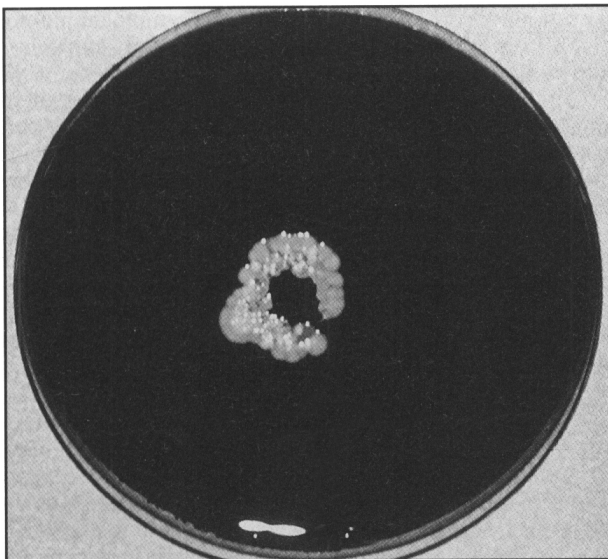


FIGURE. Stethoscope disinfected by wiping; typical circular growth of colonies corresponding to the membrane mounting.



disinfection of hands and surfaces, are inexpensive and easy to carry out, but they are frequently neglected or applied in an unapt way. Therefore, investigations such as those published by Bernard et al¹ are important: 54% of the stethoscopes investigated by the authors carried more than 20 colony-forming units per membrane, which means that they did not meet the authorized norms of cleanliness in France.

Our experience shows that wiping the membranes of stethoscopes with disinfectants does not eliminate bacteria and fungi reliably. In the Magdeburg University Hospital, microbiological surveillance of the inanimate ward environment is performed on request, as well as unannounced. On such occasions, we regularly examine some stethoscope membranes for bacterial contamination. For this purpose they are pressed onto blood or plate count agar slides (Heipha, Heidelberg, Germany), which are incubated for 24 hours at 37°C.

The Figure shows a characteristic picture after stethoscope examination. We find a circular growth of colonies on the culture medium exactly in the shape of the membrane mounting. Few if any colonies can be detected in the middle of the circle. This indicates that the stethoscope was disinfected by wiping the membrane; the disinfectant did not reach the hollow space between the membrane and its mounting. In contrast, agar impressions of stetho-

scopes disinfected by spraying yield no, or only occasional, microbial growth. Given that the presence of any viable bacterium indicates the potential for presence of a pathogen, we do not further identify the bacteria. This investigation serves mainly to demonstrate to the staff of the respective ward the efficacy of their hygiene measure.

Bernard et al¹ found that gram-positive bacteria survive for up to 18 hours on stethoscope membranes. *Staphylococcus aureus* is distinguished by high environmental resistance. The spread of MRSA is so difficult to control because MRSA does not always cause infection or clinical manifestation. Thus, effective disinfection after every use of a stethoscope is a minimum demand in hospital hygiene.

Although there exist many good reasons why the creation of aerosols should be avoided, in this case we strongly recommend spraying for the reasons given above. We never observed any damage to the stethoscopes caused by this kind of treatment.

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A Recent Outbreak of Adenovirus Type 7 Infection in a Chronic Inpatient Facility for the Severely Handicapped

To the Editor:

We report an outbreak of an acute febrile illness due to adenovirus type 7 infection in a chronic inpatient facility for the mentally and physically handicapped between June and August 1998 in Kagoshima City, Japan. The outbreak took place in two adjacent wards on the first floor of a two-story building in which the facility is housed (Figure). Thirty-eight (41.3%) of 92 residents and 7 (11.1%) of 63 staff had symptoms compatible with adenovirus type 7 infection. Five quadriplegic children with underlying respiratory compromise died of pneumonia. Postmortem examination on a 1-year-old boy revealed that the death was attributable to necrotic bronchopneumonia. Adenoviral antigen was detected in his lung tissue by polymerase chain reaction.

Adenoviral infection was diagnosed in 12 residents and four staff, and was confirmed as adenovirus type 7 infections in 9 residents and two staff by culture or serology. Four of seven infected staff were nurses who had taken care of the five fatal cases. The other three infected staff members were nurses aides who had carried out most of the manual labor, such as changing dirty diapers.

Six months after the outbreak, serum samples of residents, staff, and volunteers were examined by the adenovirus type 7 neutralizing test, which yielded positive results in 43 residents (50.6%) and 17 staff (39.5%) from the two wards where the outbreak had taken place; only 2 residents (4.2%) and 2 staff (9%) from two other wards tested positive.

In this outbreak, a female teacher from the school for the children with special needs was the suspected index case. She visited the first case daily before the boy developed a high fever. She had mild

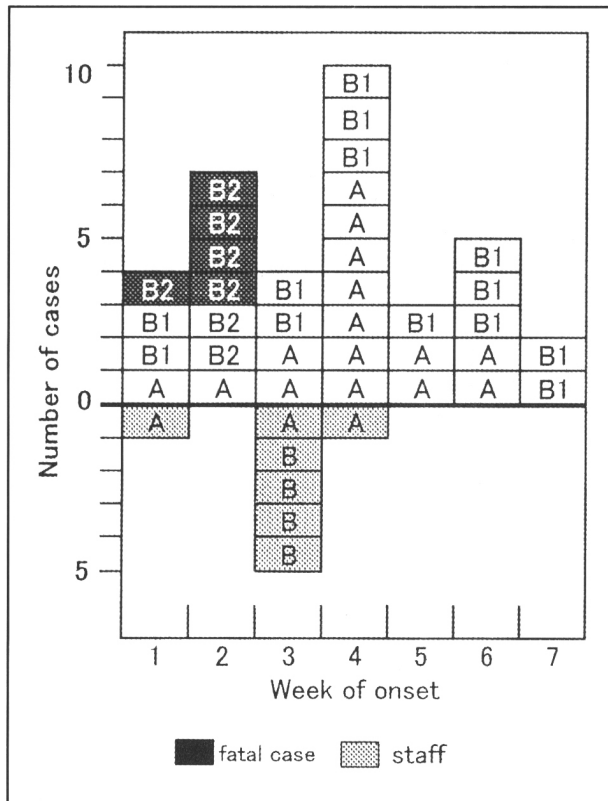


FIGURE. Cases by week of onset.

symptoms such as a runny nose and sore throat, but had neither a fever nor conjunctivitis. She tested positive for adenovirus type 7 by the neutralizing test ($\times 16$) 6 months after the outbreak.

This outbreak reminds us that adenovirus type 7 infection is potentially fatal in this kind of population, and preventive measures are needed. The results of serological examination suggest that most Japanese adults are not immune to the virus and can contract mild symptoms and become an epicenter of outbreaks.

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Vancomycin-Resistant *Enterococcus* Stool-Culture-Positive Patients at Charleston Area Medical Center, West Virginia, 1997 to 1999

To the Editor:

To determine the rate of diarrhea in patients with vancomycin-resistant *Enterococcus* (VRE)-positive stool cultures (which is unclear at the present time)¹ and the extent to which VRE stool-positive patients have risk factors or clinical manifestations associated with coinfection with *Strongyloides*,² an investigation was undertaken of the current number of VRE cases and the clinical presentation of such cases at Charleston Area Medical Center (CAMC), the largest medical center in the state of West Virginia.

Available CAMC epidemiology records, laboratory logbooks, and inpatient records of hospitalized adult patients between 1997 and early 1999 were reviewed to identify cases with stool cultures positive for VRE, plus

an equal number of controls with stool cultures positive for other pathogens. CAMC laboratory logbooks document the results of ova and parasite examination of stool or sputum specimens requested by physicians. These specimens were processed by concentration techniques, followed by examination of an iodine-stained smear.

We identified 12 patients with stool cultures positive for VRE, 7 (58%) of whom had diarrhea. None of the VRE or control patients had serum samples taken for testing for antibody to human immunodeficiency virus, human T-cell lymphotropic virus, or *Strongyloides*. None of the patients were found to be infected with both VRE and a pathogen of the control group (*Salmonella*, *Campylobacter jejuni*, and methicillin-resistant *Staphylococcus aureus*), and none were noted to have stool samples testing positive for *Clostridium difficile* toxin.

No statistically significant differences between the VRE-positive and control groups were found for age, income, gender, or the presence of diabetes mellitus, allergy to penicillin or cephalosporin drugs, or infiltrates or effusions noted on chest radiograph. Factors for which there were statistically significant differences included (1) prior antibiotic use within the preceding 3 months (100% of the VRE cases vs 17% of the controls; $P=.00003$, Pearson chi-square test); (2) acute or chronic renal failure (75% of the VRE cases vs none of the controls; $P=.00034$, two-tailed Fisher's Exact Test); and (3) the presence of diarrhea or abdominal symptoms (58% of the VRE cases vs 100% of the controls; $P=.037$, two-tailed Fisher's Exact Test). Although the presence of eosinophilia (at least 500 eosinophils/mm³ peripheral blood prior to, or at the time of, VRE culture) did not differ significantly between the two groups overall (33% of the VRE cases vs none of the controls; $P=.09$, two-tailed Fisher's Exact Test), the difference was statistically significant when consideration was restricted to those cases with diarrhea or abdominal symptoms: eosinophilia was present in 57% of the VRE cases with such symptoms versus none of the controls with such symptoms ($P=.009$, two-tailed Fisher's Exact Test).