

# HBsAg positive mother and newborn

**HBsAg** (*Hepatitis B surface Antigen* i.e. Australian antigen) is the hepatitis B virus (HBV) surface antigen. Determination of HBsAg in serum is used to identify persons infected with HBV and to monitor the development of acute or chronic hepatitis B. HBsAg is positive in acute or chronic hepatitis B as well as in healthy carriers.<sup>[1]</sup>

## Hepatitis B screening in pregnancy

The presence of HBsAg in the blood is examined in all pregnant women, up to the **14th week of pregnancy**, with the aim of preventing vertical transmission of HBV infection from mothers with high HBV viremia to their children during childbirth. In newborns of HBsAg positive mothers, a combination of active and passive immunization is performed after the birth. In pregnant women with high HBV activity, the combined immunization would not be sufficiently effective, therefore in indicated cases, antiviral treatment (tenofovir, telbivudine) is administered during the third trimester.<sup>[1]</sup>

## Newborn of HBsAg positive mother

The fetus/newborn can become infected by **hepatitis B** from the mother transplacentally during pregnancy or childbirth, **during childbirth** through contact with infected amniotic fluid, vaginal secretions or the mother's blood, possibly postnatal (by blood transfusion, fecal-oral). The risk of transmission of infection is many times higher if the mother is at the same time HBeAg positive (a marker of virus replication) and anti-HBe negative (the risk of transmission is about 70-90%, while for HBsAg positivity with HBeAg negativity the risk of transmission is 5-20%).<sup>[2]</sup> Vaginal birth does not increase the risk of HBV transmission.<sup>[3]</sup>

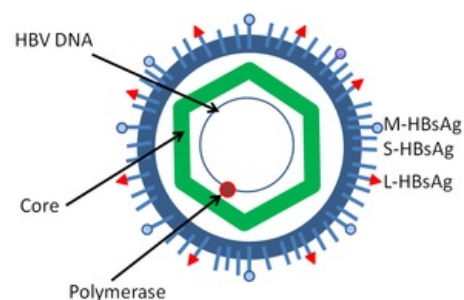
Hepatitis B has a long incubation period (45-160 days), therefore it is clinically silent in the newborn period. Even in infancy, it rarely manifests clinically, jaundice (icterus) is present in less than 3% of those infected. The clinical picture is variable, it includes:

- mild transient acute infection;
- chronic active hepatitis with/without cirrhosis;
- chronic persistent hepatitis;
- fulminant fatal hepatitis B (rare);
- hepatocellular carcinoma in older children and young adults.<sup>[2]</sup>

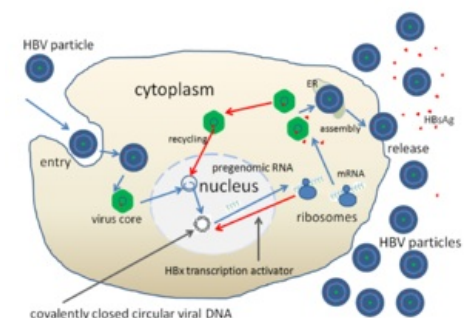
In the perinatal period, HBsAg is not tested in umbilical cord or venous blood in children.<sup>[3]</sup> In the later period, HBsAg and anti-HBc-IgM (indicator of acute infection) can be tested in children, possibly HBV DNA (quantification of viral load).<sup>[2]</sup>

According to the valid regulation, all children of HBsAg positive mothers are vaccinated against hepatitis B within 24 hours after the birth. Hepatitis B **immune globulin (HBIG)** is administered i.v. and **1st dose of HBV vaccine i.m.** to the external side of the thigh, then continue according to the relevant vaccination calendar. Afterwards, it is advisable to monitor children and mothers in the hepatology outpatient clinics of infectious diseases departments (the effect of vaccination can be verified by examining the child's anti-HBs and HBsAg after completing the vaccination schedule<sup>[2]</sup>). HBsAg can be detected in breast milk, but breastfeeding is not contraindicated in HBsAg positive mothers, does not increase the risk of infection in vaccinated children.<sup>[3][1]</sup>

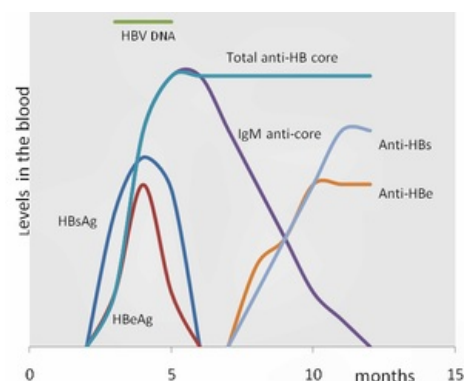
In the Czech Republic, the incidence and prevalence of hepatitis B (HBV) is low, the prevalence is higher in people from Vietnam, China, Russia and Ukraine.<sup>[1]</sup> Vaccination against hepatitis B has been part of the vaccination calendar in the Czech Republic since 2001.



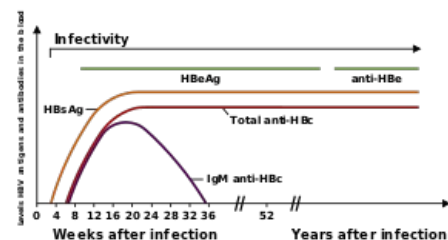
Simplified structure of hepatitis B virus.



Schema of hepatitis B virus replication.



Antigens and antibodies detectable in blood after acute hepatitis B virus infection.



Antigens and antibodies detectable in blood in chronic hepatitis B virus infection.

## Links

## Related articles

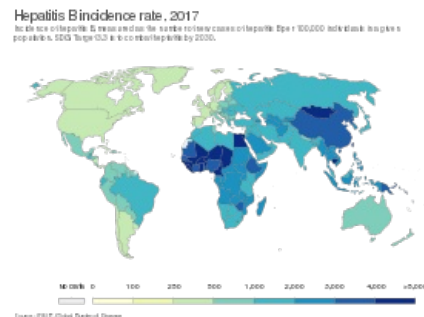
- Hepatitis B
- Infections threatening the fetus: Congenital syphilis • Congenital toxoplasmosis • Congenital listeriosis • HIV infection in pregnancy • The importance of chlamydia and mycoplasmas in perinatology • Congenital Cytomegalovirus infection • Adnate HSV infection
- Infections in the neonatal period

## External links

- Doporučený postup České neonatologické společnosti - Postup péče o novorozence HBsAg pozitivních a anti-HCV pozitivních matek (2007) ([http://www.neonatologie.cz/fileadmin/user\\_upload/080519/HBsAg-a-HCV.pdf](http://www.neonatologie.cz/fileadmin/user_upload/080519/HBsAg-a-HCV.pdf))
- Doporučený postup České gynekologické a porodnické společnosti (2015) - Dispenzární péče v těhotenství (<http://www.perinatologie.cz/dokumenty/doc/doporučene-postupy/p-2015-zasady-dispenzarni-pecce-ve-fyziologicke-m-tehotenstvi.pdf>)
- Zero To Finals: Understanding Hepatitis B Serology Results (didactic video) ([https://www.youtube.com/watch?v=h\\_9EBVPADNE](https://www.youtube.com/watch?v=h_9EBVPADNE))

## Reference

1. HUSA, P. Léčba infekce virem hepatitidy B (HBV) před plánovaným otěhotněním, v těhotenství a při kojení. *Interní Med* [online]. 2016, y. 18, vol. 1, p. 24-26, Available from <<https://www.internimedicina.cz/pdfs/int/2016/01/06.pdf>>.
2. GOMELLA, TL. *Neonatology : Management, Procedures, On-Call Problems, Diseases, and Drugs*. 7. edition. Lange, 2013. pp. 640-641. ISBN 978-0-07-176801-6.
3. PODEŠVOVÁ, H. *Postup péče o novorozence HBsAg pozitivních a anti-HCV pozitivních matek* [online]. Česká neonatologická společnost, [cit. 2018-08-08]. <[http://www.neonatologie.cz/fileadmin/user\\_upload/080519/HBsAg-a-HCV.pdf](http://www.neonatologie.cz/fileadmin/user_upload/080519/HBsAg-a-HCV.pdf)>.



Hepatitis B incidence. Number of new cases per 100,000 population.