

GAMA GLOBAL WEBINAR SERIES

Cleaning and Disinfection: Principles and Practice

 Sep 2022

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GLOBAL WEBINAR SERIES

Objective:
To provide our partners and healthcare workers the best support in IPC knowledge and our innovations.

Format:
1 global webinar per month, 30 minutes + Q&A in English.

Possible contact sessions:
Due to different time zones, the webinars will be recorded and shared. Live Q&A session with the speakers can be arranged for those who cannot attend the webinar. Please contact your sales rep/ channel marketeers if needed.


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BEFORE WE BEGIN

- Make sure you are **on mute** and your **camera is off** for the duration of the webinar.
- Please place any questions in the **Q&A** section for answering at the end of the webinar.




- Feel free to introduce yourself and where you are joining from in the **chat box!**
- Due to the intellectual property of the presenter, please **refrain from recording or taking screen shots** during the webinar.
- Contact your salesperson for the webinar content & certificate

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OUR SPEAKERS



Dr Philip Norville
Clinical & Scientific Director


Dr Philip Norville has over 10 years' experience working with healthcare organisations, helping improve and implement effective infection prevention solutions.

As Clinical & Scientific Director for GAMA Healthcare, Phil leads a team of experienced infection preventionists, making sure GAMA's offering is clinically proven and industry-leading.



James Clarke
Head of Scientific Services - R&D

James has 10 years of experience in the research and development of high-performing disinfectant and antiseptic products across a range of applications and geographies. Educated as a microbiologist, he now leads GAMA's R&D science and technology group in Halifax, UK.



Dan Morgan-Smith
Global Acute Strategy Director

Dan is an experienced Infection Prevention Sales leader with 25 years of experience in the UK market. He has worked with two ambitious companies helping both grow to be strong market leaders and the outstanding company in their field.

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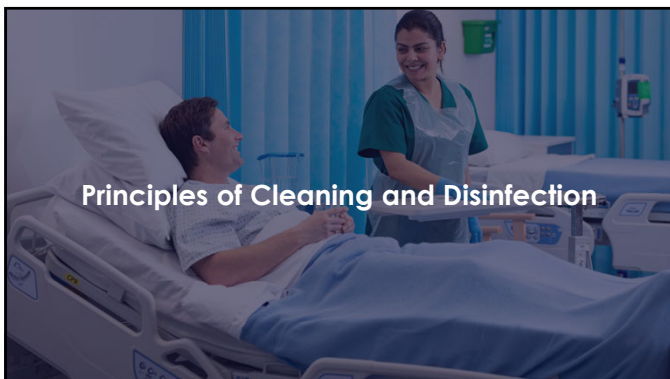
AGENDA

1. Principles of cleaning and disinfection
2. Overview of disinfectant testing with an introduction to EN standards
3. Case study of cleaning and disinfection in clinical practice
4. Clinell Universal and Peracetic Acid Wipes - when to clean and disinfect?

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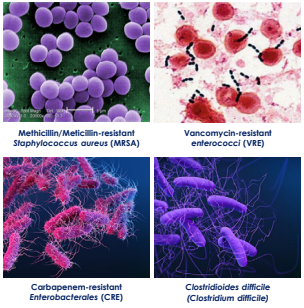
Principles of Cleaning and Disinfection

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DECONTAMINATION

Decontamination can play an important role in helping to **prevent the spread** of antibiotic-resistant bacteria.

Use of physical or chemical means to remove, inactivate or destroy microorganisms on a surface to make it safe, so that they are no longer capable of transmitting infectious particles.



Methicillin/Melicillin-resistant Staphylococcus aureus (MRSA)
 Vancomycin-resistant enterococci (VRE)
 Carbapenem-resistant Enterobacteriales (CRE)
 Clostridioides difficile (Clostridium difficile)

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DECONTAMINATION, CLEANING & DISINFECTION

Decontamination of non-invasive equipment or the environment can be achieved through:

- Cleaning
- Disinfection
- A combination of the two

A 2-in-1 decontamination system utilises a formula containing both a detergent and disinfectant to clean and disinfect in one process with one product.

Physical removal of contamination is achieved by the actual wiping process itself.

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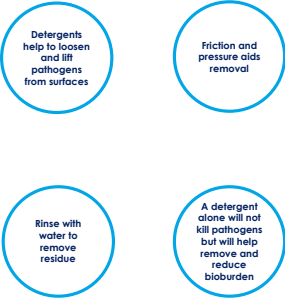
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CLEANING

Standard precautions:

- Hand hygiene
- Respiratory, cough, isolation management
- PPE use
- Sharps safety
- Blood spills
- Laundry and waste management
- Patient equipment cleanliness
- Patient environment cleanliness

Cleaning removes substantial amounts of any material which is not part of the item (Hoffman et al., 2004).



Detergents help to loosen and lift pathogens from surfaces
 Friction and pressure aids removal
 Rinse with water to remove residue
 A detergent alone will not kill pathogens but will help remove and reduce bioburden

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DISINFECTION

Disinfection is defined as a process used to reduce the number of viable microorganisms on items or surfaces to a safer level.

It is a higher level of decontamination, but it still may not eradicate some bacterial spores and prions.

Be applied to a clean, dry surface – pre clean with detergent

Be used at the right concentration

Have enough time in contact with the surface to kill the pathogen

Be effective against particular pathogens

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ADVANTAGES OF A 2-IN-1 DECONTAMINATION SYSTEM

Reduce the risk of using only detergent or only disinfectant

Reduce the risk of using detergent and disinfectant in the incorrect order

Time-saving – only one step instead of two = improved compliance

Less space and equipment required – one product instead of two

Reduced risk of cross-contamination transfer of pathogens from one surface to another when cleaning

Less waste generated

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MICROORGANISMS

- Vary in their susceptibility to disinfectants (some are easier to kill than others).
- Certain groups are more resistant to disinfectants than others.
- Causing significant numbers of HAIs are in practice very susceptible to disinfectants and can be eradicated easily.
- The disinfectant hierarchy gives insight on why different levels of disinfectant are needed (i.e. sporicidal and sporostatic).

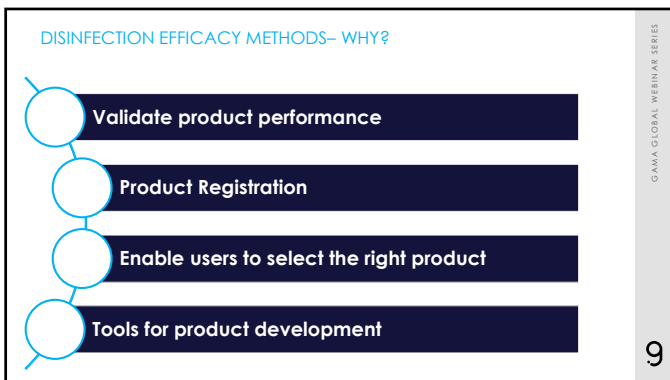
RESISTANCE LEVEL	MICROORGANISM	EXAMPLES
High Resistance	Prions	Creutzfeldt-Jakob Disease
	Bacterial spores	Bacillus sp., Clostridium spp.
	Protozoan cysts	Cryptosporidium
	Mycobacteria	Mycobacterium tuberculosis
Medium Resistance	Small, non-enveloped viruses	Poliiovirus, Papillomaviruses
	Protozoan oocysts	Giardia
	Fungal spores	Aspergillus, Penicillium
	Gram-negative bacteria	Pseudomonas spp., Escherichia coli
Low Resistance	Vegetative fungi	Aspergillus, Candida
	Vegetative protozoa	Giardia, Cryptosporidium
	Large, non-enveloped viruses	Adenoviruses and Rotaviruses
	Gram-positive bacteria	Staphylococcus spp., Enterococcus spp.
Least Resistance	Enveloped viruses	Human Immunodeficiency Virus, Hepatitis B Virus

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BASIC PRINCIPLES OF DISINFECTION
EFFICACY TEST METHODOLOGY

1. Preparation 2. Exposure 3. Neutralisation 4. Results

1. Preparation of simulated test conditions;

- Target organism(s)
- Interfering substances (simulated soils) – Clean/Dirty
- Exposure environment; Suspension, surface etc. including temperature

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BASIC PRINCIPLES OF DISINFECTION
EFFICACY TEST METHODOLOGY

1. Preparation 2. Exposure 3. Neutralisation 4. Results

2. Exposure: Expose the simulated conditions to the test product for the selected contact time.

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BASIC PRINCIPLES OF DISINFECTION
EFFICACY TEST METHODOLOGY

1. Preparation 2. Exposure 3. Neutralisation 4. Results

3. Neutralisation: Stop the exposure of the test product to the test system.

- Chemical neutralization
- Dilution neutralization
- Physical removal

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BASIC PRINCIPLES OF DISINFECTION EFFICACY TEST METHODOLOGY

4. **Results:** Recover and culture the organism. Calculate results and establish performance.

Standards can describe specific success criteria

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TEST ORGANISMS

- Basic claims in EN norms;
 - Bactericidal
 - Yeasticidal
- Additional organisms are optional; enveloped viruses, fungi, mycobacteria, bacterial endospores.
- Efficacy test standards prescribe the target organism and test conditions depending on the product claim - EN14885.

High Resistance	MICROORGANISM	EXAMPLES
↑	Prions	Creutzfeldt-Jakob Disease
	Bacterial spores	Bacillus spp., Clostridium spp.
	Protozoal oocysts	Cryptosporidium
	Mycobacteria	Mycobacterium tuberculosis
	Small, non-enveloped viruses	Poliovirus, Norovirus
	Protozoal spores	Giardia
	Fungal spores	Aspergillus, Penicillium
	Gram-negative bacteria	Pseudomonas spp., Escherichia coli
	Vegetative fungi	Aspergillus, Candida
	Vegetative protozoa	Giardia, Cryptosporidium
↓	Large, non-enveloped viruses	Adenovirus and Rotavirus
	Gram-positive bacteria	Staphylococcus spp., Enterococcus spp.
	Enveloped viruses	Human Immunodeficiency Virus, Hepatitis B Virus
Low Resistance		

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INTERFERING SUBSTANCES – MEDICAL AREA

Clean conditions: 0.3 g/L Bovine serum albumin (BSA)

Selected for products that just disinfect

Dirty conditions: 3 g/L BSA+ 3 g/L Sheep Erythrocytes

Select for products that both clean and disinfect in one step

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EXPOSURE A.K.A CONTACT TIME

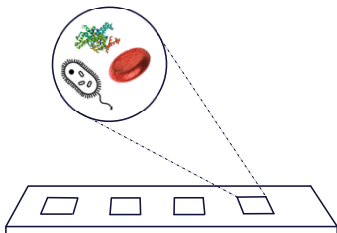


- Time for which the product is exposed to target organism.
- Critical to understand to ensure sufficient disinfection has taken place.
- Guidelines specify minimum and maximum contact times for specific uses e.g. hands – minimum 30 secs (EN1500).

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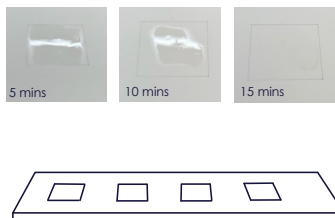
EXAMPLE MICROBIOLOGICAL TEST METHODS
– MECHANICAL SURFACE TEST (EN16615)



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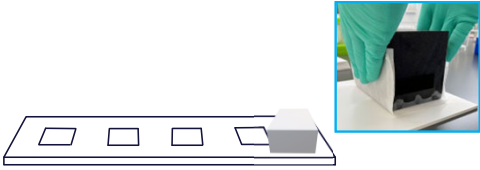
EXAMPLE MICROBIOLOGICAL TEST METHODS
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EXAMPLE MICROBIOLOGICAL TEST METHODS
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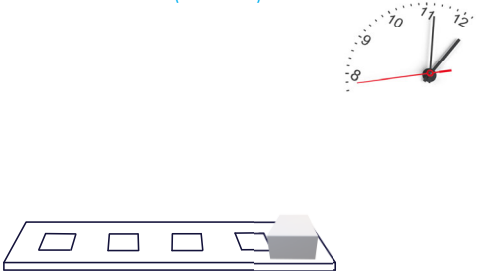


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EXAMPLE MICROBIOLOGICAL TEST METHODS
- MECHANICAL SURFACE TEST (EN16615)



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Case study of cleaning and disinfection in clinical practice

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UNIVERSITY HOSPITAL BIRMINGHAM CASE STUDY

NHS
University Hospitals
Birmingham
NHS Foundation Trust

- Large teaching hospital (approx. 2,700 beds) in Birmingham, UK.
- Investigated the changes in the rate of MRSA acquisition when 2 step surface decontamination process is changed to a 1 step decontamination process.
- **Phase 1:** Detergent wipe clean and alcohol disinfection.
- **Phase 2:** Clean and disinfection with a combined cleaning and disinfection wipe.
- MRSA acquisition - acquiring MRSA if a patient had negative admission screen and have MRSA isolated from a subsequent screen or clinical specimen, 48 hours after admission.



Wiping out MRSA: effect of introducing a universal disinfection wipe in a large UK teaching hospital

Hicki, S. et al. J. Hosp. Infect. 2018; 87: 1-10. doi:10.1016/j.jhin.2017.12.018. Published 19 December 2018.

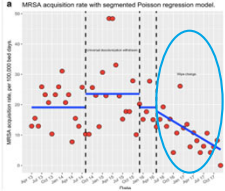
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UNIVERSITY HOSPITAL BIRMINGHAM CASE STUDY

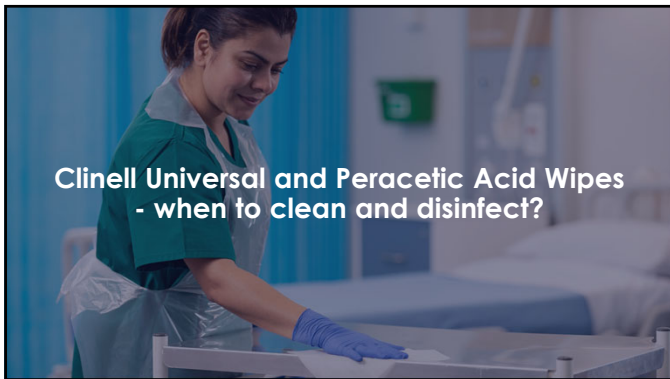
NHS
University Hospitals
Birmingham
NHS Foundation Trust

- **Phase 1** - MRSA acquisition rates **20.7 per 100,000 patient days** (310 acquisitions).
- **Phase 2** - MRSA acquisition rates **9.4 per 100,000 patient days** (93 acquisitions).
- **55% reduction in MRSA** acquisition rates.
- **1160 staff trained** - training and education may have contributed to the reduction of MRSA acquisitions.
- "The data suggest the use of a one wipe regime is associated with reducing the incidence of healthcare associated MRSA".



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HEALTHCARE ENVIRONMENT NEEDS TO BE FREQUENTLY CLEANED & DISINFECTED

- FACT** - Micro organisms can survive for many months in the Hospital Environment. Surfaces & equipment, just like hands get re-contaminated.
- CHANGE** - This is about human factors- or behaviour. Make it easy to do the right thing.
- IMPROVE PROTOCOL & POLICY** - Clean Hospitals expert guidance:

WHEN TO DECONTAMINATE?

 - Visibly dirty
 - New Occupant
 - Before procedure
 - After Procedure
 - Sufficient to maintain**
- SUPPORT** - To embed a change
 - A quick look at Products and services that support all of the above.

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FACT - COMBINED WIPES ARE THE BEST APPROACH

- Detergents plus a disinfectant is slow. Busy staff do not do it.
- Alcohol & Chlorine do not contain detergent, so they need pre-clean with detergent before being used as a disinfectant.
- Alcohol is a fixative in microbiology testing for example.
- Chlorine is inactivated by body proteins and blood.
- Human factors are crucial in IPC. You need 100% of the people to do 100% the right thing 100% of the time. **You have to make it easy.**

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CHANGE - CLINICAL EVIDENCE - GAMA STUDY

Wiping out MRSA: Effect of introducing a universal disinfection wipe in a large UK teaching hospital.

MRSA acquisitions across the whole organisation fell by **55%** with a continuing and consistent **6.3%** monthly reduction.

Additional operational benefits such as time saved, which of course is money saved.

Protocol developed:

What they then did over the subsequent few months - CS25 Peracetic/Sporicidal & Hand wipes.


Clinell Universal and Sporicidal together offer a fully effective product and protocol improvement.

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CHANGE - YOU NEED A DUAL WIPE SYSTEM - FOR COMPLETE DISINFECTION

One wipe wouldn't do everything. SPORES (C. DIFF) Yeasts - (Candida Auris) - Dry Biofilms are difficult to kill & breakdown, they win together!



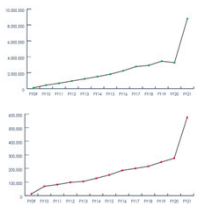
CLINELL UNIVERSAL

- Everyday cleaning & disinfection
- Multi-purpose usage



PERACETIC ACID WIPES

- Confirmed or suspected outbreaks
- Highly soiled higher risk surfaces



Both expanded at roughly the same rate X20.

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PROTOCOLS - ENVIRONMENTAL DECONTAMINATION WITH CLINELL PERACETIC

These are the 7 ways they use the PAA wipes (in descending order of volume)

1. All Commode Cleaning. They would not pre clean with anything else unless very dirty. 2-3 wipes.
2. Daily damp dusting by nurse of enteric/diarrhoea patients in a single room. All *C. diff.* patients. Wipe around of high touch points.
3. CRE & *C. diff.* in all interventional areas - Clean/disinfect after treatment in other departments. X- Ray, etc. Either they have a pack to use – or take a pack down.
4. Daily clean of Macerator. Rim and work clean to dirty.
5. Small blood splashes - That can be done with one wipe.
6. In the event of an outbreak of an MDRO. A step up in cleaning.
7. For outbreak in respiratory areas and some specialist equipment.

Remember:

1. Visibly dirty
2. New Occupant
3. Before procedure
4. After Procedure
5. Sufficient to maintain



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PROTOCOLS - TRAINING & COMPLIANCE - GOOD HABITS IS GOOD IP

Supporting continued improvement in practice.

- Posters & Link nurse meetings
- Study Days
- Ward based educational training

FOCUS on Policy and practice.

THE most useful thing to embed good practice supply dispensers FOC to Hospitals.

In the last 10 years, we have supplied more than **160,000 dispensers** within the UK hospitals.



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