

# Hepatitis B – current routes of transmission

*Niels Fisker*

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Official opponents: Professor, DMSc Peter Skinhøj, Head of Science, DMSc Kim Krogsgaard and DMSc Bente Garhn-Hansen.

Tutor: Court Pedersen.

Correspondence: Niels Fisker, Dept. of Paediatrics, Odense University Hospital, Sdr. Boulevard 29, 5000 Odense C, Denmark.

E-mail: niels.fisker@dadlnet.dk

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## ABSTRACT

The dissertation consists of four original papers and an overview. Studies were performed during my positions at the Department of Clinical Immunology (KIA), Odense University Hospital (OUH) during 1998-2002.

The aim was to examine current routes of HBV transmission through the combination of prevalence surveys and molecular epidemiological studies.

Among hospital employees (n=1,439, 67% health care workers (HCWs), the HBV prevalence was 1.6% [95% CI: 1.0%; 2.4%], and no associations to HCW or blood exposure were noted. Among pre-school children from day-care centres (n=588, 55% of non-Scandinavian origin) the HBV prevalence was 0.2% [0.0%; 1.0%].

In 2000-2001, 309 individuals were diagnosed with HBV infection at KIA, OUH. Twenty-nine per cent had acute infection (three times the number of notified cases). HBV DNA sequencing was possible in 125 cases and phylogenetic analysis proved HBV from injecting drug users (IDUs) to be identical or very closely related, while isolates from chronic cases in non-IDUs reflected the individual's ethnic origin. Among acute HBV infections acquired in Denmark, 78% were seen in IDUs and another 11% presumably followed contact with IDUs. No new cases of transmission from immigrants to ethnic Danes were found.

In 2002, a malignantly ill child was diagnosed with HBV infection. HBV DNA sequencing made relation to a previously treated HBV infected child probable. Outbreak analyses identified another six infected ward children and suggested that HBV were transmitted through central venous catheters e.g. following accidental contamination of multidose vials or other intravenous infusions.

The results support an increased prevalence of chronic HBV infection in Denmark related to immigration, but confirms HBV transmission to be very low even in possible risk groups as hospital employees and pre-school children living in an immigrant dominated neighbourhood. The Danish policy for HBV prevention has not been able to protect IDUs against HBV infection. As this group constitutes the main reservoir for the current HBV transmission, implementation of universal childhood HBV vaccination is suggested as the probable only feasible way to substantially decrease HBV transmission in Denmark. Even if such vaccination is implemented continued focus on high-risk groups and adherence to universal precautionary measures against blood borne transmission continue to be of utmost importance.