

Unusual Cases of Hepatitis B Virus Transmission in the Community

One reason some parents don't vaccinate their children against the hepatitis B virus (HBV) is their belief that their child has no risk of ever coming in contact with the virus. "My child will never be promiscuous or addicted to drugs. Why does he or she need to be protected against hepatitis B?" Of course, it is impossible to predict which children will grow up and engage in risky behavior. But let's assume for a moment that this parent is right...does this mean that his or her child has no possibility of ever coming in contact with HBV?

The truth is that transmission of HBV can sometimes occur in unusual ways. Approximately 30% of people newly infected with HBV do not know how they contracted it.

The following reports of some uncommon methods of HBV transmission in community settings illustrate how every unvaccinated person is at some (albeit limited) risk of HBV infection.

These examples are not presented to scare. Such modes of transmission are relatively rare, and sexual activity is still the predominant source of HBV infection among U.S. adults. However, these reports demonstrate that one can acquire HBV infection without engaging in so-called "risky" behavior. There is also a risk of HBV transmission in medical settings, between patients, from patients to health care personnel, and from health care personnel to patients. For more information on this issue, see the IAC publication titled "*Unusual Cases of Hepatitis B Virus Transmission in Medical Settings*" available at www.immunize.org/catg.d/p2101.pdf.

By avoiding obvious means of exposure, people can reduce the odds of becoming infected. But in reality, anyone can get HBV infection. Fortunately, the availability of hepatitis B vaccine means no one has to.

1. Hepatitis B "by proxy": an emerging presentation of chronic hepatitis B in children. Sciveres M, Maggiore G. *J Pediatr Gastroenterol Nutr* 2007; 44(2):268–9.

SUMMARY: Six persons in Italy developed acute HBV infection from their adopted children, all of whom were asymptomatic.

LINK: www.ncbi.nlm.nih.gov/pubmed/17255843

2. Risk factors for hepatitis B in an outbreak of hepatitis B and D among injection drug users. Bialek SR, Bower WA, Mottram K, et al. *J Urban Health* 2005 Sep; 82(3):468–78.

SUMMARY: In 2000 an outbreak of 12 cases of hepatitis B occurred among injection drug users in Pierce County, Wash. Three of the infected people died. Injecting more than four times a day and having more than one sex partner were risk factors for infection.

LINK: www.ncbi.nlm.nih.gov/pubmed/16049202

3. Prevalence of hepatitis B and C virus infection in barbers in the Sivas region of Turkey. Candan F, Alagozio H, Poyraz O, Somer H, et al. *Occup Med* 2002; 52(1):31–4.

SUMMARY: Because barbers may be exposed to their customers' blood, a study in Turkey attempted to determine the prevalence of HBV and HCV infection in barbers compared

to a comparison group. The prevalence of antibodies against HBV was higher in the group of 176 barbers (39.8%) than in the control group (28.3%). Most of the seropositive subjects had been exposed to needle pricks or scissor cuts.

LINK: www.ncbi.nlm.nih.gov/pubmed/11872792

4. Hepatitis B outbreak in a state correctional facility, 2000. *MMWR* 2001; 50(25):529–32.

SUMMARY: An outbreak of hepatitis B occurred among inmates of a high-security state correctional facility. The index case was an inmate who was found to be an inmate with chronic hepatitis B virus infection. Risk factors for infection included injecting drugs, having sex with another man, using a razor that had been used by another inmate, and receiving a tattoo.

LINK: www.cdc.gov/mmwr/preview/mmwrhtml/mm5025a1.htm

5. Horizontal transmission of hepatitis B virus among players of an American football team. Tobe K, Matsuura K, Ogura T, et al. *Arch Intern Med* 2000; 160(16):2541–5.

SUMMARY: Eleven cases of HBV infection were detected among 65 members of the Okayama University's football team during a period of 19 months. All players with acute HBV infection belonged to the same training group as a

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person on the team who was HBeAg positive. Transmission presumably occurred through contact with open wounds during training.

LINK: www.ncbi.nlm.nih.gov/pubmed/10979068

6. Hepatitis B virus transmission in an elementary school setting. Williams I, Smith MG, Sinha D, et al. *JAMA* 1997; 278(24):2167–9.

SUMMARY: An investigation documented transmission from an HBV-infected elementary school student to a teacher who had no overt percutaneous or permucosal exposure to the student's blood or infectious body fluids. The student did sneeze saliva and nasal secretions onto the teacher's cracked, chapped hands. The teacher gave birth to an infant 3 weeks prior to her diagnosis, and her infant also tested HBsAg positive. The teacher and student were found to have the same HBV subtype and identical HBV DNA sequences.

LINK: www.ncbi.nlm.nih.gov/pubmed/9417011

7. Horizontal transmission of hepatitis B in a children's day-care centre: a preventable event. Mcintosh ED, Bek MD, Cardona M, et al. *Aust N Z J Public Health* 1997; 21(7):791–2.

SUMMARY: The University of Sydney used molecular fingerprinting to provide evidence that a child chronically infected with HBV who had an exudative skin lesion and a history of biting had infected another child in the same day care center.

LINK: www.ncbi.nlm.nih.gov/pubmed/9489202

8. Hepatitis B – an occupational risk for butchers? Mevorach D, Eliakim R, Brezis M. *Ann Intern Med* 1992; 116(5):428.

SUMMARY: In Israel, a butcher who was chronically infected with HBV infected three of his co-workers who, in turn, infected their spouses. The workers shared knives. If the index case cut or punctured himself, his HBV-contaminated blood could have tainted a knife that other butchers later used, making it possible for the infection to be transmitted from the knife to them through a break in their skin.

LINK: www.ncbi.nlm.nih.gov/pubmed/3616487

9. Hepatitis B virus transmission between children in day care. Shapiro CN, McCaig LF, Gensheimer KF, et al. *Pediatr Infect Dis J* 1989; 8(12):870–5.

SUMMARY: CDC reported a case involving a 4-year-old boy in day care who developed acute HBV infection; another child at the center who had a history of biting and scratching was found to be chronically infected with HBV.

LINK: www.ncbi.nlm.nih.gov/pubmed/2626287

10. A large outbreak of acupuncture-associated hepatitis B. Kent GP, Brondum J, Keenlyside RA, et al. *Am J Epidemiol* 1988; 127(3): 591–8.

SUMMARY: In Rhode Island, 35 patients of an acupuncturist became infected with HBV, the primary source for the outbreak being a patient in the practice. Investigators were not able to determine the precise mechanism of transmission, but theorized it was possibly due to inadequately sterilized needles or the transfer of infectious material from the acupuncturist's hands to sterilized needles.

LINK: www.ncbi.nlm.nih.gov/pubmed/3341362

11. Transmission of hepatitis B virus from adopted Asian children to their American families. Friede A, Harris JR, Kobayashi JM, et al. *Am J Public Health* 1988; 78(1):26–9.

SUMMARY: A study in the state of Washington examined the association between having adopted a hepatitis B surface antigen (HBsAg)-seropositive Asian child and serologic evidence of past or present HBV infection in family members. Seven (9%) of 77 family members exposed to an HBsAg-positive child had evidence of past or present infection compared with four (2%) of 232 nonexposed. The risk was higher for those with prolonged exposure and was entirely restricted to parents.

LINK: www.ncbi.nlm.nih.gov/pubmed/3337301

12. An outbreak of hepatitis B in members of a high school sumo wrestling club. Kashiwagi S, Hayashi J, Ikematsu H, et al. *JAMA* 1982; 248(2):213–4.

SUMMARY: In Japan, 5 of 10 members of a high school sumo wrestling club developed HBV infection in a one-year period. The asymptomatic index case often bled from injuries received while wrestling, presumably transmitting HBV to his teammates through cuts and abrasions.

LINK: www.ncbi.nlm.nih.gov/pubmed/7087113