

Table 35-2. Nomenclature and definitions of hepatitis viruses, antigens, and antibodies.

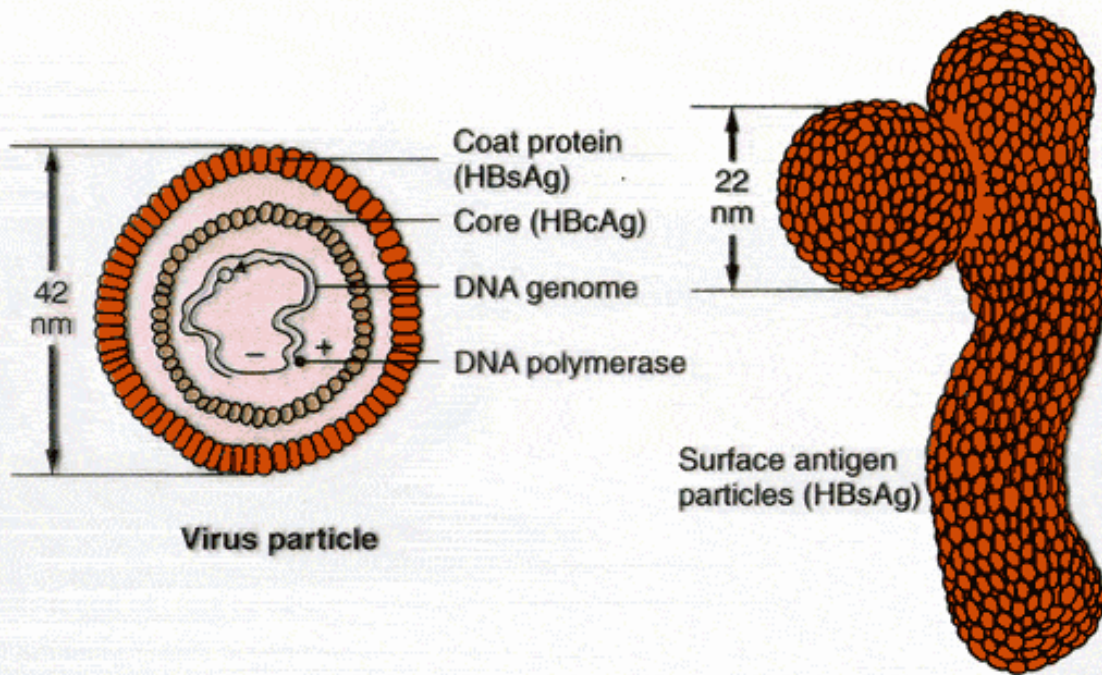
Disease	Component of System	Definition
Hepatitis A	HAV	Hepatitis A virus. Etiologic agent of infectious hepatitis. A picornavirus, the prototype of a new genus, <i>Hepatovirus</i> .
	Anti-HAV	Antibody to HAV. Detectable at onset of symptoms; lifetime persistence.
	IgM anti-HAV	IgM class antibody to HAV. Indicates recent infection with hepatitis A; positive up to 4-6 months after infection.
Hepatitis B	HBV	Hepatitis B virus. Etiologic agent of serum hepatitis (long-incubation hepatitis). A hepadnavirus.
	HBsAg	Hepatitis B surface antigen. Surface antigen(s) of HBV detectable in large quantity in serum; several subtypes identified.
	HBeAg	Hepatitis B e antigen. Soluble antigen; associated with HBV replication, with high titers of HBV in serum, and with infectivity of serum.
	HBcAg	Hepatitis B core antigen.
	Anti-HBs	Antibody to HBsAg. Indicates past infection with and immunity to HBV, presence of passive antibody from HBIG, or immune response from HBV vaccine.
	Anti-HBe	Antibody to HBeAg. Presence in serum of HBsAg carrier suggests lower titer of HBV.
	Anti-HBc	Antibody to HBcAg. Indicates infection with HBV at some undefined time in the past.
	IgM anti-HBc	IgM class antibody to HBcAg. Indicates recent infection with HBV; positive for 4-6 months after infection.
Hepatitis C	HCV	Hepatitis C virus, a common etiologic agent of posttransfusion hepatitis. A flavivirus.
	Anti-HCV	Antibody to HCV.
Hepatitis D	HDV	Hepatitis D virus. Etiologic agent of delta hepatitis; causes infection only in presence of HBV.
	HDAg	Delta antigen (delta-Ag). Detectable in early acute HDV infection.
	Anti-HDV	Antibody to delta-Ag (anti-delta). Indicates past or present infection with HDV.
Hepatitis E	HEV	Hepatitis E virus. Enterically transmitted hepatitis virus. Causes large epidemics in Asia and North Africa; fecal-oral or waterborne transmission. Perhaps a calicivirus.
Immune globulins	IG	Immune globulin USP. Contains antibodies to HAV; no antibodies to HBsAg, HCV, or HIV.
	HBIG	Hepatitis B immune globulin. Contains high titers of antibodies to HBV.

BOX 62-3

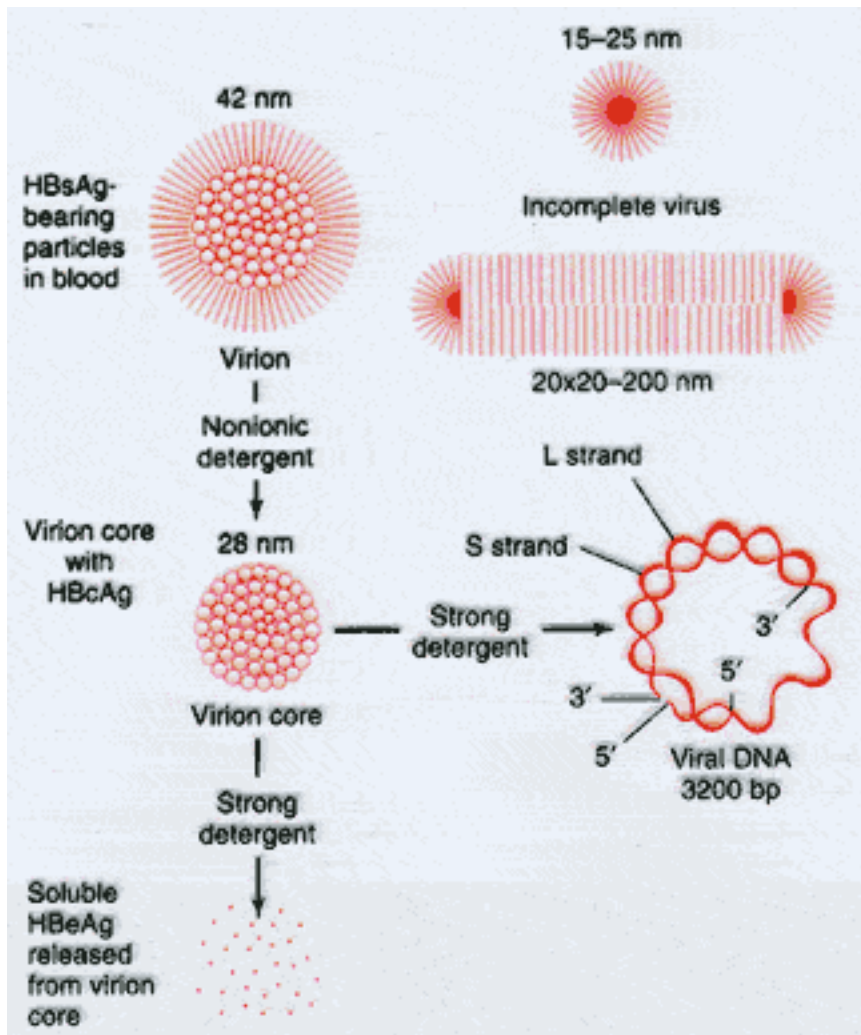
Unique Features of Hepadnaviruses

Virus has **enveloped** virion containing **partially double-stranded, circular DNA** genome.
Replication is through a circular **RNA intermediate**.
Virus encodes and carries a **reverse transcriptase**.
Virus encodes several proteins (HBsAg [L, M, S], HBe/HBc) that share genetic sequences but with different in-frame start codons (AUG).
HBV has a strict tissue tropism to the liver.
HBV-infected cells produce and release large amounts of HBsAg particles lacking DNA.
The HBV genome can integrate into the host chromosome.

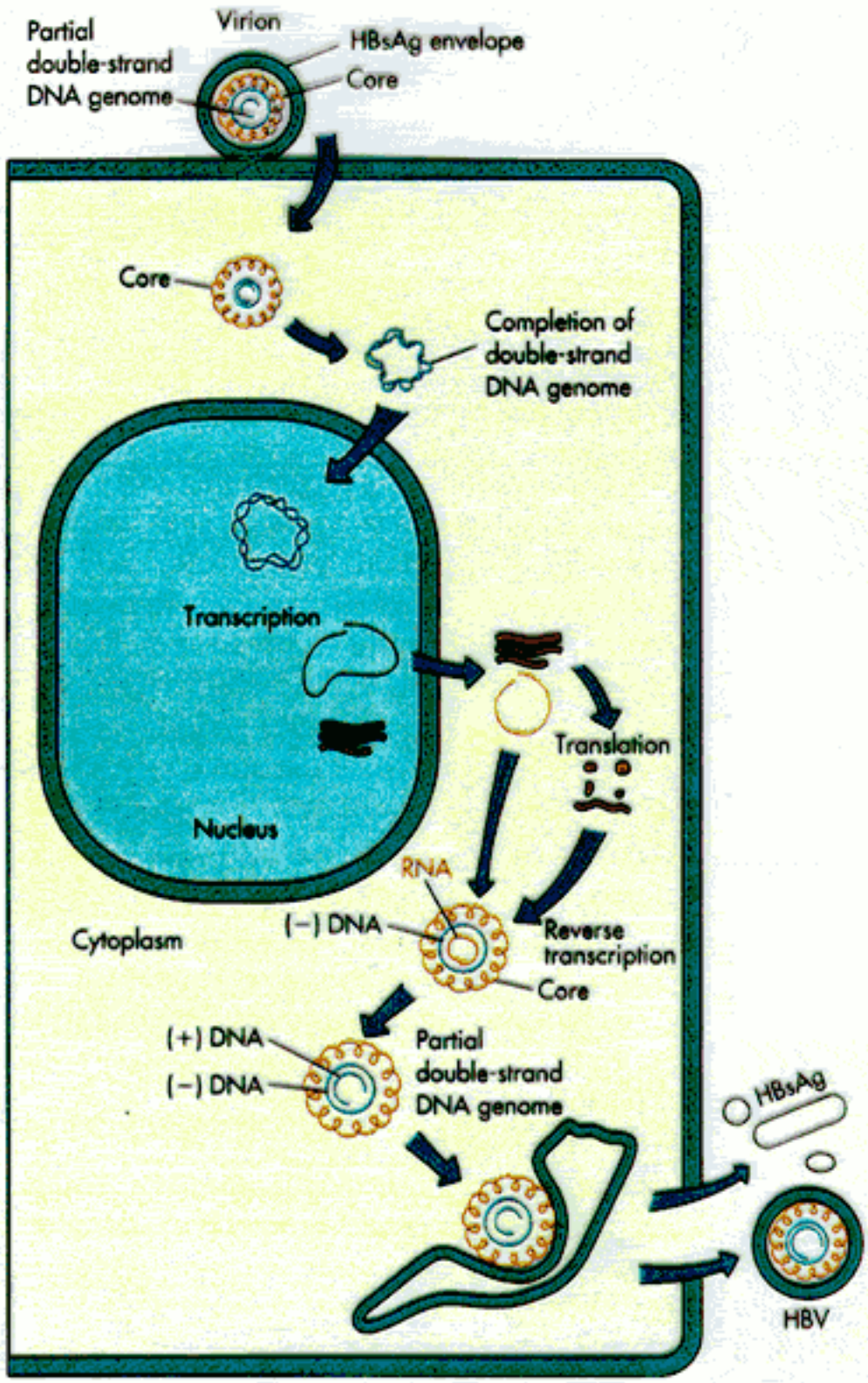
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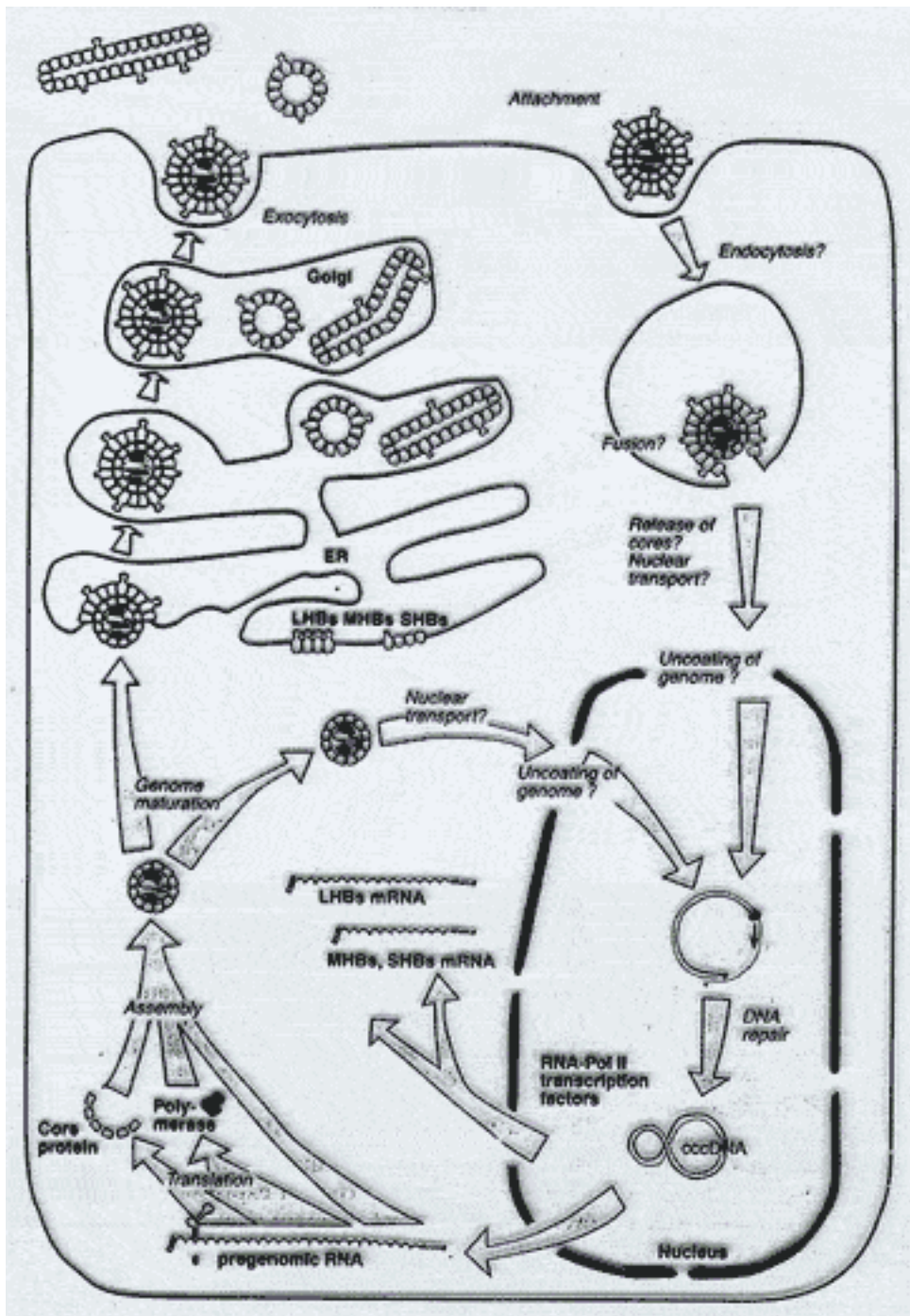


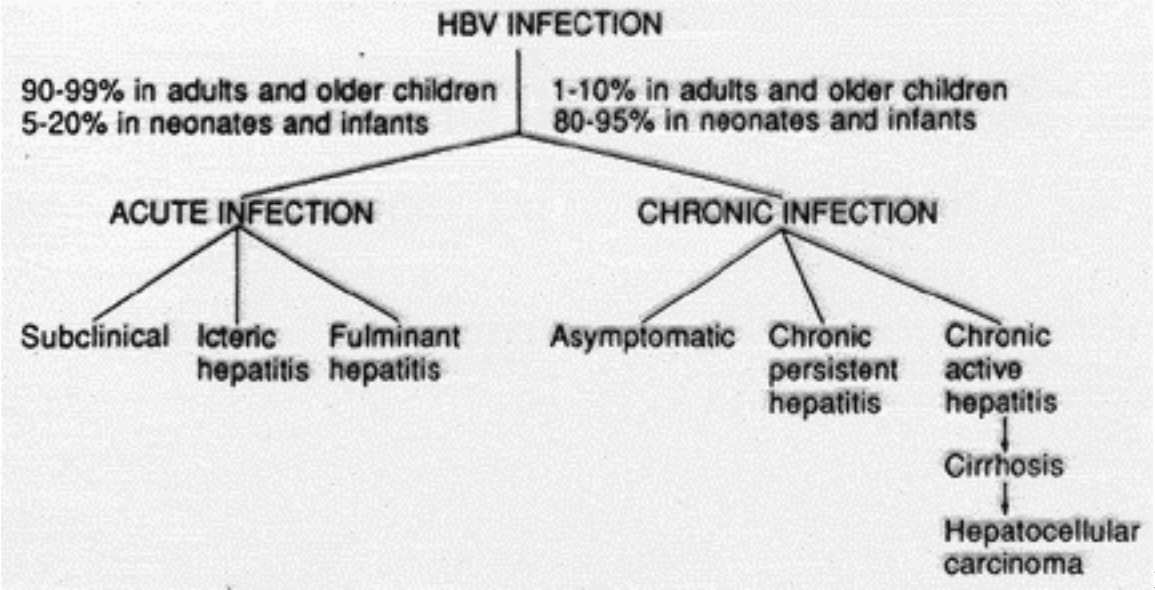
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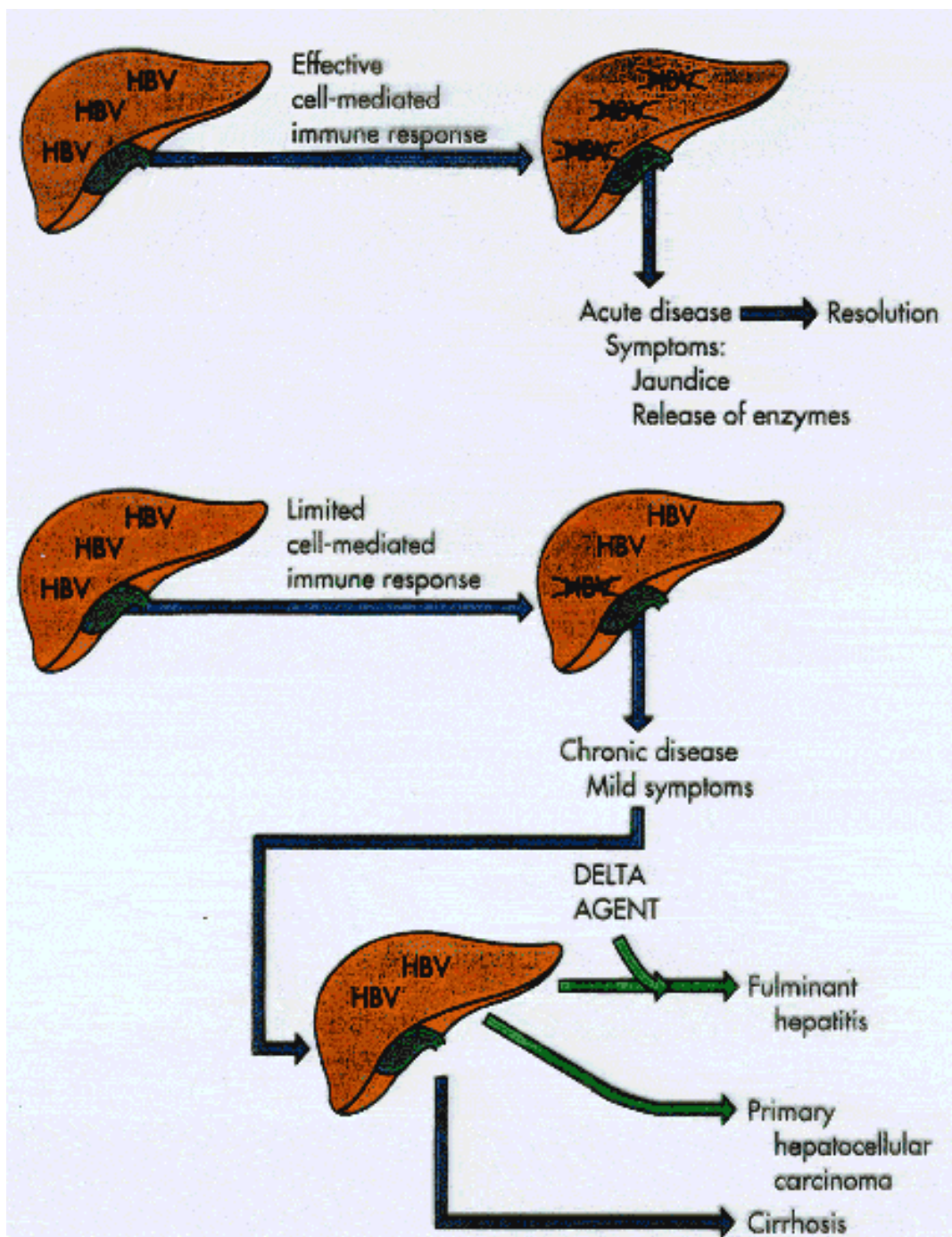


FIGURE 62-7 Major determinants of acute and chronic HBV infection. HBV infects the liver but does not cause direct cytopathology. Cell-mediated immune lysis of infected cells, potentially triggered by interferon action, produces the symptoms and resolves the infection. Insufficient immunity can lead to chronic disease. Chronic HBV disease predisposes a person to more serious outcomes. Purple arrows indicate symptoms; green arrows indicate a possible outcome.

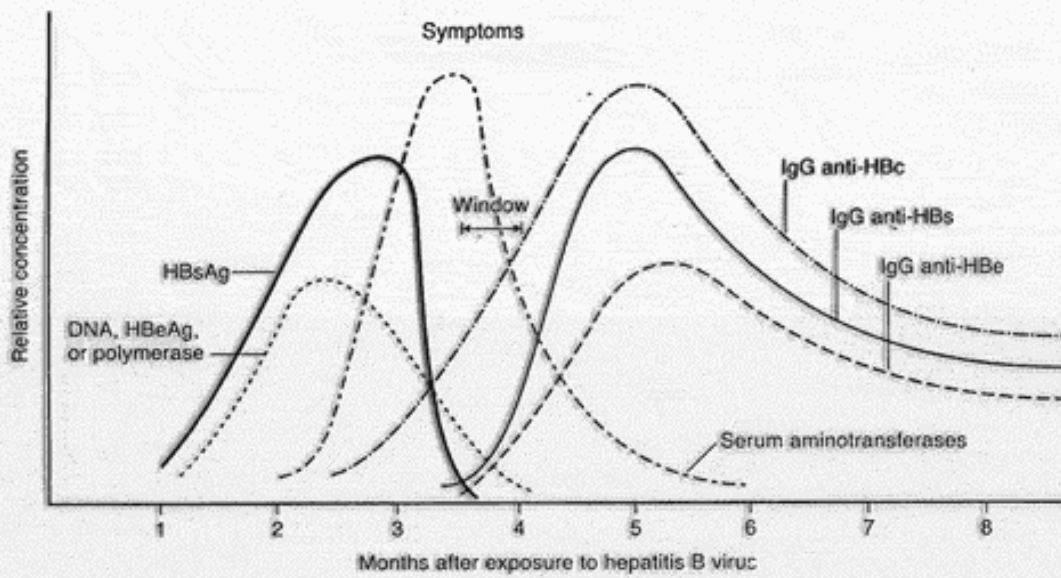
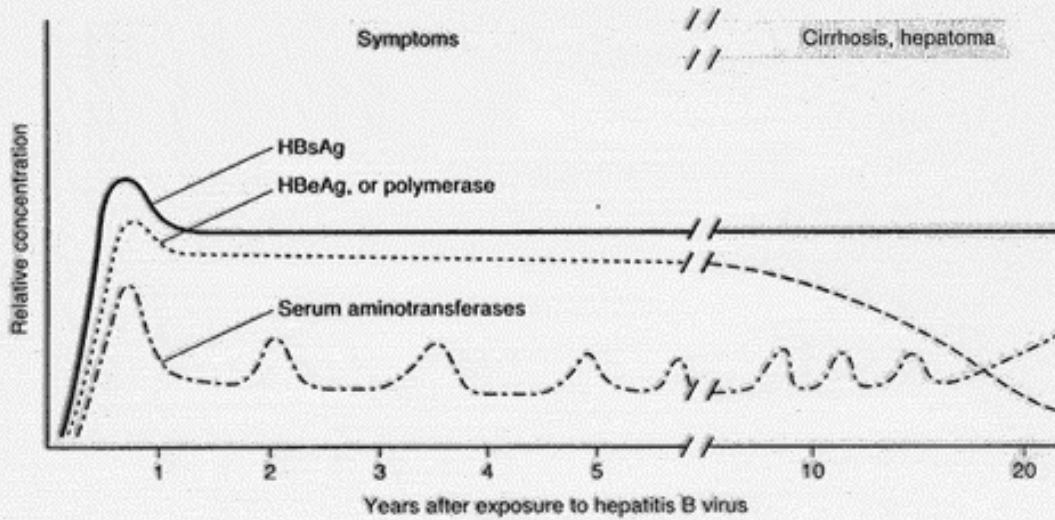


Figure 42.4. Typical course of acute hepatitis B virus infection.



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Hepatitis B Serology						
	Anti-HBs	HBsAg	Anti-HBc IgM	Anti-HBc IgG	HBeAg	HBeAb
Acute hepatitis B	-	+	+	+	+	-
Hepatitis B carrier	-	+	-	+	-	+
Post hepatitis B infection	+	-	-	+	-	-
Hepatitis B vaccination	+	-	-	-	-	-

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Table 35–7. Transmission of hepatitis B virus and spectrum of outcomes to infection.

Transmission¹	Vertical (Asia)	Contact (Africa)	Parenteral, Sexual
Age at infection	Newborns, infants	Young children	Teenagers, adults
Recovery from acute infection	5%	20%	90–95%
Progression to chronic infection	95%	80%	5–10%
Chronic carriers ² (% of total population)	10–20%	10–20%	0.5%

¹Vertical and contact-associated transmission occurs in endemic countries; parenteral and sexual transmission are main modes in nonendemic countries.

²At high risk of developing hepatocellular carcinoma.

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