



# AMERICAN COLLEGE OF SURGEONS

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## Statement on the Surgeon and Hepatitis

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*The following statement regarding the surgeon and hepatitis was originally published in the May 1995 issue of the Bulletin as the "Statement on the Surgeon and Hepatitis B Infection." A revised statement with updated information and recommendations on hepatitis B and also inclusion of information and recommendations on hepatitis C was approved by the Board of Governors at its meeting in October 1998 and subsequently approved by the Board of Regents at its February 1999 meeting. The Board of Governors and the Board of Regents approved the most recent revisions in October 2003.*

Patients and health care workers (HCWs) have great concerns about potential transmission of blood-borne pathogens, either from health care worker to patient, or from patient to health care worker. Much of this concern has been prompted by the epidemic of human immunodeficiency virus (HIV). Experience indicates that the actual risk of HIV transmission in health care settings is extremely small. The concern over HIV also focused attention on transmission of other blood-borne pathogens. As a result, there is increased awareness of the consequences to surgeons, other health care workers, and patients from the hepatitis viruses (B and C), which are transmitted by blood contact.

Hepatitis B virus (HBV) and hepatitis C virus (HCV) are more efficiently transmitted blood-borne pathogens than HIV in the health care setting. An estimated 1.25 million people in the U.S. have chronic HBV infection, and more than 4 million have chronic HCV infection. Transmission of these infections to health care workers continues to occur, and approximately 250 health care workers die annually from chronic HBV infection alone.

### Hepatitis B

HBV infection is detected by serologic testing for HBV antibodies. Chronic, or persistent, infection is documented by the continued presence in serum of the HBV surface antigen. In some cases of persistent infection, the hepatitis "e"-antigen, which indicates the presence of very high viral concentrations in the patient's blood, is present and is indicative of high risk of disease transmission through blood exposure. In many centers, detection of the e-antigen has been replaced by actual counts of the number of viral units in the infected patient's blood. High viral concentrations indicate increased risks for transmission.

Prevention of HBV infection is possible through immunization. The introduction of safe and effective vaccines for immunization against HBV, and the general acceptance by the professional community of the wisdom of immunization, has reduced the incidence of new cases. Immunization against HBV is effective, with more than 90 percent of vaccine recipients becoming immune after the initial inoculation series. However, many surgeons in practice remain without immunization and at risk for HBV infection. While younger surgeons have been routinely immunized, an estimated 25 to 30 percent of surgeons in practice for greater than 10 to 15 years remain at risk for infection.

The risk of exposure to HBV (and all blood-borne pathogens, including HCV) begins early in a surgeon's career and is greater than the risk to most HCWs during the entire professional life of a surgeon. The risk of transmission of HBV from a patient to a surgeon is much greater than the risk of transmission from an infected surgeon to a patient. It is worth emphasizing that an immune surgeon cannot contract or transmit HBV infection. All but one of the reported series of HBV transmissions involved surgeons who were e-antigen positive. It is known that disease transmission and infection occur in 30 percent of hollow needlestick exposures to hepatitis e-antigen-positive blood.

Because HBV acute infection is often asymptomatic (70 percent of cases), there may be some surgeons who are unknowingly positive for hepatitis e-antigen and some patients doubtlessly exist whose HBV infection from exposure in the clinical setting

was not detected or reported. Thus, the actual number of clusters of surgeon-to-patient transmissions is greater than the number reported in the literature. The risk of transmitting HBV from an e-antigen-positive surgeon to a patient during an invasive procedure varies with the particular procedure, the particular surgeon, and the character of the exposure event (such as puncture or cut). The actual number of surgeons who have tested positive for the e-antigen is unknown. The risk of transmission to patients is estimated from theoretical models that cover only sporadic transmission. Thus, the estimated risks are much smaller than the attack rates noted in the clusters of HBV infections that have been completely investigated. Nonetheless, these estimated risks appear to be significantly greater than the individual risks of anesthesia-associated mortality, HIV infection after transfusion of screened blood, or mortality from penicillin anaphylaxis. Because most individuals infected with HBV do not develop chronic or persistent infection, the risk of death from HBV is likely to be less than that from anesthesia, transfusion, or penicillin anaphylaxis. It stands to reason that surgeons should know their HBV immune status and be vaccinated if not already immune. Surgeons who have contracted HBV infection and are at risk for being e-antigen positive should obtain expert medical advice for their own care and take appropriate measures to prevent disease transmission to patients.

The exact mechanism of transmission from surgeon to patient is unknown, but has been thought to be from contact with the surgeon's blood. Blood exposure from the surgeon to the patient could occur when the surgeon sustains an intraoperative injury (such as needlestick or cut), which allows the surgeon's blood to directly touch the patient's open tissues. Existing evidence demonstrates that prolonged knot tying or other shear injury may allow the surgeon's virus to be transmitted to the patient. Thus, surgeon-to-patient transmission of HBV might occur even without gross blood contact. Current information about mechanisms of transmission is insufficient to know whether modifying surgical technique might prevent surgeon-to-patient transmission.

## Hepatitis C

HCV is responsible for 80 percent of infections that were formerly known as non-A, non-B hepatitis. It is mainly transmitted through exposure to the blood of an infected individual. Intravenous drug abusers, patients receiving blood transfusions before 1991, hemophiliacs, and patients on hemodialysis are at increased risk for harboring HCV infection. Prevalence of HCV infection varies according to individual risk factors of patient populations, but is now greater than 1.5 percent of the U.S. population. HCV infection is a significant blood-borne pathogen that poses an occupational risk to surgeons.

Acute HCV infection is commonly asymptomatic (70 percent). Infection with HCV is detected by the identification of specific antibodies to the virus in serum. About 60 to 70 percent of acute HCV infections result in chronic, persistent infection. Patients fortunate enough to recover from an acute infection remain at risk for subsequent reinfection. Prevention of HCV infection is possible through the rigorous practice of infection control, the use of universal precautions, the use of personal protective barriers to prevent contact with potentially infected blood, and the consistent practice of behaviors to prevent needlestick and sharp instrument injury both within and outside the operating room. There is currently no immunization to prevent infection with HCV.

Only two reported instances of transmission of HCV virus from surgeon to patient are known. Currently, there is no indication for surgeons to take special measures to protect their patients except during acute, symptomatic HCV infection. It is prudent for surgeons known to be infected with chronic HCV infection to obtain ongoing expert medical advice so that treatment can be undertaken. Currently, treatment with interferon-alfa and Ribavirin has effectively treated the infection in 50 percent of chronically infected patients. Ongoing expert medical advice will also keep the infected surgeon abreast of developments in this area of new treatment research.

## Recommendations

Based upon current data and recommendations issued by the Centers for Disease Control and Prevention, the College makes the following recommendations regarding hepatitis infection:

- 1. Relevant to all blood-borne pathogens:** Surgeons should continue to use the highest standards of infection control, involving the most effective known sterile barriers, universal precautions, and scientifically accepted measures to prevent blood exposure. This practice should extend to all sites where surgical care is rendered and should include safe handling practices for needles and sharp instruments. During every operation, maximum effort should be exerted to prevent patients' exposure to the blood of members of the surgical team and to protect the surgical team from exposure to the blood of patients.

**2. Relevant to all potentially infected patients:** Surgeons have the same ethical obligation to render care to hepatitis-infected patients as they have to care for other patients.

**3. Relevant to hepatitis B (HBV):** Surgeons should know their HBV immunization and antibody status. Surgeons with acquired antibody from successful immunization are protected from future infection and are not infectious to their patients. Surgeons with natural antibodies to HBV have had previous infection and should know whether they are positive for the antigen of HBV. If they are negative for the HBV-surface antigen, then they do not have chronic infection and they cannot transmit the infection to patients. If they are positive for the HBV-surface antigen, they should be tested for the e-antigen of HBV. If they are positive for the HBV-surface antigen but are negative for the e-antigen, then they can continue medical practice but should consult expert medical advice for their own personal health. If the chronically infected HBV surgeon is positive for e-antigen or has high viral counts in his or her blood, then an expert panel should be convened to make recommendations about the continuation of clinical practice. Such a panel should consist of infectious disease specialists and surgeons who are knowledgeable in blood-borne transmission of viruses. The e-antigen-positive surgeon and the panel should discuss and agree on a strategy for protecting patients who are at risk for disease transmission. Current clinical investigation into possible antiviral therapies for chronic HBV infection may result in effective treatments in the immediate future. Chronic HBV-infected surgeons should have expert medical advice on evolving treatments for purposes of their own health.

**4. Relevant to hepatitis B (HBV):** *Surgeons who have not been immunized and have not had previous infection with HBV (that is, no antibodies to HBV), should be immunized for HBV.* Documentation of seroconversion to a positive antibody test for the surface antibody for HBV should be obtained one month after completion of the immunization process. Failure to seroconvert should result in a second attempt at immunization. Failure to respond should be known to surgeons so that full use of strategies to prevent blood exposure may be employed to avoid future blood contact.

**5. Relevant to hepatitis C (HCV):** Surgeons should know their antibody status for HCV infection. Surgeons who are negative for HCV antibodies are at risk for HCV infection and should employ all strategies to prevent blood exposure for the future. Surgeons who have chronic HCV infection have no reason to alter their practice based upon current information. They should seek expert medical advice because current medical therapy with interferon-alfa and ribavirin can successfully treat this infection in some patients.

**6. Relevant to postexposure responses and questions:** Call the National Clinicians' Postexposure Prophylaxis Hotline at 1-888/448-4911, or website [www.ucsf.edu/hivcntr](http://www.ucsf.edu/hivcntr).

## Summary

Immunization against HBV infection appears to be the most effective method of preventing transmission of HBV from patients to members of the surgical team, and surgeons, therefore, should be immunized against HBV. Such immunization is also the most effective way to reduce the risk of transmission of HBV from surgeons to patients. New therapies may result in treatment for the HBV-infected surgeon. Prevention of HCV infection is currently only possible through prevention of blood exposure. Surgeons should know their infection status for HCV infection so that effective therapy may be undertaken. The HBV and HCV infection status of the surgeon is personal health information and is confidential. The American College of Surgeons and its appropriate committees will continue to monitor the data and update these recommendations in the interests of protecting public safety and of protecting surgeons.

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