

Collaboration of Infection Prevention and Environmental Services: A Team Approach to Elimination of Healthcare Associated Infections

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In today's healthcare environment, collaboration is a critical component in the prevention of Healthcare Associated Infections (HAIs). Now more than ever, a clean and sanitary patient environment is being measured as a component of the Infection Prevention and Control process. In addition, in this era of continual healthcare reform, outcome measures such as patient satisfaction and the cleanliness of the environment are common metrics within hospitals. Payers such as the Centers for Medicare and Medicaid Services (CMS) are also correlating hospital reimbursement with many of these measures, which has caused a financial impact to low performing facilities. This includes both the cleanliness of medical equipment, patient care surfaces, and environmental surfaces.¹ The Environment of Care is a shared goal between Environmental Services and also Infection Prevention. There must be a collaborative partnership formed between the Infection Prevention and Environmental Services Team in order for targeting zero Healthcare Associated Infections to be an achievable goal.

The patients and healthcare provider team routinely contaminate the healthcare environment through daily activities, and this can increase the risk for infection transmission. Transmission can result from contact with either contaminated hands or environmental surfaces, and also the patient's own skin flora. One of the most critical interventions that can be routinely performed to decrease the risk for cross transmission and development of Healthcare Associated Infection (HAI) is routine cleaning and disinfection of the healthcare environment. This includes both medical equipment and environmental surfaces. High touch items, such as those used between patients regularly, should be disinfected between each single use to minimize the risk for contamination.

Recent expert opinions have asserted that it is actually the Environmental Services Professional who spends the majority of time out of the entire care team with the patient in the

hospital room. This creates an interesting opportunity to utilize the EVS professional as an extension to the Infection Prevention advocacy team. Facilities should include the EVS team members in infection prevention unit based education, and also engage them in an active and personal role in preventing infections in the patients that they serve. This concept was demonstrated by researchers at John Hopkins through the CUSP initiative. EVS professionals can also serve as educators by informing patients of the steps that they are taking to mitigate the risk for infection such as daily and terminal cleaning, safety precautions such as the use of alcohol based hand rubs, and encouraging the patient's family to follow applicable isolation precautions as appropriate. There is typically a positive correlation in enhanced patient satisfaction with increased interaction with members of the healthcare delivery team, which most certainly includes Environmental Services Professionals. Environmental Services Professionals are subject matter experts in maintaining the Environment of Care, but also in serving as a patient safety advocate by reducing the incidence of Healthcare Associated Infections.

Environmental surface disinfection is an important factor in the prevention of healthcare associated infections. The many environmental surfaces that are in healthcare settings are considered "non-critical" surfaces and therefore require a low-level disinfectant. Cross-contamination can occur in a variety of ways, but most often the environmental surface becomes contaminated and then serves as a reservoir for microbial growth. The hands of either the healthcare provider or the patient come in contact with this contaminated surface, and then contact is made with another device or surface, thereby contaminating it as well. Thus, the chain of infection transmission begins. Unfortunately, all too often these high touch surfaces are not properly cleaned and disinfected routinely due to a variety of reasons.²

The ability of microorganisms to successfully survive and reproduce on environmental surfaces has never been greater. Organisms such as Methicillin-Resistant *Staphylococcus aureus* (MRSA), *Escherichia coli.*, *Clostridium Difficile* (C-Diff), and *Mycobacterium tuberculosis* can survive on surfaces for several months. Because of the resilience of these microorganisms, it is important to routinely disinfect potentially contaminated surfaces to reduce the risk of transmission. While the Environmental Services Professional is certainly the patient expert in the maintenance of a clean environment, the clinical nursing team should also have accountability for clinical services such as ventilators, intravenous pumps, and other medical devices. The patient's family can also serve as an extension of the team by either cleaning certain surfaces themselves when soiled, or promptly notifying staff members when surfaces become soiled. Emergent threats such as MERS-CoV and CRE continue to plague the healthcare delivery system, but thankfully Environmental Services professionals are armed and ready to protect patients from these threats.

Before effective disinfection can occur, it is important to thoroughly clean visibly soiled environmental surfaces to allow for the full efficacy of the chosen disinfectant product. Cleaning as defined by the latest Centers for Disease Control and Prevention (CDC) Guideline for Disinfection and Sterilization in Healthcare Facilities released in 2008 is "the removal of foreign material (e.g. soil, and organic matter) from objects, and is normally accomplished using water with detergents or enzymatic products. Thorough cleaning is essential before high-level disinfection and sterilization because inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of these processes." Cleaning removes bioburden from the affected surface by reducing the number of microorganisms that must be inactivated.³ Removing bioburden from the surface prior to application of the disinfectant solution will result in increased disinfectant efficacy. It is also important to apply friction to the area being cleaned and disinfected in order to remove more resistant forms of microorganisms such as spores (i.e. *Clostridium difficile*) from the surfaces that may not be readily inactivated by the disinfectant. This will decrease the risk for development of Multi-Drug Resistant Organisms (MDROs).

The use of a germicide that is approved by the US Environmental Protection Agency (EPA) with proven efficacy claims is also crucial to selection of the appropriate product. In addition, the Infection Preventionist should refer to the

facility's risk assessment, and ensure that the disinfectant selected has efficacy claims for microorganisms that are routinely found within the facility. Efficacy claims are readily available through the product's manufacturer, and should be carefully reviewed prior to introduction of the product into the facility. The Environmental Services team should work carefully with colleagues in Infection Prevention to ensure that the germicide selected meets the efficacy needs for infection prevention, but also is safe for the staff to utilize, and also for use around patients.

The disinfection of high-touch surfaces such as blood pressure cuffs, stethoscopes, and glucometers require frequent disinfection to prevent cross-transmission between patients. The physical number of microorganisms present on any given surface is influenced by a number of factors including: 1) the amount of moisture present on the surface, 2) the amount of activity taking place in the immediate environment, 3) the number of people having contact with the environment, and 4) the type of environmental surfaces present and their ability to support the growth of microorganism. High touch surfaces are contaminated continually throughout the day, therefore it is critical to have a well-established understanding between nursing personnel and EVS professionals regarding the frequency of cleaning necessary, and also the ownership for each item. This methodical approach to environmental hygiene will produce meaningful and sustainable results. As a result of implementation of just such a system, a large integrated health system in Southeast reduced the incident of Multi-Drug Resistant Organisms (MDROs) by over 50%, and mitigated significant treatment costs associated with MDROs.

The primary focus of a thorough environmental disinfection program should be on those items that are used with multiple patients and/or procedures. Dr. E. H. Spaulding created a standardized approach to Disinfection in the Healthcare environment that consists of three categories: Critical, Semi-Critical, and Non-Critical. Non-critical items such as wheelchairs and bedside tables are those that have contact with intact skin, but not sterile body tissues or mucous membranes. These items require the use of a low-level disinfectant. With the recent migration within most acute care facilities to the Electronic Medical Record (EMR), disinfection of non-critical items such as computer keyboards is of high importance to reduce transmission of microorganisms throughout the entire environment. Hand hygiene in these circumstances is still the most critical intervention to break the

chain of infection, but routine disinfection of these potential reservoirs for microbial growth is a key component as well.

It is critical to have a complete set of policies and procedures identifying each individual's and department's responsibility in the cleaning and disinfection process. Careful collaboration with the Environmental Services team is necessary in order to ensure that all surfaces are routinely disinfected by the appropriate personnel. Educational programs are available through organizations such as the Association for the Healthcare Environment (AHE). Also, a collaborative partnership with the facility healthcare engineering team is critically important in executing infection prevention and environmental services projects. In addition, AHE publishes the only evidence-based practice guidance resource specifically for Environmental Cleaning.

Education of the healthcare staff is key to minimizing risks associated with using any disinfectant product. Staff members should be educated on the appropriate indications for use for the product, the instructions for use including total overall contact time required to effectively inactivate the microorganisms on the product's efficacy label, the Material Safety Data Sheet (MSDS), and also the appropriate use of Personal Protective Equipment (PPE) as required by the OSHA Bloodborne Pathogens Standard. By educating the appropriate staff members on the appropriate use of the chosen product, this will ensure the manufacturer's documented product efficacy will be achieved as well as protect the end users of the product from adverse reactions.

A thorough cleaning and disinfection program combined with careful selection of the most appropriate hospital-grade disinfectant will dramatically improve the Healthcare Professional's daily fight against Healthcare Associated Infections. Appropriate product usage combined with education of the users will give healthcare facilities the greatest opportunity to reduce environmental contamination within the facility. With the continual development of new surface disinfection technologies each year, it is also crucial for healthcare providers to evaluate these new technologies carefully and review the supporting efficacy data thoroughly prior to changing processes already in place. Hand Hygiene combined with disinfection of the patient's environment will significantly reduce the risk for cross-transmission within the healthcare environment. It is only through a comprehensive and collaborative effort between Infection Prevention and Environmental Services that facilities can target zero.

References

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