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ENVIRONMENT

ROLE OF THE ENVIRONMENT IN THE TRANSMISSION OF HAI PATHOGENS

Review by David Weber, William Rutala and others (AJIC, 2010)

Summary:

Environmental contamination plays a role in the nosocomial transmission of MRSA, VRE, Norovirus, Clostridium difficile and Acinetobacter baumannii.

Infections have been associated with surface contamination in hospital rooms and healthcare worker hands. The extent of patient-to-patient transmission is directly related to the level of environmental contamination.

Norovirus accounts for 90% of all viral gastroenteritis. Human Norovirus cannot be cultured, so feline calicivirus is used in studies. We know it resists temperature (can live on frozen berries), and thrives equally on hard surfaces and in food and water. Survives up to 3 days on telephone buttons and can be transferred sequentially to 7 further surfaces by finger contact.

C diff is part of the normal intestinal flora in humans as a vegetative bacteria.
When the normal flora is disrupted by antibiotic use, C diff proliferates and is shed by faeces in very large numbers. If not cleaned away, the vegetative bacteria will change into spores, where they can live for 5 months on a hard surface. If C diff spores are introduced into another person's intestinal tract, that person will develop diarrhoea. That may lead to toxic megacolon and death.

Acinetobacter baumannii is a bacteria that survives on hard surfaces for up to 30 days. It is common on high-touch surfaces next to the patient. Acinetobacter infection is particularly problematic in ICU, where the mortality rate for infected patients is as high as 43%.

For all three of these "outbreak pathogens", enhanced cleaning and disinfection of environmental surfaces is recommended. Methods to enhance cleaning include:

- Improved training of cleaners
- Use of checklists
- Validation tools such as VeriClean

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