#whaims
aims.wh.com

W&H aims Advanced Infection prevention Management Solutions

Transmission of Hepatitis B

Key facts

- Hepatitis B is one of 5 viral hepatitides (named A to E)
- Exclusively transmitted through blood or other bodily fluids
- 257 million people are living with chronic Hepatitis B (WHO estimate in 2015)
- 887 000 deaths annually due to Hepatitis B infections; cirrhosis and hepatocellular carcinoma
- Hepatitis B can be prevented by vaccines that are safe, easily available and depending on the field of employment recommended

---

The Hepatitis B virus (HBV) is one of five known viruses described as hepatitis viruses, though, these viruses belong to different virus families. All entities summarized as hepatitis viruses primarily target the liver and cause viral hepatitis (liver infection). The majority of infections are asymptomatic or produce only non-specific symptoms such as anorexia, nausea and vomiting with pain localized in the right upper abdominal quadrant. Jaundice (icterus) known as a hallmark of liver infection tends to develop late, approximately 4 weeks after exposure and anicteric (no signs of jaundice) cases are also very common [1, 2].

HBV is a **blood-borne** infection transmitted by direct contact with either blood or genital secretions, as well as perinatal (mother to child at birth) transmission. Furthermore, HBV can survive on surfaces for at least seven days, thus transmission can also occur via contaminated objects e.g. needle-stick, cut with sharp objects (see also, **transmission of infection**). In the case of medical professionals of any field infections with blood-borne diseases most likely occur through injury. Consequently, Germany and Austria recognised HBV as an occupational hazard for health care personnel [3]. Should a skin breaking injury with a contaminated sharp occur, the probability of acquiring an infection with HBV is 30%. After entering the body and an average incubation period of 75 days, the virus replicates in the liver and sheds virus particles in large amounts into the blood. Consequently, viremia is prolonged, and the

blood of infected individuals is highly contagious. The subsequent immune response targets and destroys the host's liver cells. As HBV is 100 times more contagious as HIV and 1µl of blood may contain up to 100 infectious doses of HBV, immunization and post-exposure management are integral parts of workplace safety [1, 2, 4]. Hepatitis C (HCV) eluded identification until 1989 because the virus could not be cultured. The clinical symptoms are comparable to HBV and the same transmissions pathways are applied, though predominantly intravenous e.g. contaminated needles, drug use. Contrary to HBV there is no vaccination available [2].

The main route of transmission in the EU/EEA is sexual contact, while in high prevalence regions such as WHO Western Pacific Region perinatal is a major mode of transmission, due to advances in screening and sterile techniques infections via blood are rare but may occur when sharing razors or needles e.g. acupuncture, injecting drug use [1, 2, 5].

The European Centre of Disease Prevention and Control (ECDC) reports 4.7 million people living with chronic HBV and 3.9 million with chronic HBC within the European Union/European Economic Area (EU/EEA). When taking a closer look at the numbers 24 588 cases of HBV infection were reported for 2018, which corresponds to a crude rate of 6.0 cases per 100 000 population. Out of these cases, 10% were acute, 51% chronic, while the remaining 39% were reported as either unknown or not classifiable. Among the cases with complete information (614 acute/ 2 189 chronic) app. 1.5% could be attributed to occupational injury.

Needle-stick injuries are among frequent occupational injuries in medical professions. These injuries do not only occur during disposal, but also during use. To minimise risk puncture resistant disposal containers and different device safety feature were applied. Nevertheless, safer devices do not eradicate risk staff training. Strict adherence to safety and hygiene protocols are the most important elements in prevention [7].
Due to this prevalent occupational risk HBV vaccination is highly recommended in medical professions, as it provides good protection [6].

Bibliography:

[1] WHO: Fact Sheet Hepatitis B, 18.07.2019
[2] http://www.virology.uct.ac.za/vir/teaching/mbchb/hepatitis; Medical lecture University of Cape Town
[3] Wiedermann-Schmidt U: Impfung bei Gesundheitspersonal. ÖÄZ 23/24, 2016
[4] CDC: Recommendations and Reports, Updated U.S. Public Health Service Guidelines for the Management of occupational exposure to HBV, HCV, and HIV and recommendations for post-exposure prophylaxis, MMWR (50), No. RR-11, 2001
[5] WHO: Global Health Sector Strategy on viral Hepatitis 2016-2021, June 2016
[6] RKI: Epidemiologisches Bulletin 30/31, 2020
[7] Hepatitis B Annual Epidemiological Report for 2018, Surveillance Report by the European Centre for Disease Prevention and Control (ECDC)