These results suggest that antibiotic use, specifically vancomycin, promotes persistent gastrointestinal colonization with VRE. Pulsed-field gel electrophoresis results in patients with an intermittent pattern of VRE colonization demonstrated that, in one half of the patients, the same isolate persisted despite the three negative cultures over 3 weeks. While this could be due to inadequate sampling, it more likely was due to persistent colonization at levels too low to be detected by culture until the use of antibiotics promoted the growth of VRE again. These results also suggest that 25% of cancer patients with VRE colonization will have recurrence of VRE colonization despite sufficient negative cultures to discontinue isolation according to Hospital Infection Control Practices Advisory Committee recommendations[2]; finally, we show that the pattern of VRE colonization over time is associated with the use of vancomycin. This supports the recommendation of the Hospital Infection Control Practices Advisory Committee[2] for vancomycin restriction.

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Hepatitis B Immunization of Hospital Employees in an Endemic Area: Should We Screen?

To the Editor:

Healthcare workers are estimated to be at a fourfold higher risk of infection with hepatitis B virus (HBV) than the general population.[1] The HBV vaccine is highly effective, but cost is an important factor that affects implementation of immunization programs. In highly endemic areas, prescreening may reduce costs by avoiding unnecessary vaccination. We studied the HBV profile of our healthcare workers with the aim of determining the cost-effectiveness of prevaccination screening.

METHODS

We studied 572 healthcare workers at Aga Khan University Hospital, a large university medical center. Initially, both hepatitis B surface antigen (HBsAg) and antibody (HBsAb) were tested by enzyme-linked immunosorbent assay (Abbott Laboratories, Chicago, IL). However, as the prevalence rates of HBsAg were low, subsequent screening was done only for HBsAb to curtail costs. The clinical areas surveyed are shown in the Table.

The current cost of HBsAb in our laboratory is $8 (US) and that of three doses of Engerix B vaccine (SmithKline Beecham, Philadelphia, PA) is $30. Prescreening cost-effectiveness was determined using the following formula for the prevalence of HBsAb above which screening is cost-effective:

$$100 \{ 1 - \frac{(CV - CT)}{CV} \} = \% \text{ prevalence}$$

where CV=cost of vaccine and CT=cost of test. This readily derived formula identifies the seroprevalence rates above which the cost of screening and vaccination would be lower than the cost of vaccination alone, whereas previously described calculations have used the cost of screening to determine cost-effectiveness.[2]

RESULTS

Three of 80 (3.75%) employees tested positive for HBsAg, while 87 of 572 (15.2%) were HBsAb-positive. Areas of highest seroprevalence (>20%) were the Labor and Emergency Rooms, Anesthesiology, and Clinical Laboratory (Table); however, rates by department did not differ significantly (chi-squared, 13.37 with 14 df; P=.50).

TABLE 1
HBsAb Seroprevalence Rates in Healthcare Workers

Department	No. Tested	% Positive
Labor room	10	33
Emergency room	34	26
Anesthesia	17	24
Clinical laboratory	66	23
Operating room	50	20
Medicine	46	20
Surgery	30	17
Pediatrics	14	14
Interns	83	11
Intensive-care units	66	11
Outpatient clinics	73	10
Wards	58	10
Radiology	13	8
Dental	6	0
Pathology	6	0
Total	572	15

Using our formula, we calculated that it would be cost-effective to prescreen in our institution only if the expected HBsAb prevalence rate was at least 26.7%. Therefore, screening would not have been cost-effective in our hospital.

DISCUSSION

Hepatitis B is endemic in Pakistan, with seroprevalence rates of 6% to 8% for HBsAg and 25% to 30% for HBsAb.[3] We found lower seroprevalence rates in our healthcare workers compared to the general population. The reasons for this are unclear but may relate to educational background or economic class.

We found that it would be not be cost-effective for our institution to prescreen our employees before HBV vaccination. Therefore, we recommended direct vaccination of all our employees, particularly as there are no adverse effects of vaccination in

immune individuals.[4] We have derived a formula that other institutions could use to determine HBV vaccination policies in their own settings.

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Request for Information on Application of Evidence-Based Medicine

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"Currents," the news section of the *Annals of Internal Medicine,* is planning a story on evidence-based medicine and its practical application. They write ". . . we are hoping to spotlight some real-life examples of evidence-based medicine in action and its impact. If you are conducting research to evaluate the practical application of evidence-based medicine or if you have experience using evidence-based medicine principles in your daily work, . . ." please contact Cori Vanchieri, news editor, *Annals of Internal Medicine,* 301-589-5772 (e-mail corivan@aol.com).

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