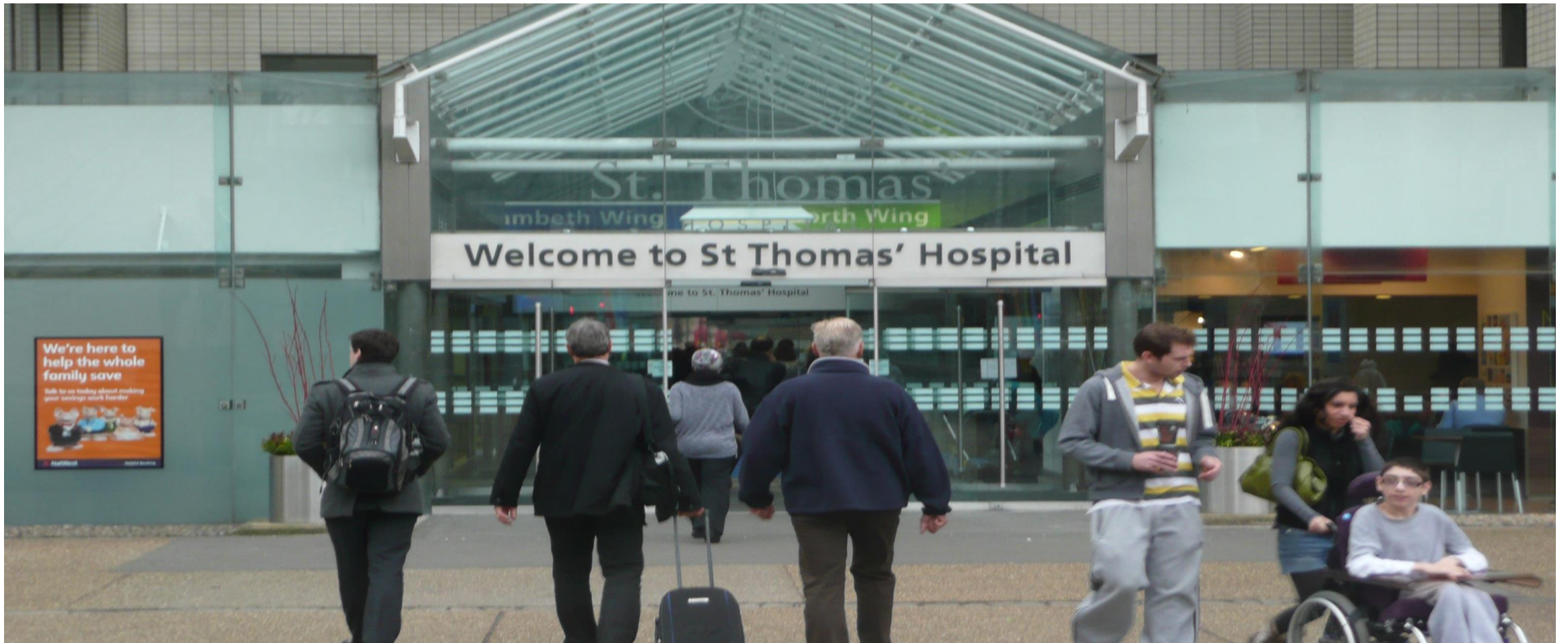
Kontrollpanel utanför dörren



Ta in material i rummet







Utbildade städare





Försegla ventiler



Toiletter





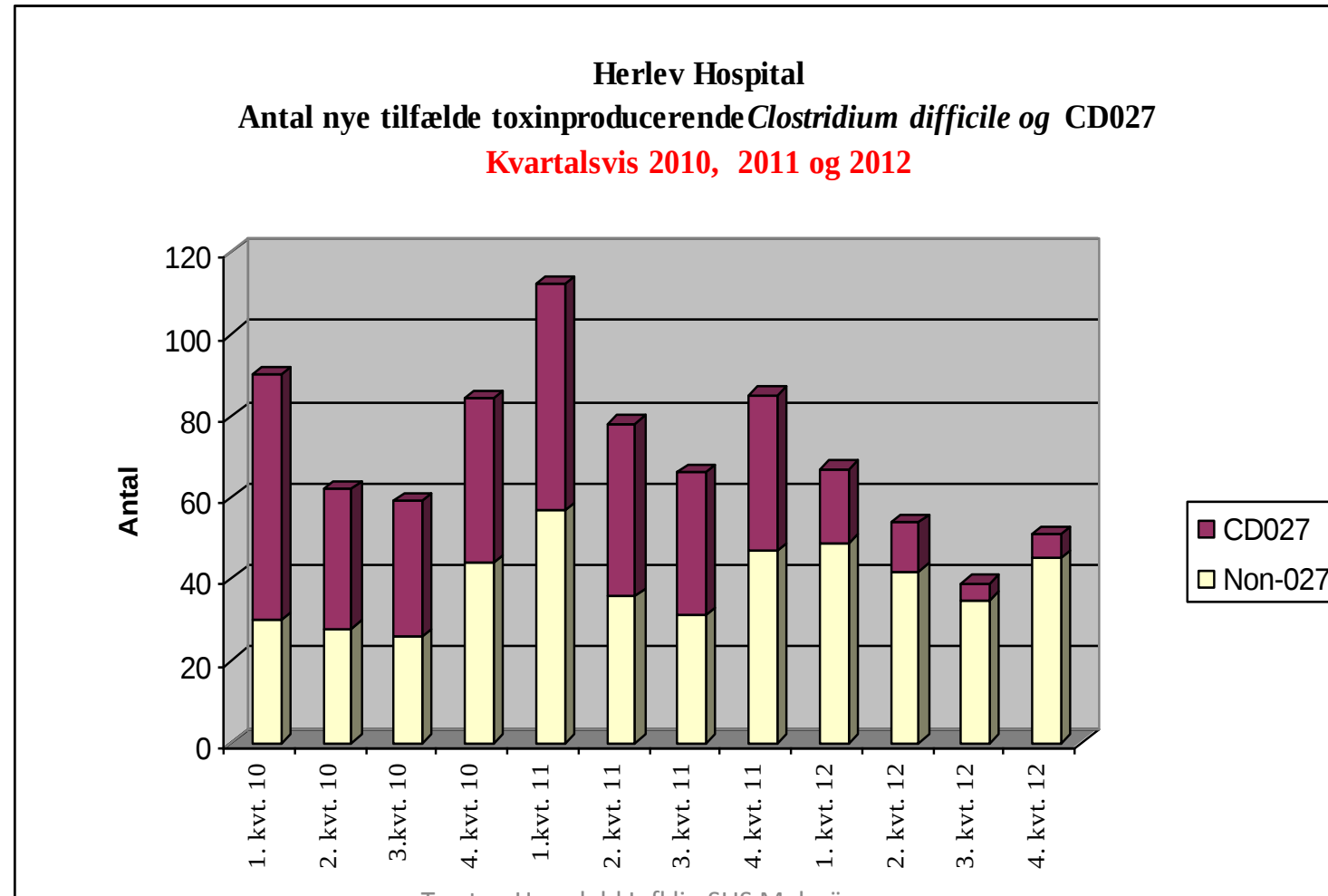
Torsten Homdahl Infklin SUS Malmö

Herlev Hospital



- 4500 employees
- 22 wards
- 425.000 citizens in the recording area
- For some diseases 700.000 citizens in the recording area

Reason for action!



What did we do at Herlev Hospital about *Clostridium difficile*

• **Aim:** Reduction of numbers of episodes to 150-200 a year, that is more than half of what we had of episodes in 2011

• **Registration** of every new case with follow up

• Establishment of an **outbreak group**

• **Focusing** at patients with diarree

• **Diagnosing** of *Clostridium difficile* ; quick sampling and answer.

• **Cleaning:** Acute cleaning team

Increased use of chlorine

• Desinfection with Glosair

• **The use of antibiotic**

• **Intranet information**

HOW

- The Capital Region decided to buy Glosair to all hospitals
- The responsibility for the project was placed in the Microbiological department at Herlev Hospital
- A plan was made

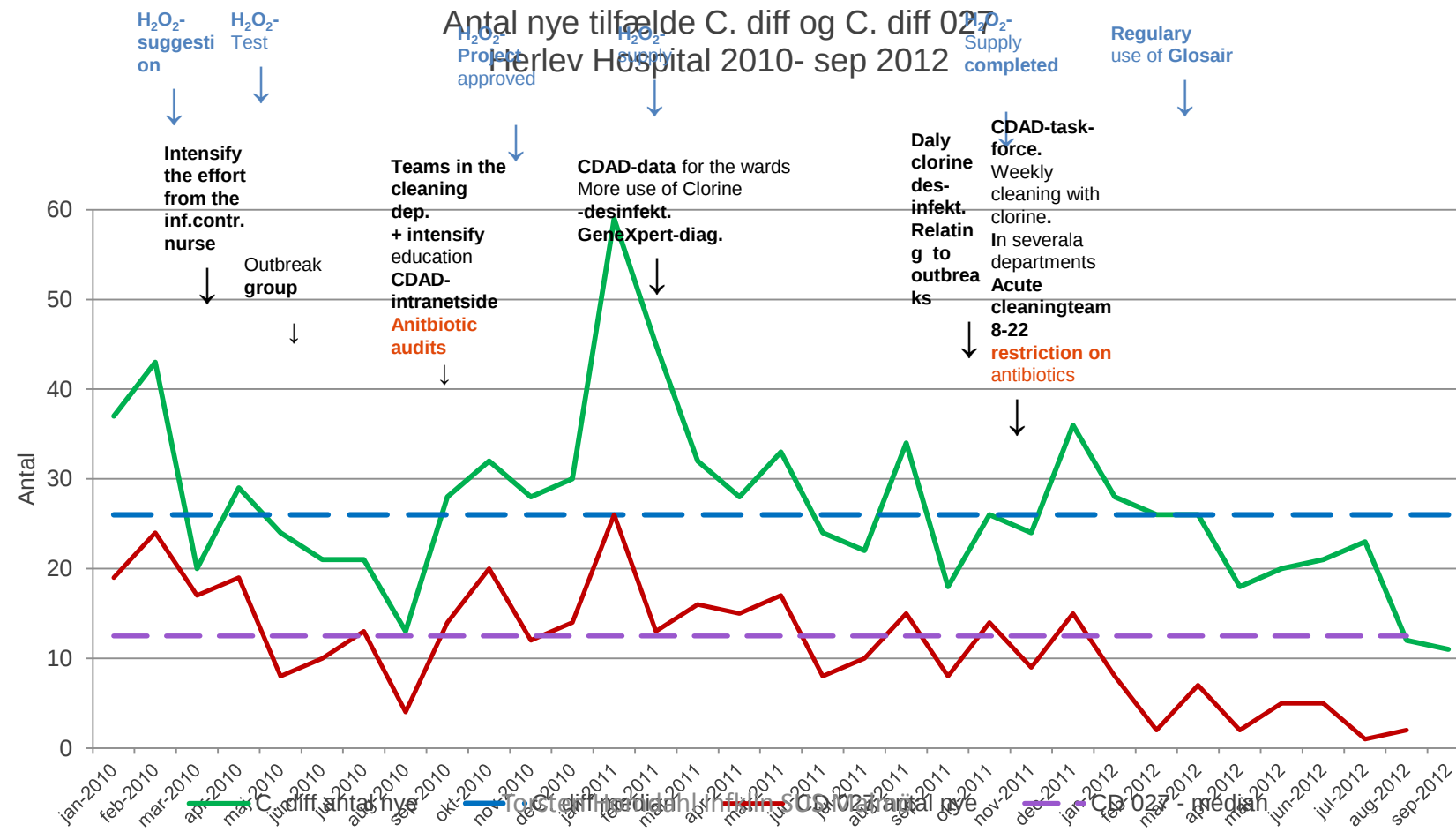
Reduction of colonies of staphylococci after cleaning with chlorine

Udstyr	Colonies after cleaning with clorin	Colonies after Glosair
atm+ilt v. søjle	50	0
atm+ilt h. søjle	2	0
sugeagr.ve søjle	22	0
monitorstik h. søjle	3	0
monitorstik v. søjle	0	0
dråbetæller	0	0
blodstænk h. søjle	0	0
resp. mont.udtag	0	0
resp. Slangeholder	0	0

Who is meant to do the decontamination process?

- Cleaning department ?
 - Infection control nurses ?
 - Technical staff ?
 - External support ?
-
- Herlev decided to engage the cleaning department

CDAD-efforts at Herlev Hospital



H₂O₂-silver-dry-mist, hvorfor?

- Rum-desinfektion kan være særlig vanskelig pga. tilstedeværende apparatur
- Recidiverende tilfælde af samme infektion trods forholdsregler kræver nytænkning
- Baderum, skyllerum etc ?
- "0-stille" en afdeling?
- **Meget kraftig signalværdi**
- Supplement til eksisterende procedurer:
 - "ikke selve løsningen men måske en del af den"



Rationel dekontamination



Konklusion

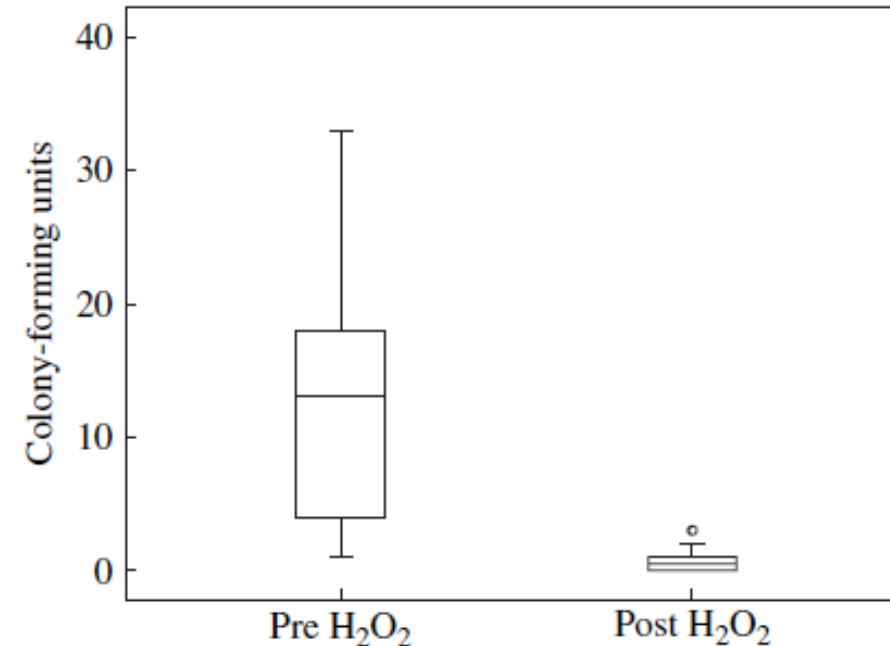
- Glosair kan ikke stå alene
- Glosair er en del af en løsning
- Væsentligt element i exponering af indsats
- Meningsfuldt for alle involverede medarbejdere
 - Specialistfunktion i rengøringen
- Udfordring i forhold til logistik
- Bedre mikrobiologisk dokumentation ønskes

Gaseous hydrogen peroxide v *C.difficile*
in patient isolation rooms

Table I Overall recovery of environmental *C. difficile* from low, medium and high risk wards, and recovery of *C. difficile* before and after hydrogen peroxide decontamination

	% (no.) of rooms positive for <i>C. difficile</i>	% (no.) of samples positive for <i>C. difficile</i>	Mean <i>C. difficile</i> cfu per 10 samples
Low risk areas	67% (2/3)	3% (2/60)	0.3
Moderate risk areas	100% (2/2)	11% (5/44)	1.1
High risk areas	100% (11/11)	26% (58/223)	6.2
Before H ₂ O ₂ decontamination	100% (10/10 ^a)	24% (48/203)	6.8
After H ₂ O ₂ decontamination	50% (5/10 ^a)	3% (7/203)	0.4

^a Due to a technical failure of the Sterinis[®] on one occasion only 10/11 rooms in the high risk areas had paired sampling results before and after hydrogen peroxide decontamination.



Shapey *et al.* Activity of a dry mist hydrogen peroxide system against environmental *Clostridium difficile* contamination in elderly care

wards. J Hosp Infect (2008) 70:136-141

H2O2

- God effekt vad gäller eradikering I sjukhusmiljö¹⁻⁵
- Klinisk nytta
 - *Före och efter studier visar att HPV ger en signifikant minskning av C. difficile(37%), MRSA(89%) and VRE 75%⁶⁻⁷*
 - *Minskar risken för smitta när föregående patient har varit koloniserad(64%).⁸*



1. Jeanes *et al. J Hosp Infect* 2005;61:85-86.
2. Dryden *et al. J Hosp Infect* 2008;68:190-192.
3. Bates & Pearce. *J Hosp Infect* 2005;61:364-366.
4. Otter *et al. Am J Infect Cont* 2010;38:754-756.
5. Cooper *et al. J Hosp Infect* 2011;78:238-240.
6. Boyce *et al. Infect Control Hosp Epidemiol* 2008;29:723-729.
7. Manian *et al. SHEA* 2010.
8. Passaretti *et al. ICAAC/IDSA* 2008.

Slutsatser

- God dokumentation vad gäller dekontamination av ytor
- Inga randomiserade kontrollerade kliniska studier
- Inga hälsoekonomiska studier
- Historiska kontroller, enstaka sjukhus
- Enstaka studie visar minskning av C.Difficile sjukdomsfrekvens 37% ,Manian et al 2010

Diskussion

- Vid utbrott som man inte får bukt med med traditionella metoder
- Farliga patogener-låg smittdos
- Komplement
- Miljövänligt
- Kostnad vs nytta
- Omloppstid av patienter

