tertiary-care center. During the outbreak, the incidence density rate for hospital-acquired infection rose from 29.4 to 62.3 ($P < .05$) infections per 1,000 days at risk (ie, neutropenic days). Multiple samples from the patients' environment were tested for the presence of *P. aeruginosa*. A total of 4.5% of the samples from sanitary equipment and 20.0% of the samples from surface cleaning equipment were found to be contaminated with *P. aeruginosa*. Genotypic analysis by pulsed-field gel electrophoresis showed different patterns for all (N = 6) of the patient isolates; however, two of the patient isolates were identical in comparison with environmental isolates from cleaning equipment (four samples) and sanitary equipment (one sample).

This investigation revealed that the cleaning staff had used cleaning solution instead of disinfectants for decontamination of the patients' environment. The outbreak was terminated after re-adoption of surface disinfection, application of sterile filters on taps and shower heads, chemical disinfection of the washbasin drains, and appointment of a hospital hygiene nurse to a previously unfilled position. After institution of the control measures, incidence densities for hospital-acquired infection decreased to the level before the outbreak. This investigation emphasizes the need to carefully evaluate cleaning and disinfection practices for patient care, particularly regarding neutropenic patients.

FROM: Engelhart S, Krizek L, Glasmacher A, Fischnaller E, Marklein G, Exner M. *Pseudomonas aeruginosa* outbreak in a haematology-oncology unit associated with contaminated surface cleaning equipment. *J Hosp Infect* 2002;52:93-98.

Development of Viral Disinfectant Assays for Duck Hepatitis B Virus Using Cell Culture/Polymerase Chain Reaction

Human hepatitis B virus (HBV) is a worldwide public health problem with chronic carriers at risk for developing cirrhosis and hepatocellular carcinoma. Nosocomial infections can occur from exposure to inadequately disinfected equipment or the blood and body fluids of infected patients. However, disinfectants to inactivate HBV must be validated. Duck hepatitis B virus is accepted as a surrogate for HBV, due to their similar sensitivities to disinfectants and its safety. Ducklings are used for disinfectant efficacy assays; however, the same virus titer is obtained using duck embryonic hepatocytes. Viral titration in disinfectant efficacy assay is conducted using Southern hybridization of infected duck serum. However, this test requires radioisotopes.

Wang and co-investigators from the Department of Poultry Science, Auburn University, Auburn, Alabama, developed disinfectant assessment protocols using duck embryonic hepatocytes with polymerase chain reaction (PCR) or nested PCR. Its ease of handling, lower cost, and enhanced sensitivity make PCR desirable. Chicken embryonic hepatocytes were applied to duck HBV disinfectant efficacy assay. Results were consistent and could be used under certain conditions. The virucidal activities of two quaternary ammonium chloride disinfectants, n-alkyl dimethyl benzyl ammonium chloride and alkyl dimethyl benzyl ammonium chloride (10C-12C), were compared and effective concentrations were 1,200 and 1,800 ppm, respectively. The efficacies of these disinfectants were validated using real-time quantitative PCR.

Results confirmed that the efficacy of n-alkyl dimethyl benzyl ammonium chloride was higher than that of alkyl dimethyl benzyl ammonium chloride (10C-12C). This assay was useful for rapid discrimination of killing potentials of disinfectants.

The authors point out that these assays can be applied to other viruses that are unable to cause CPE in cell cultures and broadened the utility of duck HBV as an animal model for HBV.

FROM: Wang CY, Giambrone JJ, Smith BF. Development of viral disinfectant assays for duck hepatitis B virus using cell culture/PCR. *J Virol Methods* 2002;106:39-50.