Table 1. Estimates of the incidence of cholera among travelers, American expatriates, and Peruvian citizens from three studies.

<table>
<thead>
<tr>
<th>Year/[reference]/or source of data</th>
<th>Patient: destination</th>
<th>Cholera rate per 100,000 persons</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991/[8]</td>
<td>Travelers from Western nations: Asia (India)</td>
<td>0.05 (3.7)</td>
<td>Diagnosis based on passive reporting; TCBS media not routinely used</td>
</tr>
<tr>
<td></td>
<td>South America (Ecuador)</td>
<td>0.3 (2.6)</td>
<td></td>
</tr>
<tr>
<td>1991/[9]</td>
<td>Travelers from Japan: All destinations</td>
<td>5</td>
<td>All travelers with diarrhea were screened using TCBS media</td>
</tr>
<tr>
<td></td>
<td>Bali, Indonesia</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>[PR]</td>
<td>U.S. Embassy employees in Peru: All employees</td>
<td>30</td>
<td>Patients seen and specimens obtained for culture in clinic; TCBS media routinely used</td>
</tr>
<tr>
<td></td>
<td>U.S. citizens</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>1991/Peruvian National Surveillance System</td>
<td>Peruvian citizens in Lima*</td>
<td>136</td>
<td>Diagnosis based on clinical case definition</td>
</tr>
</tbody>
</table>

NOTE. PR = present report; TCBS = thiosulfate citrate bile salts sucrose.
* Determined per month.

The rates of clinically defined cholera among Peruvians living in Lima ranged from 18 cases per 1,000 persons in 1992 to 3 cases per 1,000 persons in 1993. We found similar rates of culture-proven cholera among foreigners living in Peru. Several new oral cholera vaccines have been developed. One vaccine, the oral whole cell plus cholera toxin B subunit (WC/rBS) (SBL Vaccin, Stockholm), was recently shown to be efficacious in Latin America [10]. When safe, effective cholera vaccines are more widely available, they will be useful in protecting travelers and expatriates entering areas where cholera is endemic.

**Emergence of Mycobacterium kansasii as the Leading Mycobacterial Pathogen Isolated Over a 20-Year Period at a Midwestern Veterans Affairs Hospital**

In the mid-1980s there was a resurgence of tuberculosis in the United States. However, no more than two cases of tuberculosis per year were diagnosed at the Omaha Veterans Affairs Medical Center in the previous 4 years. We suspected that there was a different pattern of mycobacterial disease at our facility. Consequently, we reviewed our logs of mycobacterial culture specimens collected from patients between 1 January 1971 and 31 December 1990 to identify the first known isolates of any mycobacterial species.

Records were available for 89% of 478 patients whose initial culture was positive for mycobacteria. The annual rate at which initial cultures yielded mycobacterial isolates generally declined over the 20-year period. In the four successive 5-year periods from 1971 to 1990, the number of *Mycobacterium tuberculosis* isolates declined from 108 to 38, 13, and 16. The number of *Mycobacterium kansasii* isolates that corresponded to the successive 5-year periods (67, 34, 30, and 54) resulted in a total exceeding that for *M. tuberculosis* isolates. Because of a pseudoepidemic resulting from a contaminated oxygen humidifier jar in a bronchoscopy room, the number of *Mycobacterium gordonae* isolates increased from 5 in the first 5 years and 2 in the next 5 years to 14 and 13 in the successive 5-year periods, respectively.

A slight increase in the number of cases of *Mycobacterium fortuitum* infection during the second decade (5 isolates, 1971-
Figure 1. Ratio of reported Mycobacterium kansasii isolates to reported Mycobacterium tuberculosis cases, by state, in the United States in 1979. Dotted areas indicate ratios from 0.000 to 0.025; areas with thin diagonal lines indicate ratios from 0.026 to 0.050; cross-hatched areas indicate ratios from 0.051 to 0.100; areas with thick diagonal lines indicate ratios from 0.101 to 0.250; and solid area indicates ratios of 0.251. Blank areas lacked data on Mycobacterium kansasii isolates.

1975; followed by 9, 12, and 5 isolates in the second, third, and fourth 5-year periods, respectively) reflected outbreak 8 [1] of postoperative sternal osteomyelitis. There were 4, 6, 3, and 6 Mycobacterium avium isolates in the four successive 5-year periods; only two cases in the second decade involved HIV-infected patients. Mycobacterium chelonae was rarely isolated, but the number of isolates also increased somewhat (0, 1, 2, and 4 in the 5-year periods). Mycobacterium bovis isolates were also rare, with only one isolate in 1971-1975 and one in 1981-1985. There were 13, 5, 2, and 4 other mycobacteria isolated in the successive 5-year periods.

With use of strict criteria [2], 83 of the 185 patients from whom M. kansasii was isolated were found to be clinically infected and 88 were found to be colonized; 14 cases were considered indeterminate. After an average of 35 months of follow-up for colonized patients, only one developed clinical illness.

As of 1 April 1993, we had treated 31 patients with AIDS. In the review ending 31 December 1990, M. tuberculosis was isolated from a prostatic abscess from one of these patients [3], M. kansasii was isolated from two patients, and M. avium-Mycobacterium intracellulare from two patients. In the next 27 months, M. kansasii was isolated in four cases, M. avium-M. intracellulare was isolated in three cases, and both organisms were isolated in one case.

Our principal finding is that M. kansasii has become a more common pathogen at our medical center than M. tuberculosis, even in HIV-infected patients. This finding is consistent with Nebraska’s 1991 tuberculosis case rate of 1.8/100,000 population, which ranks 46th among case rates for the 50 states. Factors cited by the Advisory Committee for the Elimination of Tuberculosis that explain the recent resurgence of tuberculosis in the United States [4] are relatively uncommon in Nebraska. Although our paucity of tuberculosis cases might arouse skepticism, a regional tuberculosis center in South Carolina reported only 10 cases per year [5].

Our declining incidence of tuberculosis cannot be explained by a declining patient census; the number of veterans treated at our facility has increased. Furthermore, data from the Nebraska Department of Health demonstrate a continuing low incidence of tuberculosis in Douglas County and in the state, making it unlikely that our patient population was not affected by a local upsurge of the disease. Comparing a 1979 survey [6] with the 1979 tuberculosis report from the Centers for Disease Control and Prevention [7], we calculated that the ratio of M. kansasii isolates to M. tuberculosis cases was higher for Nebraska (0.433) than for any other state (figure 1).

Institutions where isolates of M. kansasii predominate must consider M. kansasii infection in selecting empirical antimycobacterial therapy. In addition, the possibility of M. kansasii infection heightens the urgency of rapid identification of species so that unnecessary isolation of patients can be discontinued.

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References

4. Centers for Disease Control and Prevention. Initial therapy for tuberculosis infection in selecting empirical antimycobacterial therapy. In addition, the possibility of M. kansasii infection heightens the urgency of rapid identification of species so that unnecessary isolation of patients can be discontinued.

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