

## ABSTRACT

**Key words:** health care workers, hepatitis B virus, hepatitis C virus, HIV, occupational risk

**Title:** HIV, HBV and HCV infections and activation status among health care workers in Mongolia

**Background:**

Health care workers are exposed to biological, chemical, physical and psychosocial hazards in their workplaces. Hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency viruses (HIV) are the most common pathogens of blood borne infection. However, there is limited information among health care workers and no nationwide survey has been conducted regarding these virus infections thus far in Mongolia.

**Goal:**

To investigate HIV infection and to determine prevalence, activation, immunity against hepatitis B and association with risk factors among health care workers of in all levels of hospitals in Mongolia.

**Methods:**

A nationwide cross-sectional survey was used with stratified multistage, random sampling from 4 geographical regions and the capital-city. A representative sample size was calculated. Personal, medical and professional information was collected using a standardized questionnaire. Serum samples were tested for anti-HBs, HBsAg, anti-HBc, anti-HCV, anti-HIV by ELISA (3.0 Ortho-Clinical Diagnostics, Raritan, NJ). HBV-DNA and HCV-RNA detection and quantification were done by real time- PCR method (COBAS® AmpliPrep / COBAS® Taqman® HCV test, v1.0 and HBV test, v2.0).

**Results:** A total 1020 randomly selected healthcare workers were enrolled from 17 Soums of four provinces and capital-Ulaanbaatar city in the study. Among participants 36.9% (n=375), 41.7% (n=424) and 21.4% (n=217) were from primary, secondary and tertiary level of healthcare service, respectively. Out of these 25.9% (n=261) were doctors, 37.1% (n=378) were nurses, and the remaining were 19.9% (n=202) other staffs. The rates of seropositivity for anti-HBc, HBsAg, and anti-HCV were 68.2%, 7.6% and 21.9%, respectively. In addition, 0.7% (n=7) were co-infected with HBV and HCV. Among

HBsAg-positive subjects 89.7% were positive for HBV-DNA whereas 4.0% out of HBsAg-negative but anti-HBs-positive subjects were positive for HBV-DNA. HCV-RNA was positive in 46.2% of anti-HCV-positive participants. No positive case of HIV was observed among healthcare workers. Multiple regression analysis demonstrated that surgical procedure, blood transfusion and working year at hospital were statistically significant risk factor for HBV and HCV infection.

**Conclusion:**

Among urban and rural healthcare workers 28.8% had single or co-infection with HBV and HCV, furthermore 89.7% and 46.2% were positive for HBV-DNA and HCV-RNA, respectively revealing high replication rates. No positive case of HIV was observed.