Selecting a disinfectant wipe

Thought leaders in Infection Prevention & Control from the Royal College of Nursing[1], including Peter Hoffman, have led the conversation around the selection criteria for surface disinfection solutions.

As an evidence-based practice, IPC solutions such as pre-impregnated disinfectant wipes should be considered carefully. Failure to meet environmental decontamination needs can result in elevated costs and risks associated with compromised patient & staff safety.

£2.7 billion per year

28,500 patient deaths

79,700 healthcare worker absences

Statistics demonstrating the annual cost of healthcare-associated infections to England's National Healthcare Service.
Guest JF, Keating T, Gould D, Wigglesworth N. Modelling the annual NHS costs and outcomes attributable to healthcare-associated infections in England. *BMJ Open. 2020;10:e033367.*

Factors to consider when selecting a disinfectant wipe		Questions to ask
Effective formulation	Both the liquid formula and wipe substrate effect a wipe's ability to kill microorganisms. Poorly engineered wipes can encounter a similar problem to dry cloth and disinfectant solutions – adsorption. This is a chemical interaction between the liquid formula and the substrate, which traps the active molecules and lowers a wipes effectiveness. Therefore, when analysing the efficacy of a pre-impregnated wipe, the 'wipe eluate' (liquid extracted from the wipe) should be tested. This methodology gives an accurate indication of the wipe's performance.	*"Did the efficacy testing analyse the wipe eluate?"* *"Is it clear whether the wipe eluate has been tested?"*
Clinically relevant microorganisms	Standard efficacy tests can be used to support generalised claims such as 'Kills 99.99% of bacteria', however, these tests do not analyse efficacy against all bacteria. In fact, standard methodologies can test against as little as 3 species to substantiate a wide blanket claim. Different microorganisms may exhibit specific contact times and log reductions, therefore detailed efficacy testing give a precise indication of performance against specific clinically relevant microorganisms.	*"What clinically relevant organisms have been tested against?"*
Realistic contact times	The killing ability of a liquid disinfectant, like those found in wet wipes, is governed by contact time and test conditions. • **Contact times should not exceed the time you would expect a surface to remain wet after wiping** – A surface must remain wet in order to reach a specific log reduction of viable microorganisms. Unrealistic contact times can be misleading – some reach as high as 60 minutes. The risk is that if the surface dries before the contact time is met, pathogens will survive the intended disinfection. • **Dirty conditions give a better indication of real-world performance** – Organic matter is prevalent in healthcare settings and can inhibit disinfectant action. Therefore, efficacy tests carried out in clean conditions will mask the true performance of a disinfectant. Tests carried out in the presence of organic matter, or 'dirty conditions', give a more accurate reflection of efficacy in real-world conditions.	*"What contact times are needed for specific microorganisms? Is this realistic?"* *"Were they achieved under dirty conditions?"*

Surface compatibility

Some surfaces require frequent disinfection, and while medical devices and equipment are designed to withstand damage, incompatible disinfectants can still cause irreparable, expensive damage.

Some disinfectants use harsh chemicals such as chlorine, alcohol and amine derivatives to boost their efficacy or stabilise their formulation. These ingredients can affect the disinfectant's material compatibility and cause damage to surfaces.

Compatibility testing can give peace of mind and substantiate safety for use on common materials found in healthcare (metals, plastics, and rubbers).

Failure to meet compatibility needs can cause cracks which provide a reservoir for pathogens where they can avoid disinfection.

"Is there any compatibility data available? On what materials?"

"Has the product been tested with medical device manufacturers?"

Published evidence

While laboratory testing can be strategically designed to mimic real-world factors *in vitro*, there are limitations to its insight. Fortunately, evidence in the form of published literature can further substantiate a product's performance *in situ*.

Disinfectant wipes can provide a number of benefits beyond antimicrobial efficacy and compatibility, and clinical studies can give insight into a product's benefits such as:

- Impact on infection rates
- Cost savings
- Time savings
- Improvements in compliance
- Protocol comparisons

"What evidence is there to support the product's performance in the real world?"

Consistent quality

If used for surface disinfection and cleaning of medical devices, disinfectants should comply with regulated guidelines to ensure safety and authentication for use.

Checking for a CE-mark is a quick way to determine if a product has met the required standard for sale. This classification gives confidence in the quality of the product as it shows the manufacturer has met the General Safety and Performance Requirements (GSPR) to place the device on the market in the EU.

Disinfectant wipe providers should have end-to-end quality manufacturing protocols in place to eliminate the risk of contamination during production. Such as regular microbiological batch testing, formulation filtration and well sourced raw materials.

"Is there a CE-mark?"

"What quality and hygiene controls are in place?"

Implementation and training

Supporting the implementation and ongoing use of selected wipes is critical to achieving the desired outcomes.

Educational activities such as face-to-face training and online learning can help encourage compliance with local protocols, and should be made available to healthcare workers and staff.

Audit tools can be used to assess environmental cleanliness and encourage education where it's needed most. Auditing can be carried out by conducting visual checks, microbiological swabbing, ATP devices, or easy-to-use fluorescent marker kits.

Dispensers should also be provided to promote compliance and best practice. Mounted to the wall, they put wipes at the point of use and act as a visual aid to encourage environmental decontamination. Dispensers keep the wipes positioned upright to allow equal distribution of disinfectant liquid in each wipe.

"What training and support offering is available?"

"Are there any examples of successful implementation?"

"Are dispensers provided free of charge?"

1. Royal College of Nursing. Wipe it out: the selection and use of disinfectant wipes. 2011

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JBN220378