

VIRAL HEPATITIS

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VIRAL HEPATITIS

NON-HEPATITIS VIRUSES

- Epstein Barr virus (mononucleosis)
- Cytomegalovirus
- Herpes simplex virus
- Varicella zoster (chicken pox)
- Measles
- Rubella
- Coxsackie
- Influenza

Most commonly seen in:

- Children
- Immune suppressed
 - HIV
 - Transplant recipients

	Hepatitis A	Hepatitis B	Hepatitis C	Hepatitis D	Hepatitis E
Virus					
Nucleic acid	RNA	<u>DNA</u>	RNA	RNA	RNA
Size (diameter)	27 nm	42 nm	30-38 nm	35 nm	27 nm
Incubation	2-4 w	4-20 w	2-26 w	6-9 w	3-8 w
Spread					
Faeces	Yes	No	No	No	Yes
Blood	Uncommon	Yes	Yes	Yes	No
Saliva	Yes	Yes	Yes	?	?
Sexual	Uncommon	Yes	Uncommon	Yes	?
Vertical	No	Yes	Uncommon	Yes	No
Chronic infection	No	Yes	Yes	Yes	No
Prevention					
Active	Vaccine	Vaccine	No	Prevented by	No
Passive	Immune serum globulin	Hyperimmune serum globulin	No	<u>hepatitis B</u> vaccination	No

Five Causes of Acute Viral Hepatitis

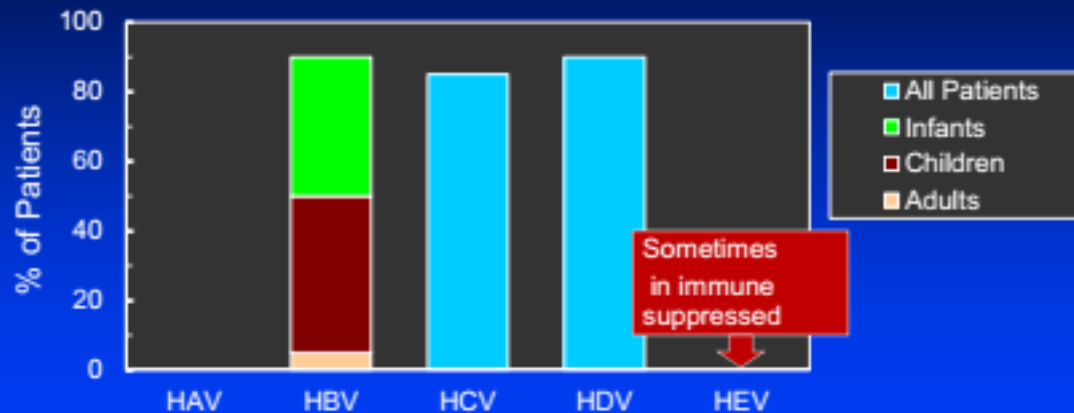
HEPATITIS VIRUS	SIZE (nm)	GENOME	SPREAD	INCUBATION PERIOD (DAYS)	FATALITY RATE	CHRONIC RATE	ANTIBODY
A	27	RNA	Fecal-oral	15–45 mean 25	1%	None	Anti-HAV
B	45	DNA	Parenteral Sexual	30–180 mean 75	1%	2–7%	Anti-HBs Anti-HBc Anti-HBe
C	60	RNA	Parenteral	15–150 mean 50	<0.1%	70–85%	Anti-HCV
D (delta)	40	RNA	Parenteral Sexual	30–150	2–10%	2–7% 50%	Anti-HDV
E	32	RNA	Fecal-oral	30–60	1%	None	Anti-HEV

Hepatitis A No chronic infection

Chronic Hepatitis E Just in immune suppressed patient

	Hepatitis A	Hepatitis E
Virus		
Nucleic acid	RNA	RNA
Size (diameter)	27 nm	27 nm
Incubation	2-4 w	3-8 w
Spread		
Faeces	Yes	Yes
Blood	Uncommon	No
Saliva	Yes	?
Sexual	Uncommon	?
Vertical	No	No
Prevention		
Active	Vaccine	No
Passive	Immune serum globulin	No

VIRAL HEPATITIS CHRONIC INFECTION



ML Shiffman. Clin Liver Dis. 2010; 14:75-91.
A Regev and ER Schiff. Curr Opin Gastroenterol. 1999; 15:234-239.
U Navaneethan, et al. Liver Int. 2008; 28:1190-9

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Liver Institute of Virginia

	Hepatitis B	Hepatitis C	Hepatitis D
Virus			
Nucleic acid	<u>DNA</u>	RNA	RNA
Size (diameter)	42 nm	30-38 nm	35 nm
Incubation	4-20 w	2-26 w	6-9 w
Spread			
Faeces	No	No	No
Blood	Yes	Yes	Yes
Saliva	Yes	Yes	?
Sexual	Yes	Uncommon	Yes
Vertical	Yes	Uncommon	Yes
Chronic infection	Yes	Yes	Yes
Prevention			
Active	Vaccine	No	Prevented by
Passive	Hyperimmune globulin	No	<u>hepatitis B vaccine</u>

Acute hepatitis

- Acute viral hepatitis(A, B, C, D ,E)
- Drugs induced hepatitis
- Alcoholic acute hepatitis
- Toxic hepatitis

VIRAL HEPATITIS MODES OF INFECTION

	HAV	HEV	HBV	HCV	Other
Food and water	Yes	Yes			
Seafood	Yes				
Person-person	Yes				Yes
IV drug use			Yes	Yes	
Blood transfusion			Rare	Rare	CMV
Men-sex-men	Yes		Yes		
Heterosexual activity			Yes		
Vertical transmission			Yes		

Adapted from: A Regev and ER Schiff
Gut Opin Gastroenterol. 1999; 15:234-239

VIRAL HEPATITIS PRODROME

- Flu-like symptoms
 - Myalgias
 - Arthralgias
 - Fatigue
 - Nausea/vomiting
 - Loss of appetite
 - Fever may occur
- Mild tenderness over the liver
- Elevation in serum ALT
- Lasts for 3-5 days
- Serologic studies typically positive

A Regev and ER Schiff
Curr Opin Gastroenterol. 1999; 15:234-239.

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VIRAL HEPATITIS EXTRAHEPATIC MANIFESTATIONS

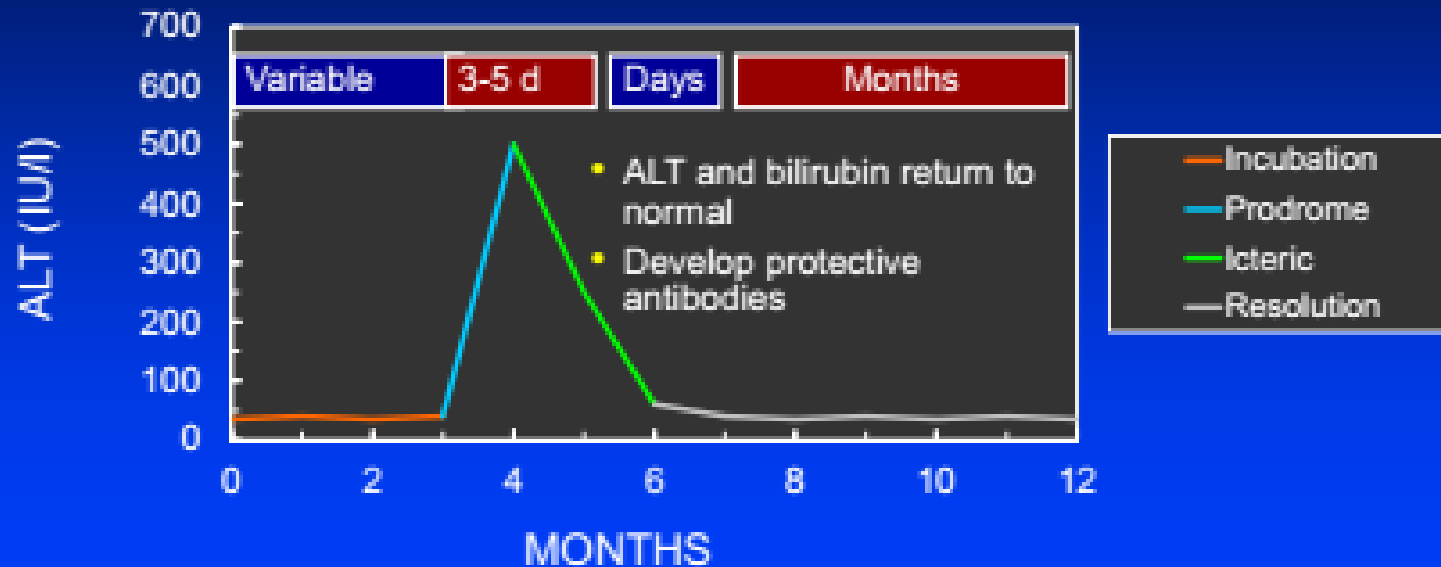
HAV	HBV	HCV	HEV
Arthritis Adult Still disease Aplastic anemia Red cell aplasia Interstitial nephritis Acute tubular necrosis Polymyositis Rhabdomyolysis	Cryoglobulinemia Serum sickness Glomerulonephritis Polyarthritis PAN Bullous Pemphigoid Lichen planus Guillian Barre	Cryoglobulinemia Glomerulonephritis Type 2 DM PCT B cell NHL Lichen planus Polyneuropathy Vasulitis	Pancreatitis Guillian-Barre Neuralgic amyotrophy Hemolytic anemia Aplastic anemia Cryoglobulinemia Glomerulonephritis Thyroiditis Myocarditis Myositis

ML Shiffman. Clin Liver Dis. 2010; 14:75-91.
 A Regev and ER Schiff. Curr Opin Gastroenterol. 1999; 15:234-239.
 N Kamar N, et al. Liver Int. 2016; 36:467-72

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VIRAL HEPATITIS PHASES OF ACUTE DISEASE



Serologic Diagnosis of Acute Hepatitis

DIAGNOSIS	SCREENING ASSAYS	SUPPLEMENTAL ASSAYS
Hepatitis A	IgM anti-HAV	None needed
Hepatitis B	HBsAg, IgM anti-HBc	HBeAg, anti-HBe HBV DNA
Hepatitis C	Anti-HCV by EIA	HCV RNA by PCR; anti-HCV by Immunoblot
Hepatitis D	HBsAg	Anti-HDV
Hepatitis E	History	Anti-HEV
Mononucleosis	History, white blood cell differential counts	Monospot test Heterophil antibody
Drug-induced hepatitis	History	

COMPLICATIONS OF ACUTE VIRAL HEPATITIS

- ▣ Acute liver failure
- ▣ Cholestatic hepatitis
- ▣ Aplastic anaemia
- ▣ Chronic liver disease and cirrhosis (B and C)
- ▣ Relapsing hepatitis

Treatment of Acute viral hepatitis A

- ▣ Prevention
- ▣ Prevention
- ▣ Prevention
- ▣ Prevention
- ▣ Prevention
- ▣ Prevention
- ▣ Prevention
- ▣ Prevention

Managmemnt

Avoid Sedatives and narcotics.

No specific dietary modifications are needed

Elective surgery should be avoided

Not Just



HAV

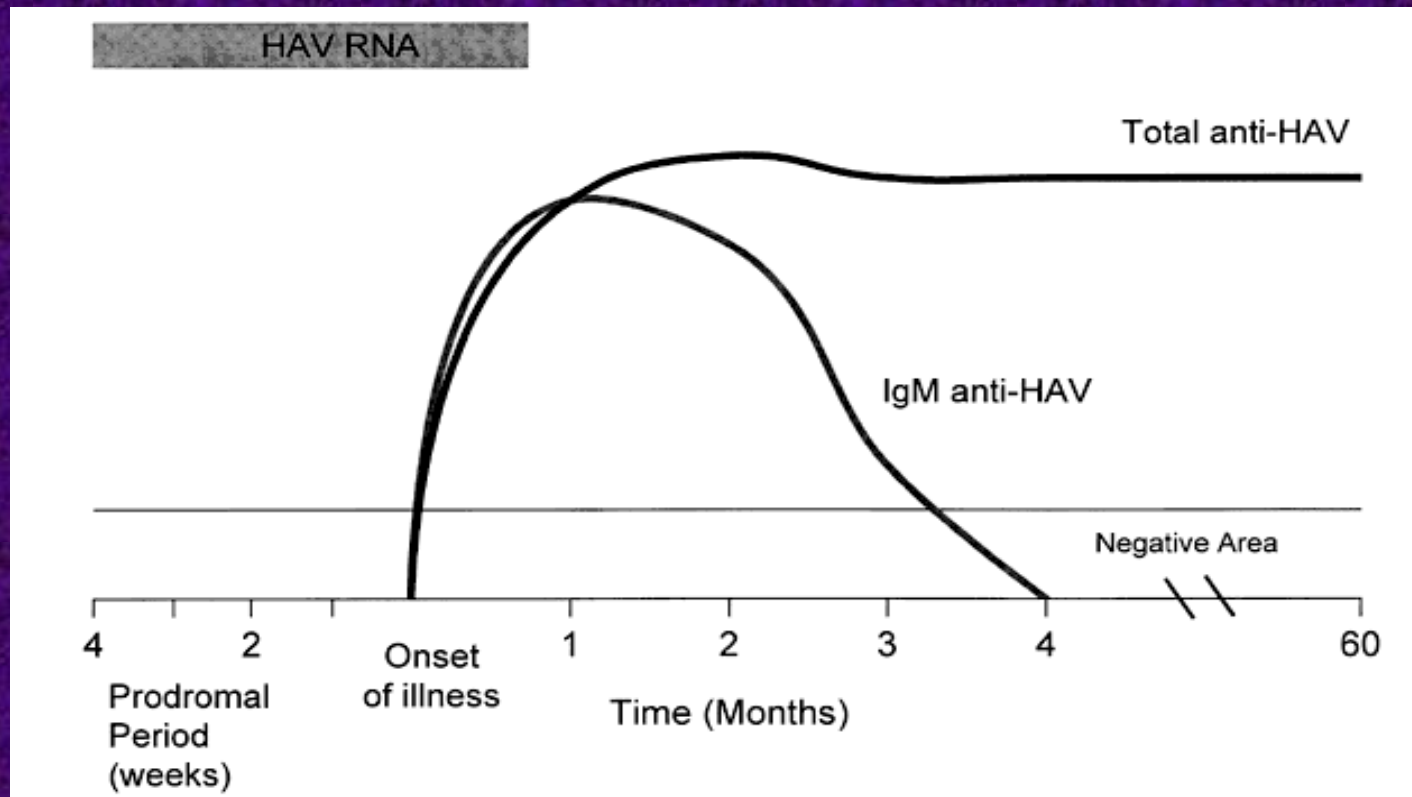
- ▣ excrete the virus in faeces for about 2-3 weeks **before** symptoms
2 weeks after
- ▣ May be asymptomatic, so up to 30% of adults will have serological evidence of past infection but give no history of jaundice.
- ▣ In occasional outbreaks water and shellfish have been the vehicles of transmission

Anti-HAV

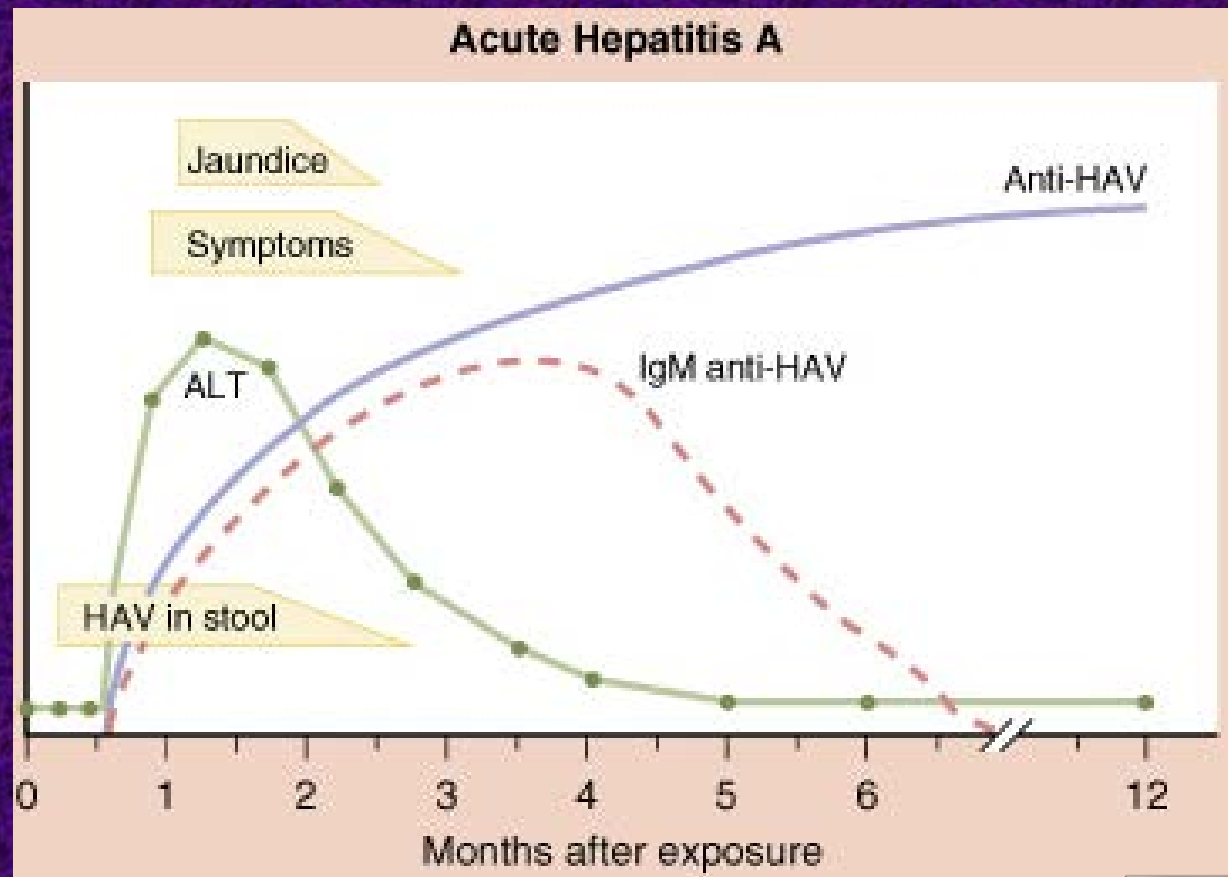
HAV is only present in the blood transiently during the incubation period. the virus cannot be grown readily.

Anti-HAV IgM type, is already present in the blood at the onset of the clinical illness and is diagnostic of an acute HAV infection.

الاختبارات المصلية لالتهاب الكبد الفيروسي A الحاد

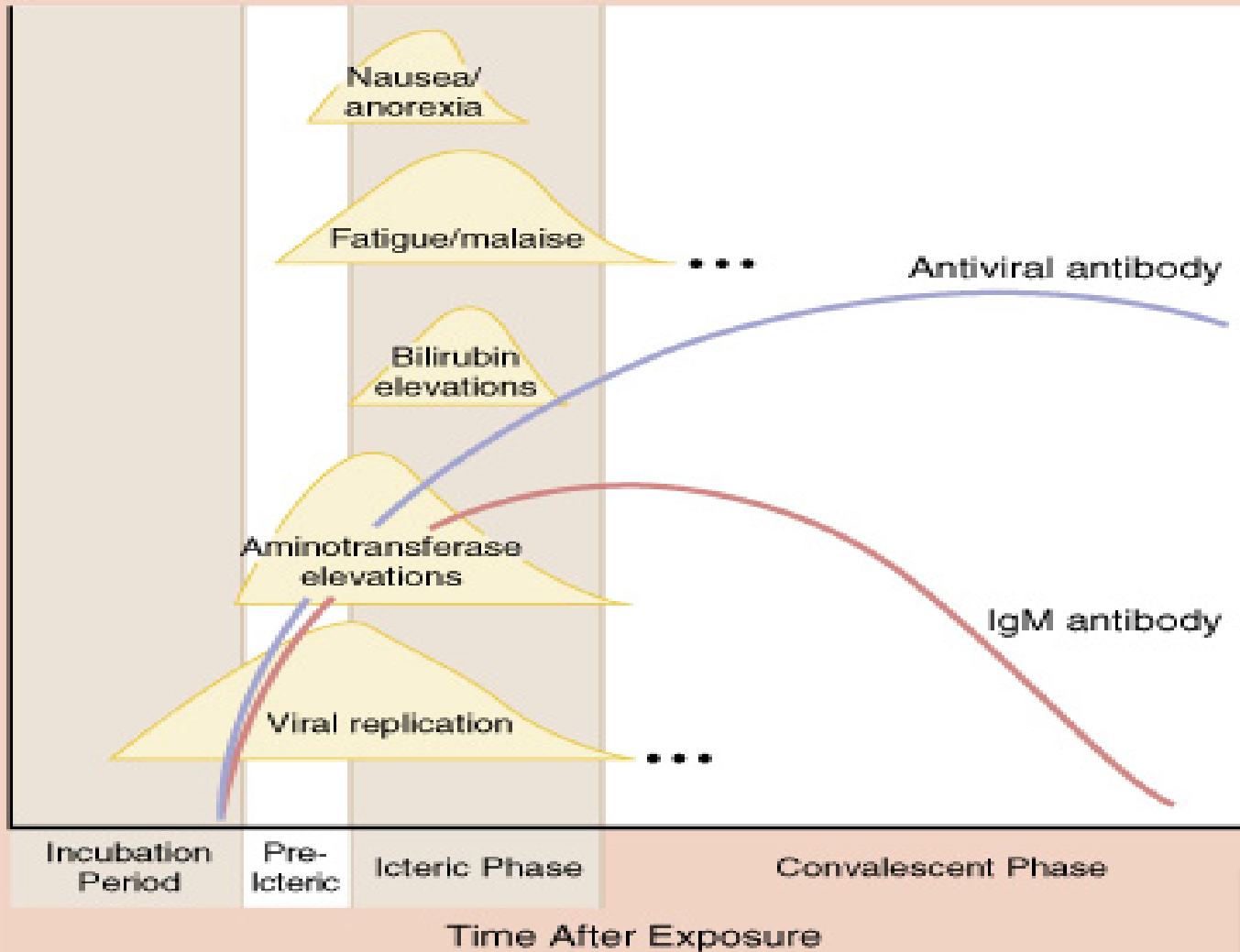


الاختبارات المصلية لالتهاب الكبد الفيروسي الحاد



الشكل السريري الوصفي لالتهاب الكبد الفيروسي الحاد

Acute Viral Hepatitis



Investigation

Anti-HAV

HAV Blood

HAV stool

Anti-HAV of IgM type

diagnostic of an acute HAV infection.

Investigation

Diagnostic of an acute HAV infection

Anti-HAV of IgM type

Anti-HAV of IgG type

is of no diagnostic value

-it can be used to measure the prevalence of HAV infection.

Its presence indicates immunity to HAV

Prognosis

- ▣ Acute liver failure complicates acute hepatitis A in only 0.1% of cases
- ▣ chronic infection does not occur.
- ▣ However, HAV infection in patients with chronic liver disease may be life-threatening disease.

Immunization HAV

should be considered for individuals with

-chronic hepatitis B or C infections.

-particular risk such as

1-close contacts

2- Elderly

3-Those with other major disease

4- ?pregnant women

5- People travelling to endemic areas

Route of transmission	Risk of chronic infection
Horizontal transmission	10%
Injection drug use	
Infected unscreened blood products	
Tattoos/acupuncture needles	
Sexual (homosexual and heterosexual)	
Vertical transmission	90%
HbsAg-positive mother	

Global Burden of Viral Hepatitis (Estimates)

- ▣ 2000 million (2 billion) infected with hepatitis B (> 250 million chronically)
- ▣ 150 million chronically infected with hepatitis C
- ▣ ~800,000 deaths annually – hepatitis B+C

Hepatitis C prevalence in people who inject drugs

People who inject drugs – the most affected population group

Prevalence estimates

30% to 98% in EU countries (2002)

21% to 86% in 9 EU countries (2012)

Sources: Roy K, et al 2002. Monitoring hepatitis C virus infection among injecting drug users in the European Union: a review of the literature. *Epidemiology & Infection*. 129: 577-85; Rony M, et al 2012. Hepatitis C prevalence in injecting drug users in Europe, 1990-2007: impact of study recruitment setting. *Epidemiology & Infection*