



The Importance of Contact Times for Disinfectants (Omidbakhsh, N. CJIC 2008; 23:49)

Abstract

The number of hospital and community associated infections continues to rise in North America and around the world. The use of disinfectants is the backbone for infection prevention and control in healthcare, educational settings, correctional settings and emergency services. Infection Control Guidelines in North America generally state that surfaces such as countertops, over-the-bed tables, bedside tables, hand rails and other high touched surfaces be cleaned on a daily basis using an EPA or DIN registered disinfectant. However, the actual process for cleaning is rarely considered, the time needed to do the job correctly is rarely given and staffing limitations lead to inappropriate use of disinfectants.

Background

A critical component of disinfection is prior cleaning. Prior cleaning is necessary to remove proteinaceous material and biofilms to allow the germicide to achieve adequate microbial inactivation. The use of a product that provides excellent cleaning capabilities is paramount in ensuring effective disinfection. In addition, strict adherence to disinfectant contact times (the length of time the surface needs to remain wet) must be followed. However, current practices generally allow only time for a surface to be wiped once and allowed to air dry. For disinfection to occur, it is important for a product to keep the surface wet for the entire disinfection contact time as noted on the label in order to achieve the claimed disinfection activity.

Study

As experts in the appropriate use of disinfectants we wanted to study what level of kill actually happens using the practices that are routinely used in facilities today - wipe once and allow the surface to air dry. The results were not surprising.

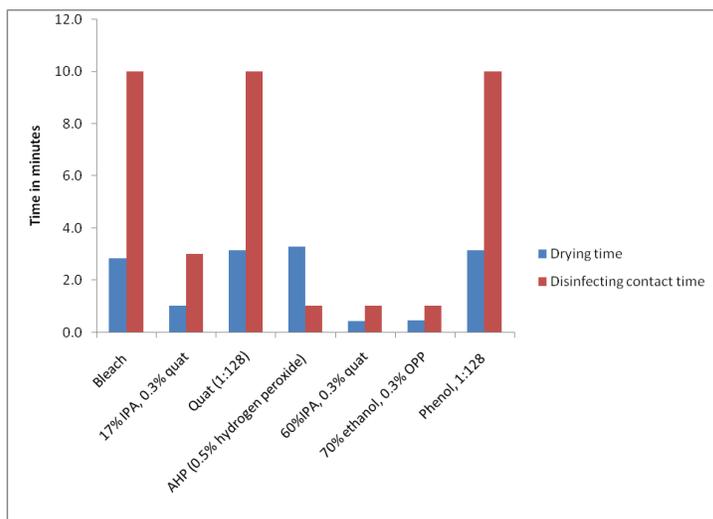
The study compared six different chemistries: a Quaternary Ammonium Compound, a Quat-Alcohol blend, a Phenol, an Alcohol-Phenol blend, Bleach and Accelerated Hydrogen Peroxide. First, the drying time was compared to the label contact time. It was found that all products dried in less than 5 minutes with alcohol-based products drying significantly faster (less than 2 minutes) than the other chemistries. Products with contact times of 10-minutes (Quat, Phenol and Bleach) all dried within 3 – 4 minutes. Accelerated Hydrogen Peroxide formulations with 1 minute and 5 minute contact times dried within 3 – 4 minutes. **Figure 1** provides a visual comparison of the data. The second phase of the study tested the efficacy of the products using their drying time to see what level of kill is achieved

and if disinfection claims according the label were achieved. The results are outlined in **Figures 2, 3** and **4** below.

Results

Accelerated Hydrogen Peroxide was the only chemistry that was able to achieve disinfection using the drying time regardless of contact time. Facilities that do not achieve the appropriate contact time for disinfectants in accordance to the approved label contact time may not be achieving the level of kill required. Education is paramount to ensuring products are used appropriately. If staff using cleaning and disinfecting products do not have the basic understanding of best practices for cleaning within a healthcare facility there is a significant risk that the level of kill needed is not occurring. Furthermore, facilities that want to ensure that disinfection is in fact occurring should look at chemistries that have proven cleaning efficacy, the ability to kill in short contact times and also the ability to kill in within the length of time the product takes to dry.

Table 1: Drying Time versus Disinfectant Label Contact Time





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Figure 2: Chemistries That Dry Before They Kill

| Chemistry | Dry Time | Label Claim | <i>Staphylococcus Aureus</i> | <i>Pseudomonas aeruginosa</i> | MRSA |
|-----------------------|----------|-------------|------------------------------|-------------------------------|------|
| 17% IPA, 0.3% quat | 1 min | 3 min | 5.9 | 6 | 3.7 |
| Quat (1:128) | 3 min | 10 min | <2 | <2 | <2 |
| 60% IPA, 0.3% quat | 30 sec | 1 min | <2 | <2 | <2 |
| 70% ethanol, 0.3% OPP | 30 sec | 1 min | 1.59 | <4 | 5.13 |
| Phenol, 1:128 | 3 min | 10 min | <2 | 2.52 | <3 |

Figure 3: Chemistries That Marginally Kill Before They Dry

| Chemistry | Dry Time | Label Claim | <i>Staphylococcus Aureus</i> | <i>Pseudomonas aeruginosa</i> | MRSA |
|---------------|----------|-------------|------------------------------|-------------------------------|------|
| Bleach, 1:100 | 3 min | 10 min | 6 | 5.9 | 6 |

Figure 4: Chemistries That Kill Before They Dry

| Chemistry | Dry Time | Label Claim | <i>Staphylococcus Aureus</i> | <i>Pseudomonas aeruginosa</i> | MRSA |
|-----------|----------|---------------|------------------------------|-------------------------------|------|
| 0.5% AHP | 3 min | 1 min / 5 min | 6.67 | 7.13 | 6.3 |

Conclusion

If your disinfectants leave you dry, your healthcare facility may be left unprotected against the spread of bacteria and viruses. Alternatively, you can use a disinfectant technology that stays wet long enough to satisfy your germicidal requirements - each and every time.

Implications for AHP

AHP Disinfectants are One-Step Disinfectant Cleaners

- AHP has proven cleaning efficiency resulting in lower costs and faster results, adding confidence that disinfection can occur

AHP Disinfectants provide the perfect balance between safety and efficacy

- AHP is designed to be easier on employees and occupants resulting in protocol compliance
- AHP provides a HMIS rating of "0", meaning it has been proven to be non-toxic, non-irritating to eyes and skin and non-skin sensitizing and does not require the use of personal protective equipment to handle

AHP Disinfectants are environmentally sustainable

- AHP's active ingredient, hydrogen peroxide, breaks down into water and oxygen leaving no active residues
- AHP is formulated to ensure that it will not negatively impact indoor air quality and has been approved as an asthma-safe product

AHP Disinfectants have realistic contact times

- Short contact times ensure surfaces remain wet for the required contact time, providing comfort and confidence that disinfection has occurred
- AHP has been proven through peer reviewed studies to reduce HAIs

AHP Disinfectants are compatible

- AHP formulations are tested to ensure compatibility that preserve your investments in equipment, furniture and building surfaces by reducing corrosion and wear