HOW WELL DOES WIPING WORK?

PURPOSE

Test how well "sani-wipes" sanitize common areas of bacteria-prone surfaces within a healthcare environment and reveal the bacteria levels of common radiography objects as they exist naturally.

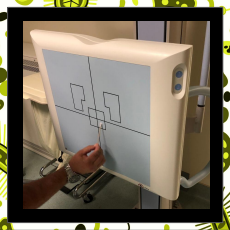
To what extent is the radiography department a risk to hospital acquired illness (HAI) spread? And, to what effect does wiping contribute?

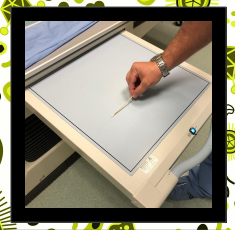

Fig. 1


Fig. 2

HYPOTHESIS

When comparing the levels of bacteria on known radiology-specific fomites, we will be able to visualize a significant difference between samples collected from an unwiped surface, and one that has been wiped. We expect the results of the samples, when compared to data of HIA, to be strongly correlative.





EXPERIMENT

Obtain swabs of lead shields, positioning sponges, and x-ray detectors prior to and after being wiped down by sanitizing wipes and/or bleach wipes.

Samples of fomites were taken as-is, to accurately represent what a patient may be exposed to. Sampling locations within the objects covered any surface that would make physical contact with a patient.

The same objects are wiped down with sani-wipes and bleach wipes. The directions and wait time of the wipes are followed. The sanitized objects are then swabbed.

A control sample was made by swabbing only the sterile water used with the swabs.

Samples were incubated for 1 week to allow for sufficient growth of microbiological culture.

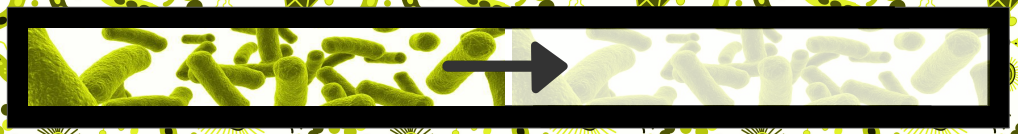



Fig. 3


Fig. 4

Samples collected from both lead aprons + lap shields. Used in exam rooms, on portables, and in OR. No sign of biological growth post-wipe.

Samples collected from sponges used to aid patients in positioning. Used during portables + in exam rooms. No sign of biological growth post-wipe.

OUTPATIENT TABLE BUCKY

OP TABLE BUCKY WIPED

OUTPATIENT WALL BUCKY

INPATIENT WALL BUCKY

GUIDELINES FOR USE

Fig. 5

All wipes have a contact time, the time required for the chemical composition of the wipe to effectively kill pathogens.

Disinfectants work when they are wet, the recommended contact/dry time can vary between different brands. Plan accordingly, don't rush to get the next patient in!

Healthcare grade Clorox bleach, which meets the Center of Disease Control and Prevention (CDC), requires 3 minutes of contact time to effectively eliminate clostridium difficile (C.Diff) spores.

Fig. 6

RESEARCH

Common Hospital Acquired Infections

Clostridium difficile (C. diff) is a bacteria that can cause severe diarrhea with ensuing dehydration and colitis.

- 290,000 acquire C.diff within a healthcare facility each year
- 27,000+ die because of the infection

Methicillin-resistant staphylococcus aureus (MRSA) is a bacteria that is resistant to many antibiotics and causes staph infections in wounds and can spread to the bloodstream causing sepsis.

- 90,000 suffer from a MRSA infection each year.
- 20,000 die. Many of those are children.

Fig. 7

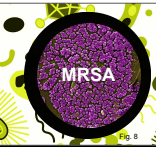


Fig. 8

ANALYSIS

A total of 2 clinical sites were tested, yet results were still similar and conclusive. Samples collected after sanitizing surfaces showed no signs of biological growth!

Lead shields (aprons + lap shields) and x-ray buckys (detector surfaces + support handles) saw the most significant growth of biological culture, while in comparison positioning sponges showed half the amount of growth after incubation.

Interesting note: Samples collected from areas of high outpatient traffic showed significantly more growth of biological culture in comparison to areas of high inpatient traffic.

RT CONNECTION

Workflow - Analyze your sequence of steps from one patient + exam to the next, is there room for error when sanitizing?

Create a plan. Don't let time be a constraint, wipes require a certain amount of contact and dry time to to work effectively. Communicate and apply teamwork with other technologists to assure the room and equipment is sanitized prior to bringing in the next patient.

Accessibility: Where are the wipes located in the exam room? Where are they stored in the department? Placement is key, wipes should be within view of high traffic areas; at the workstation, at the entrance/exit to the room, and/or by the detector (areas of patient contact).