How to Prevent Chronic Viral Hepatitis Among the Healthcare Workers?

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ABSTRACT
Chronic viral hepatitis B and C is quite prevalent in the healthcare setting. It is transmitted to the healthcare worker by direct contact with blood or body fluids, for example, contaminated needle stick injury and invasive surgical procedures. Prevention of such transmission is possible by observing standard precautions, using proper methods of disinfection and sterilization, adequate vaccination plans, adopting appropriate measures to prevent infection after an exposure, and most importantly to create awareness among the HCWs regarding its spread.

INTRODUCTION
Significant morbidity and mortality is associated with occupational blood-borne infections. Health care workers (HCWs) like doctors and paramedical staff, including interns and medical students are exposed to hazardous blood-borne pathogens such as hepatitis B (HBV) and hepatitis C virus (HCV). Other people who are at risk include those not directly involved in patient care but with potential exposure to these infectious agents (e.g., housekeeping, laundry, security and maintenance staff, as well as volunteers).

These chronic infections pose a serious public threat to HCWs in terms of psychological and occupational diseases. These infections can not only be transmitted from patients to HCWs, but can also affect the HCWs' families. In this article, we are going to discuss briefly the risk factors responsible in the transmission of these infections, and then go on to describe ways and methods to prevent hepatitis B and C in hospitals and clinics.

TRANSMISSION OF HBV & HCV INFECTIONS
Approximately 14.4% and 1.4% of hospital workers are estimated to be infected with HBV and HCV, respectively. On the other hand, spread of infection from a HCW to patients is rare, and only few cases have been reported. Despite the potential risks, it was found in one study that 24% of HCWs were not vaccinated at all and HCV infections were positive in 1.6% of all HCWs.

In the health care setting, transmission of HBV and HCV infection may occur via several routes, but the most frequent route is through needle stick injury (NSI). Other sharp instruments such as lancets can also be harmful. However, it should be kept in mind that all body fluids including peritoneal,
synovial, pericardial, cerebrospinal and amniotic fluids can be infectious. Vaginal discharge and semen are also important source of infection. Another route of HBV transmission is invasive surgical procedures; in fact, surgeons represent the largest group of HCWs involved in provider-to-patient HBV transmission. However, the main concern is the regular performance of an exposure-prone procedure (EPP). EPPs are defined as procedures in which there is a risk that injury to the physician may result in the exposure of the patient’s open tissues to the blood of the physician. Any type of invasive surgery is, thus, an EPP, wherein the affected physician’s gloved hand is in constant contact with sharp instruments, needle tips or sharp tissues (spicules of bone or teeth) inside a patient’s open body cavity.

**PREVENTION OF HBV & HCV IN HEALTHCARE SETTING**

Since hepatitis B and C can spread through blood and blood products, prevention of hepatitis B and C transmission through the medical care setting is an important public health issue. Following are some of the ways by which spread of these chronic infections can be curtailed to a large extent in our hospitals and out-patient clinics:

**Observing standard precautions:** Proper hand washing and use of barriers such as gloves, gowns, and masks—the main components of standard precautions—can minimize mucocutaneous exposures. Reducing the manipulation of manual sharps can also prevent occupational injuries. The use of puncture-resistant containers for sharp disposal is also an effective strategy towards minimizing spread of infection.

**Methods of disinfection and sterilization:** In order to prevent dissemination of hepatitis B and C within healthcare workers and their patients, it is important to erase these viruses from the hospital environment. For example, in case of HCV infection, hypochlorite solution should be used as surface disinfectant for blood contaminated spills.

**Use of engineered safety devices:** These devices protect HCWs performing injections or blood sampling from sharp injury. Two kinds of devices are currently available: some of them need to be activated by the provider after use whereas others are activated automatically (for example, self-retraction of the needle).

**Vaccination strategy:** Vaccination is a major tool for preventing HBV infections in HCWs, and therefore is strongly recommended in such individuals. All those HCPs who are not vaccinated and those who do not respond to vaccination are susceptible. For unvaccinated HCWs, or if no proof of vaccination is available, hepatitis B immune globulin (HBIG) and a 3-dose series (on days 0, 30 and 180) of Hepatitis B vaccines should be administered. Testing for antibodies against HBV surface antigen (HBs) is recommended 1-2 months after the 3rd dose for HCWs at high risk of blood exposures, to evaluate the response to vaccination. Re-vaccination with at least 1 dose of HBV vaccine along with HBIG should be considered for non-responders after the 3-dose series. Unfortunately, there is no
commercially available vaccine against HCV infection.

PREVENTION AFTER EXPOSURE

It is important that written protocols are available in each care setting for the management of occupational exposure to blood and other body fluids. They must include an immediate cleaning of the wound with soap and water, followed by disinfection with adequate products. Other measures include rapid screening of the source patient (when identified and with his/her authorization) for HIV, HBV and HCV, and a rapid counseling of the victim together with a reporting to the Occupational Medicine Department.

AWARENESS AMONG HCWs

One survey showed that HCWs such as nurses, physicians, medical students and nursing students do not receive complete and comprehensive training in infection control\textsuperscript{10}. Another study done on 180 Pakistani medical students found that >85% of the participants were aware of the risk of HBV and HCV transmission. However, despite the fact that their knowledge about risks of needle stick injuries increased as students' education and training progressed, the prevalence of NSI unfortunately also increased\textsuperscript{11}.

CONCLUSION

Chronic viral hepatitis is a silent but preventable disease. Improving vaccine coverage among HCWs is challenging, but ultimately it benefits HCWs who provide care to contagious patients. Last but not the least, it is imperative to strengthen the efforts of information and training towards the HCWs regarding the risks attached to blood and blood-borne infections.
REFERENCES


