

Experts Partner to Address Resistant Bacteria Through Antibiotic Stewardship, Environmental Hygiene

Infection Control Today, 2015

ABSTRACT

Antibiotic resistance has become a significant topic of importance as antibiotic resistance threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria. As an increasingly serious global threat, public health has required action across all government sectors and society. Infection Control Today partnered with Dr. Stuart Levy and Dr. Rosie Lyles to share their perspectives on antibiotic resistance and how environmental surfaces and disinfectants play a role.

Microorganisms Susceptibility to Surface Disinfectants

There are some chemistries that can contribute to antibiotic resistance such as those products that use triclosan as an antimicrobial. Of major concern is the possibility that triclosan resistance may contribute to reduced susceptibility to clinically important antimicrobials, due to either cross-resistance or co-resistance mechanisms. Additionally, Quaternary Ammonium Compounds (QUATs) have been identified in contributing to antibiotic resistance through both cross-resistance and co-resistance, partially because QUATs leave an active residue behind on surfaces which can build up over time giving microorganisms a chance to build up resistance. However, the likelihood of bacteria developing resistance to surface disinfectants is low due to the rapid kill times of surface disinfectants. Manual surface disinfection is essential for removing soils and killing pathogens on surfaces and surface disinfectants approved by the EPA or Health Canada are equally effective against antibiotic resistant and

nonresistant bacteria.

Challenges Hospitals Face Keeping Antibiotic Resistance Under Control

Antibiotic resistance is now considered a global threat, which has put added pressure on healthcare facilities to keep their patients free of infections and show progress on reducing hospital readmissions to comply with government healthcare reform policies. These types of infections can be prevented if improved infection control practices and antibiotic stewardship efforts are adopted. The main challenge for facilities is educating their staff on how to implement better protocols to achieve compliance.

Troublesome Pathogens

Clostridium difficile and Carbapenem Resistant Enterobacteriaceae (CRE) are two particular deadly pathogens that are now harder to prevent and control due to growing antibiotic resistance. The Centers for Disease Control and Prevention (CDC) recently reported that those on antibiotics are 7 to 10 times more likely to contract C. difficile while using the drugs and during the month after use. C. difficile can also survive on environmental surfaces for months at a time, making it extremely difficult to control and eradicate.

Challenges Hospitals Face in Regards to Surface Disinfectants

No matter what surface disinfectant a facility uses, whether it's a daily surface disinfectant or a sporicidal

product for *C. difficile* isolated patient rooms, if the product is not used correctly, it will not be as effective as it was intended to be. Facilities should ensure that staff receives ongoing education and training. Further, facilities should select products that are EPA or Health Canada registered to kill pathogens of most concern and that are easy to use to help ensure proper implementation and compliance.

Best Practices

The following are some tips for hospitals to consider when performing daily surface disinfection and terminal cleaning procedures. Use trusted EPA or Health Canada registered disinfectants with appropriate microorganism claims for daily and terminal cleaning to ensure pathogens of concern are killed. When adopting semiautomatic technology (such as UV light devices), always start with routine manual cleaning and disinfecting of environmental surfaces. Technology should be used as a supplement - not as a replacement - to disinfect rooms more effectively. Follow your facility's manual room cleaning and disinfection protocols as well as consulting additional infection prevention guidelines for additional steps to take as part of a bundled approach. Routinely launder and clean privacy curtains, linens, employee uniforms and other soft surfaces in your facility. Consider using an EPA registered product to sanitize soft surfaces between laundering and on soft surfaces that cannot be laundered.

The Role of Environmental Hygiene in Combating Antibiotic Resistant Pathogens

Daily environmental surface disinfection can reduce the amount of antibiotic resistant pathogens in the healthcare environment and help prevent their spread. Furthermore, environmental cleaning and disinfection is one component of a bundled horizontal approach to prevent the spread of infections. Other components include a focus on hand hygiene, the use of contact

precautions, staff education and ongoing training. All of these steps, in conjunction with the prudent use of antibiotics, are critical and work together to help keep patients safe.

CONCLUSION

As antibiotic resistance continues to be an ongoing challenge, it is imperative that facilities recognize the important role environmental hygiene can play in reducing transmission of these harmful pathogens. While we may not be able to control the development of antibiotic resistant organisms, we can prevent their transmission with our facilities. Effective staff education/training combined with effective surface disinfectants and user compliance is a step in the right direction to combating the threat of antibiotic resistance.

REFERENCE

- i. Antimicrobial resistance, World Health Organization, 2015.
<http://www.who.int/mediacentre/factsheets/fs194/en/>
- ii Triclosan and antimicrobial resistance in bacteria: an overview. *Microb Drug Resist.* 2006 Summer; 12(2):83-90 <http://www.ncbi.nlm.nih.gov/pubmed/16922622>
- iii Does the wide use of quaternary ammonium compounds enhance the selection and spread of antimicrobial resistance and thus threaten our health? *Microb Drug Resistance.* 2010 Jun; 16(2):91-104 <http://www.ncbi.nlm.nih.gov/pubmed/20370507>
- iv Disinfectant wipes are appropriate to control microbial bioburden from surfaces: use of new ASTM standard test protocol to demonstrate efficacy. *J Hosp Infect.* 2015 Dec; 91(4):319-25 <http://www.ncbi.nlm.nih.gov/pubmed/26518272>

v Alfa, J. et al. (2015). Use of a daily disinfectant cleaner instead of a daily cleaner reduced hospital-acquired

infection rates. American Journal of Infection Control 43 (2015) 141-6.