

Medical News

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MRSA: Psychological Impact of Hospitalization and Isolation

Tarzi and colleagues from Watford General Hospital, London, United Kingdom, conducted a cross-sectional matched control study to investigate the impact of hospitalization and methicillin-resistant *Staphylococcus aureus* (MRSA) isolation on the psychological functioning of older adults undergoing rehabilitation. Twenty-two MRSA-positive and 20 MRSA-negative older adults completed standardized measures relating to depression, anxiety, and anger. Both groups had higher scores for anger than those estimated for older adults living in the community. The level of depressive and anxious symptoms among the isolated group was significantly higher than that found for the MRSA-negative group or estimates for older adults living in the community. There was no correlation between length of hospitalization or isolation and the outcome measures.

The results suggest that, among older adult inpatients, isolation has a negative impact on mood in addition to that resulting from hospitalization. Those involved in caring for hospitalized older adults should be made aware of the potential psychological distress of isolation, and alternative approaches (eg, hand hygiene, antibiotic restriction, or surveillance) should be used in the management of MRSA whenever possible. Future studies should examine the best ways of managing the detrimental effects of isolation.

FROM: Tarzi S, Kennedy P, Stone S, Evans M. Methicillin-resistant *Staphylococcus aureus*: psychological impact of hospitalization and isolation in an older adult population. *J Hosp Infect* 2001;49:250-254.

Survival of MRSA on Sterile Goods Packaging

One of the infection control strategies practiced in some hospitals that are attempting to minimize cross-contamination problems with methicillin-resistant *Staphylococcus aureus* (MRSA) is to dispose of unused, but potentially contaminated, single-use items. This practice is expensive. Another view is that storage may allow for significant die off of MRSA so that these items can be used. Dietze and colleagues from the Free University of Berlin, Germany, conducted a study to establish survival times of MRSA on sterile goods packaging. Paper and foil samples were contaminated with MRSA (approximately 10^8 to 10^9 colony-forming units/sample). The number of pathogens recoverable from the samples was measured at defined times. MRSA was demonstrated to survive on sterile goods packaging for more than 38 weeks. No MRSA was recoverable after 50 weeks.

The authors concluded that temporary storage of MRSA-contaminated single-use items for such a long period of time is not an appropriate or reliable means of decontamination.

FROM: Dietze B, Rath A, Wendt C, Martiny H. Survival of MRSA on sterile goods packaging. *J Hosp Infect* 2001;49:255-261.

VRE in Long-Term-Care Patients

Little is known about the persistence of colonization with vancomycin-resistant *Enterococcus faecium* (VRE) in the non-oncologic, non-intensive care unit patient. Baden and colleagues from Beth Israel Deaconess Medical Center, Boston, Massachusetts, studied all patients who had VRE isolated on 2 or more occasions of more than 1 year apart (study A) and those who had been "cleared" of VRE colonization after 3 stool cultures with negative results (study B). Twelve patients had stored VRE isolates recovered more than 1 year apart (study A), and 58% of paired isolates were genotypically related according to pulsed-field gel electrophoresis patterns. In study B, stool samples were obtained weekly from 21 "cleared" patients for 5 weeks, which revealed that 24% were positive for VRE. For these culture-positive patients, 72% of the cultures failed to detect VRE. Recent antibiotic use was significantly more common in the culture-positive patients than in the culture-negative patients ($P = .003$).

Colonization with VRE may persist for years, even if the results of intercurrent surveillance stool and index site cultures are negative. Cultures for detection of VRE in stool samples obtained from patients declared "cleared" are insensitive.

FROM: Baden LR, Thiemke W, Skolnik A, et al. Prolonged colonization with vancomycin-resistant *Enterococcus faecium* in long-term care patients and the significance of "clearance." *Clin Infect Dis* 2001;33:1654-1660.

Temperature Sensors: Potential Source of *Stenotrophomonas maltophilia*

Stenotrophomonas maltophilia is an important cause of nosocomial infections among ventilated and immunocompromised patients, and among patients receiving broad-spectrum antibiotics. Rogues and colleagues from France recently reported on a cluster of patients in a surgical intensive care unit who were colonized or infected with *S. maltophilia*. An epidemiologic investigation was initiated after surveillance data revealed that eight patients had positive results on culture from sputum for *S. maltophilia* in

the preceding month. A review of respiratory care procedures revealed that when mechanical ventilators were serviced between patients, the electronic temperature probes used with servo-controlled humidifiers were wiped with inadequate disinfection. Cultures were taken of case-patient room surfaces, sinks, and ventilator equipment. *S. maltophilia* was recovered from room surfaces, ventilator expiratory circuits, and a temperature sensor that had been kept in ambient air after disinfection. Patients and environmental isolates were examined by randomly amplified polymorphic DNA-polymerase chain reaction.

Three clinical isolates and one environmental isolate had the same profile, which suggests cross-contamination or common source exposure. The outbreak was controlled by adequate disinfection of the temperature sensors. No single epidemic strain was identified, but several observations support the conclusion that the temperature probes contributed to the outbreak.

FROM: Rogues AM, Maugein J, Allery A, et al. Electronic ventilator temperature sensors as a potential source of respiratory tract colonization with *Stenotrophomonas maltophilia*. *J Hosp Infect* 2001;49:289-292.

Biofilms and Planktonic Cells of *Pseudomonas aeruginosa* Have Similar Resistance to Killing by Antimicrobials

Biofilms are considered to be highly resistant to antimicrobial agents. However, Spoering and Lewis from Northeastern University, Boston, Massachusetts, point out that strictly speaking, this is not the case. Biofilms do not grow any better than planktonic (free floating) cells in the presence of antimicrobials. Biofilms are indeed highly resistant to killing by bactericidal antimicrobials, compared with logarithmic-phase planktonic cells, and therefore exhibit tolerance. It is assumed that biofilms are also significantly more tolerant than stationary-phase planktonic cells. Spoering and Lewis conducted a study to compare, in detail, the tolerance of biofilms versus stationary- and logarithmic-phase planktonic cells to four different antimicrobial agents.

Carbenicillin appeared to be completely ineffective against both stationary-phase cells and biofilms. Killing by this beta-lactam antibiotic depends on rapid growth, and this result confirms the notion of slow-growing biofilms resembling the stationary state. Ofloxacin is a fluoroquinolone antibiotic that kills nongrowing cells, and biofilms and stationary-phase cells were comparably tolerant to it. Most cells in both populations were eradicated at low levels of ofloxacin, leaving a fraction of essentially invulnerable persisters. The bulk of the population in both biofilm and stationary-phase cultures was tolerant to tobramycin. At very high concentrations of tobramycin, a fraction of persister cells became apparent in stationary-phase culture. Stationary-phase cells were more tolerant to the biocide peracetic acid than were biofilms.

In general, stationary-phase cells were somewhat more tolerant than biofilms in all of the cases examined. The

authors concluded that, at least for *Pseudomonas aeruginosa*, one of the model organisms for biofilm studies, the notion that biofilms have greater resistance than do planktonic cells is unwarranted. They further suggest that tolerance to antibiotics in stationary-phase or biofilm cultures is largely dependent on the presence of persister cells.

FROM: Spoering AL, Lewis K. Biofilms and planktonic cells of *Pseudomonas aeruginosa* have similar resistance to killing by antimicrobials. *J Bacteriol* 2001;183:6746-6751.

Outbreak of *Mycobacterium szulgai* Following Laser Eye Surgery

Laser-assisted in situ keratomileusis (LASIK) is a commonly performed procedure to correct myopia, hyperopia, and astigmatism. After a case of postoperative intracorneal keratitis infection with *Mycobacterium szulgai* occurred, investigators identified a total of 5 additional patients with this infection of the 52 who had LASIK procedures performed from June 6 to October 24, 2000. All 5 cases were identified among the 18 patients of Dr. A, and no cases were identified among the 34 patients of Dr. B. Two additional patients of Dr. A had had similar corneal lesions, but cultures were not obtained from them. The surgeons' techniques differed only in that Dr. A used a saline lavage that was chilled in a tub of ice, whereas Dr. B used unchilled saline directly from its stock bottle. Extensive environmental cultures were obtained. A culture from the drain of the source ice machine grew *M. szulgai*. Pulse-field gel electrophoresis confirmed this to be identical to all 5 clinical isolates and different from *M. szulgai* type strain (American Type Culture Collection 35799) and from 3 randomly selected strains.

The investigators concluded that intraoperative contamination from ice water apparently caused the infections. This appears to be the first systematic epidemiologic investigation of an infection cluster following LASIK and the first to link *M. szulgai* infection with an environmental source. Contaminated ice water from lavage syringes may be a significant source of postoperative ophthalmic infection. Ice water is often contaminated and should not be used in association with surgical procedures.

FROM: Holmes GP, Bond GB, Fader R, Fulcher SF. A chilling experience: a cluster of *Mycobacterium szulgai* keratitis following laser-assisted in situ keratomileusis. Presented at the 41st Annual Interscience Conference on Antimicrobial Agents and Chemotherapy; December 16-19, 2001; Chicago, Illinois. Abstract no. K-478.

Gram-Negative Bacteria Among Peritoneal Dialysis Patients

Nasal and pericatheter colonization by *Staphylococcus aureus* presents an increased risk of peritonitis and exit-site infection for peritoneal dialysis (PD) patients. Perez-Fontan and colleagues from Hospital Juan Canalejo, A Coruna, Spain, conducted a study to examine the inci-