

Letters to the Editor

Prevalence of HIV-1, HBV, and HCV Among Patients Admitted to the Emergency Department of the Hospital de Base of the Federal District, Brazil

To the Editor:

Transmission of bloodborne pathogens such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) to healthcare workers at emergency departments is a matter of great concern.^{1,2} The aim of this study was to determine the prevalence of seropositivity to HIV-1, HBV, and HCV among patients admitted in the Clinical Emergency Unit and the Trauma Unit of a tertiary hospital and reference trauma center in the Federal District of Brazil from November to December 1995. During this period, blood samples drawn for routine examinations from patients over 11 years of age admitted to those units were tested anonymously for HIV-1, HBV, and HCV serologies. Eight hundred twenty-six blood samples were collected: 549 from patients admitted to the Clinical Emergency Unit and 277 from patients admitted to the Trauma Unit. The prevalence ratio of bloodborne viruses in this population was compared with that obtained at the Central Blood Bank of Brasilia during the same period in 1995. Each serum sample was tested for the presence of antibodies to HIV-1, HBV, and HCV in the Health Institute of the Federal District according to standard techniques.

Prevalence rates for HIV-1, HBV, and HCV (based on positive and indeterminate results) in the Emergency Department were 5.4%, 4.1%, and 2.4%, respectively. When comparing the prevalence rates in patients admitted to the Emergency Department to those of blood donors, the prevalence ratio for HIV-1 was 14.20 (95% confidence interval [CI₉₅], 8.50-23.71), for

HBV was 15.07 (CI₉₅, 8.25-27.55), and for HCV was 3.79 (CI₉₅, 2.20-6.53). No significant differences were found when comparing the prevalence ratio of HIV-1, HBV, and HCV in the Clinical Emergency Unit and the Trauma Unit (2.02 [CI₉₅, 0.99-4.13], 1.96 [CI₉₅, 0.86-4.44], and 2.86 [CI₉₅, 0.85-9.69], respectively). However, there was a trend toward higher prevalence ratios for all pathogens in patients of the Clinical Emergency Unit compared to those of the Trauma Unit.

In our study, prevalence ratios of HIV-1, HBV, and HCV were higher among hospital patients than blood donors of the Central Blood Bank of Brasilia. Blood donors have been used by different authors to estimate the prevalence of HIV, HBV, and HCV infections in the general population.³ Among the 826 patients included in the present study, 6 were found to be positive for both HIV-1 and HCV, and 1 patient was positive for HIV-1 and HBV.

The possibility of coinfection reinforces the need for testing for all of these pathogens after an occupational exposure. The risk of acquiring an HBV infection from a percutaneous exposure to blood of a carrier of the virus varies from 2% to 40%, depending on e-antigen status.⁴ In the same situation, the risk of contracting HCV varies from 1% to 9%, and for HIV the risk is 0.4%.⁵

In summary, the prevalence of seropositivity for HIV-1, HBV, and HCV in patients of our Emergency Department is nearly 15-fold higher than in blood donors and is nearly 2 times higher than that of patients from the Trauma Unit (although no significant differences were found between these two groups of patients). These findings reinforce the importance of Universal or Standard Precautions for all health professionals, particularly those who work in emergency units.

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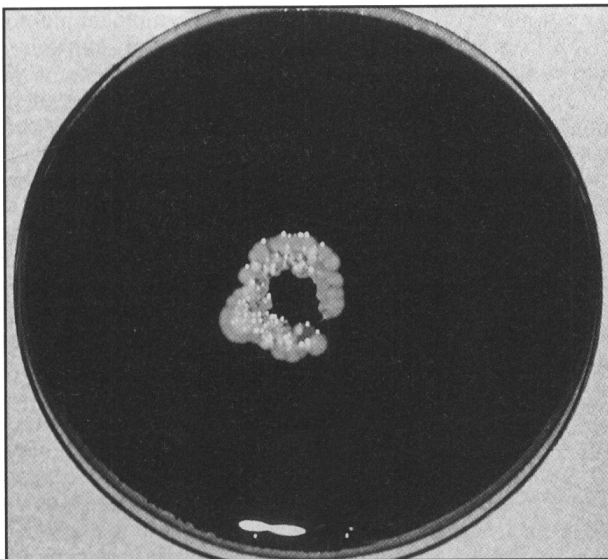
Bacterial Contamination of Hospital Physicians' Stethoscopes

To the Editor:

Stethoscopes must be regarded as vectors of bacteria and other microorganisms, and therefore they may play an important role in the spread of nosocomial infections. Preventive measures in hospital infection control must include regular disinfection of devices and instruments. The effectiveness of disinfection often proves to be limited, since structural characteristics are not considered. Because of that, we recommend that stethoscopes' membranes not be wiped but instead sprayed with a disinfectant.

Many measures to prevent the spread of nosocomial infections, eg,

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