Medical Ostriches

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On January 3, 1990, shortly after being asked to compose this editorial, the high-risk obstetrics clinic asked me to evaluate a 28-year-old nurse who was two months pregnant. Three weeks earlier it had been learned that she was positive for hepatitis B surface antigen. She had been screened following an accidental needlestick. The patient said that in addition to the needlestick, she had also contaminated her hands with blood several weeks earlier while treating the lacerated finger of a friend who had active hepatitis.

Although she had been asymptomatic with normal liver enzymes when first checked, the patient now complained of arthralgias and stiffness of her small joints, particularly in the morning. Her aspartate amino transferase (AST) and alanine amino transferase (ALT) levels were 607 IU/l and 1560 IU/l, respectively. Her bilirubin, prothrombin time and other screening tests were normal. Over the ensuing two weeks, her ALT rose to over 3000 IU/l and her bilirubin to 4.3 mg/dl. She developed nausea, vomiting, malaise, fatigue, severe pruritus and clinical jaundice.

As of January 30, 1990, she had not yet returned to work. Although encouraged by her improved appetite and persistently normal prothrombin time (an excellent predictor of severe hepatitis), I am still unable to be certain when or if she will fully recover, whether she will develop chronic hepatitis or if the baby she is carrying will become infected. Fortunately, the hepatitis B virus does not cause congenital anomalies. In addition, the availability of high titer hepatitis B immune globulin and a vaccine for hepatitis B reduces the baby's risk of acquiring hepatitis B to approximately 5%, even if the mother remains hepatitis B-positive at the time of birth.[1] Although the mother appears to have avoided a fatal outcome from fulminant hepatitis B, she is still at risk of becoming a chronic carrier, and it is unclear when she will be allowed to return to work.

Hepatitis B is the most frequently acquired occupationally related infectious disease in healthcare workers. Twelve thousand to 15,000 such individuals are infected each year, and approximately 300 will ultimately die because of the infection.[2] A safe and effective vaccine that protects individuals against the acquisition of hepatitis B has been available since 1982 (Heptavax-B, Merck, Sharp & Dohme, Philadelphia, Pennsylvania). A recombinant vaccine has also been available since 1986 (Recombivax HB, Merck Sharp & Dohme) and a competitor was added in 1988 (Engerix-B, Smith, Kline and French, Philadelphia, Pennsylvania). Why was this nurse not protected?

Unfortunately, my patient is far from unique. Her story has been repeated again and again in frantic phone calls that I receive from medical personnel eager to do anything that will prevent them from acquiring hepatitis B after they have been exposed. It is estimated that only 30% to 40% of all high-risk healthcare workers in the United States have been vaccinated, despite the fact that

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over 90% of large hospitals and 60% of smaller hospitals offer the vaccine to high-risk healthcare workers. Seventy-five percent offer it free of charge.[2] My hospital has provided it at no cost for almost eight years, yet my patient had not availed herself of this benefit. My patient had even sustained an earlier needlestick one year prior to her recent exposure. Despite counseling at that time, she had chosen not to be vaccinated. Speaking with her now, she has no good explanation for her failure to be vaccinated and readily encourages others to undergo vaccination.

Spence and Dash, in this issue of Infection Control and Hospital Epidemiology, have attempted to uncover the reasons for such poor compliance with vaccination programs.[3] Their results are illuminating as well as discouraging. Only 42% of registered nurses working in high-risk areas of the Hahnemann University Hospital had been vaccinated, despite an educational program and the availability of vaccine at no cost. Much as with my patient, 73% of the nonrecipients had even experienced a parenteral exposure to blood or bodily fluids during the preceding year.

Excuses for failing to be vaccinated can be categorized under four general headings: fear of developing AIDS, hepatitis or some other ill-defined but severe side effect of vaccination; ignorance about hepatitis B, the risks of acquiring the disease, its modes of transmission and even the fact that the vaccine is available; procrastination, as shown by the 10% who never completed their series of three shots and the 23% who "found it difficult to schedule an appointment;" and the "head in the sand" (ostrich) approach, common among health professionals, who often seem to feel that the best defense against personal disease is to pretend it doesn't exist.

I am continually astounded by the health profession's limited knowledge of hepatitis B, despite the vast literature published on the subject in recent years. Sixty-eight percent of those responding in Spence and Dash's study were ignorant of even the basics of hepatitis B transmission.[3] Educational efforts must be blunt, stressing the 0.5% to 1.0% incidence of fulminant hepatitis with its 50% to 75% acute mortality and the 5% to 10% incidence of chronic hepatitis. In chronic active hepatitis B, 30% to 50% of patients will die within five years from complications of their disease, including variceal bleeding and encephalopathy. Thirteen percent will develop hepatocellular carcinoma.

Equally important, and possibly more readily appreciated, are the economic and personal impacts of the two to ten weeks of enforced absence from work. The profound malaise and fatigue frequently extend beyond ten weeks, even in those who recover completely. And while the emphasis in prevention programs is rightfully placed on the greater frequency of hepatitis B transmission from the patient to the unprotected healthcare provider, there are numerous published examples in which a chronic carrier healthcare worker transmitted hepatitis B to patients.[4,5]

Healthcare workers have a moral and ethical responsibility to avoid transmitting disease to their patients. In addition, there is ample precedent for denying continued licensure to individuals shown to have transmitted hepatitis to patients. In view of the many potential health and career dangers produced by exposure to hepatitis B, a safe and effective vaccine would seem to provide an inexpensive insurance policy, even if one had to bear the approximately $120 cost oneself. The vaccine protects the worker, the patient and the worker's family from an avoidable risk.

In the past, many hospitals and educational institutions balked at the cost of instituting educational and vaccination programs, ignoring the human and monetary costs of the disease itself. The soon to be enforced Occupational Safety and Health Administration (OSHA) standards, which require a vigorous educational program and the provision of vaccine to healthcare workers at risk of exposure to hepatitis B, is a step in the right direction. Universal early and repeated educational efforts aimed at students in the healthcare fields, with vaccine made available in conjunction with the educational programs, would provide the greatest hope for the future. Many healthcare schools still do not make a point of encouraging students to obtain the vaccine. Even fewer provide it free of charge.

A vigorous educational program should also remove the remaining vestiges of fear concerning the vaccine. Describing the vaccine's unprecedented record of safety, providing the clear-cut evidence that neither AIDS nor hepatitis are transmitted by the vaccine and emphasizing the availability of the newer, genetically engineered vaccines (which should placate the AIDS fears of even the terminally timorous) should alleviate most remaining concerns.[6] Innovative efforts to simplify vaccination (i.e., making it available in a unit-based manner, as suggested by Spence and Dash[3]) in addition to targeting healthcare students, may corral some of the procrastinators. Approval of a rapid vaccination regimen (0, 30 and 60 days) for one form of the recombinant vaccine (Engerix-B) may help to attract individuals who forget to return for their six-month dose when using the standard regimen (0, 30 and 180 days), as well as those who just won't commit themselves to such a long program. The enforced education envisioned in the new OSHA standards may even make a dent in the number of healthcare professionals who deal with the risk by refusing to acknowledge it, but I fear that the medical ostrich will never become extinct.

The problems of compliance with vaccination

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programs in society at large mirror those among healthcare workers. Despite commercial availability of the plasma-derived vaccine since 1982 and a recombinant vaccine since 1986, the annual number of hepatitis B cases in the United States has increased 50%, from approximately 200,000 per year in 1978 to about 300,000 per year at the present time. There are a number of reasons for the failure of hepatitis B vaccine availability to have a discernible impact on the incidence of hepatitis B in the United States, but there is not sufficient space to detail the reasons here.[7,8] However, it is unlikely that the vaccine will have a major impact on the erradication of hepatitis B in the United States if healthcare professionals fail to use it effectively themselves. It is time for the healthcare providers, practitioners, administrators and educators alike to put their own houses in order.

It is time to take our heads out of the sand.

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