Medical News

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Daycare Cleanliness Questioned by Report

Daycare providers are being urged to establish strict handwashing policies after a recent study of six centers found high levels of fecal coliform contamination, especially in kitchens and on the hands of teachers and children.

Sampling 675 surfaces over a six-month period at day care centers in the San Francisco, California, vicinity, researchers recovered fecal coliiorms from nearly 10% of tested areas. Toys and toilets showed unexpectedly low recovery rates (2% and 4%), while samples taken from kitchen surfaces and the hands of staff tested positive 19% and 16% of the time, respectively.

Published in *Public Health* Nursing, the findings may explain why daycare centers outstrip private households and daycare homes in the frequency of diarrhea1 illnesses.

In the course of their testing, Bonnie Holaday, RN, from the Vanderbilt University School of Nursing in Nashville, Tennessee, and three colleagues from the University of California in San Francisco, also collected cultures from diaper-changing areas, furniture, table tops and counter tops, faucets, drinking fountains, and walls.

Based on information collected by interviewing center directors and observing staff members, the team determined that two of the six daycare facilities had poor handwashing techniques and no policy for handwashing before eating or after being outside. They also determined that a child's socioeconomic status, the time of year, and the number of toilet-trained children had little or no impact on the rate of fecal coliiorm recovery.

One factor that did appear to have a positive effect on maintaining a relatively coliform-free environment was the presence of an on-site registered nurse at one of the centers.

In its report, the testing team noted that approximately half of all American infants and 80% of preschoolers are housed in daycare facilities while their parents work. Furthermore, compared with diarrhea1 diseases, only respiratory infections pose a greater health problem to those children.

To combat the spread of enteric diseases among this population, the study suggested that improvements be made in the distribution of printed information on handwashing and that handwashing facilities be made more available. This was considered especially important because government education efforts appear to be falling short.

Also recommended was oversight of cleanliness procedures by a trained healthcare worker and regular cleansing with germicidal detergents in areas other than washrooms. To further emphasize the point, the report called for "cleansibility" to be emphasized in the design and construction of surfaces in daycare centers.

From *Infectious Diseases in Children.* July 1991;4:1.

Group A Strep May Be Becoming More Virulent

Group A streptococci, which have caused relatively mild infections such as strep throat in recent decades, may be acquiring greater virulence, Dennis L. Stevens, MD, reported.

Studies conducted by Stevens and his colleagues at the Veterans' Affairs Medical Center, Boise, Idaho, suggest that cytokines are produced in massive quantities in response to certain streptococcal virulence factors.

"This overreaction on the part of the nonimmune host orchestrates or mediates tissue destruction, shock, and death," said Stevens.

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Toxic Shock-Like Syndrome

These severe infections produce what is called a toxic shock-like syndrome that includes necrotic, soft-tissue infections, shock, kidney dysfunction, and acute respiratory distress. Mortality may be as high as 30%.

People who have antibodies against the virulence factors, such as toxins produced by the bacteria, do not develop the disorder.

"Certain host cells, such as the monocytes and macrophages, serve as the battleground between the invading bacteria and the host. If the secreted strep toxins reach these cells, they overreact," Stevens said. If enough cells are affected, the patient dies.

"This explains why in severe infections or in cases where the patient presents late, such as puppeteer Jim Henson, there is a grave prognosis in spite of appropriate antibiotics and supportive care," he said, noting that his research group is investigating novel ways to combat such cases.

In 1989, Stevens reported a study of 20 patients from the Rocky Mountain region who had group A streptococcal infection that was remarkable for the severity of local tissue destruction and life-threatening systemic toxicity. Strains of group A β-hemolytic streptococci isolated from eight of the patients produced pyrogenic exotoxin A, which has rarely been found in group A strep in recent years.

Since that publication, nearly 30 reports have been published or presented describing similar infections in young patients in Western Europe, Australia, Scandinavia, and the United States, he noted.

M Protein

The M protein is responsible for much of the damage caused by streptococcal infection. The M protein is known as a superantigen because of its ability to stimulate immune cells and provoke a powerful immune response.

The protein is anchored within the bacterial wall by a group of six amino acids, a site for potential therapeutic intervention.

Vincent A. Fischetti, MD, of the Rockefeller University in New York, and his colleagues have isolated the group of six amino acids, which they call the Achilles' Heel in the M protein on the surface of group A streptococci. In addition to strep, this same group also is found in a variety of other gram-positive bacteria.

"This group provides a potential new target for antibiotic intervention," Fischetti said. "Just as penicillin and related antibodies interfere with the assembly of the bacterial cell wall, an alternative antibiotic strategy may now be developed to block the attachment of cell surface proteins in gram-positive bacteria. And if you block the way these proteins are attached, you have a good chance of eliminating the organism's ability to cause disease."

Malak Kotb, MD, reported that she and her colleagues at the University of Tennessee, Memphis, Tennessee, have discovered a novel mechanism by which M protein stimulates some human lymphocytes.

Continuing work begun by the late Edwin H. Beachey, she and her colleagues have found that the M protein stimulates immune response cells that are normally active. Although many of the stimulated cells die, others appear to migrate to body tissues such as the heart or kidneys, where they damage those organs.

"In the past, such damage had been attributed to antibodies produced by the body to tight off strep bacteria, but it now appears that the damage results from the M protein's stimulation of immune response cells," she said.

Both studies were reported at the annual meeting of the American Society for Microbiology in Dallas, Texas.

From *Infectious Disease News.* July 1991;4:20.

CMV-IG Available for Recipients of CMV-Seropositive Kidneys

Connaught Laboratories, Inc. (Swiftwater, Pennsylvania) is marketing a prophylactic intravenous cytomegalovirus (CMV) immune globulin (CMV-IG) for seronegative recipients of seropositive kidneys. In a randomized trial,[1] the incidence of virologically confirmed CMV-associated syndromes was reduced from 60% in controls ($n = 35$) to 21% in recipients of CMV-IG ($n = 24$) ($p < .01$); marked leukopenia was reduced from 37% in controls to 4% in recipients ($n = 24$ ($p < 01$); and fungal or parasitic superinfections were not seen in CMV-IG recipients but were seen in 20% of controls ($p = .05$).

CMV, a herpesvirus spread by close contact with infected secretions or the introduction of infected blood or organs into a host, can cause severe problems for kidney transplant patients. CMV can cause retinitis (which can lead to blindness), pneumonia, hepatitis, and may contribute to graft rejection.

REFERENCE

1. Snydman DR, Werner BG, Heinze-Lacy BH, et al. Use of cytomegalovirus immune globulin to prevent cytomegalovirus disease in renal transplant recipients. *N Engl J Med.* 1987;317:1049-1054.

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