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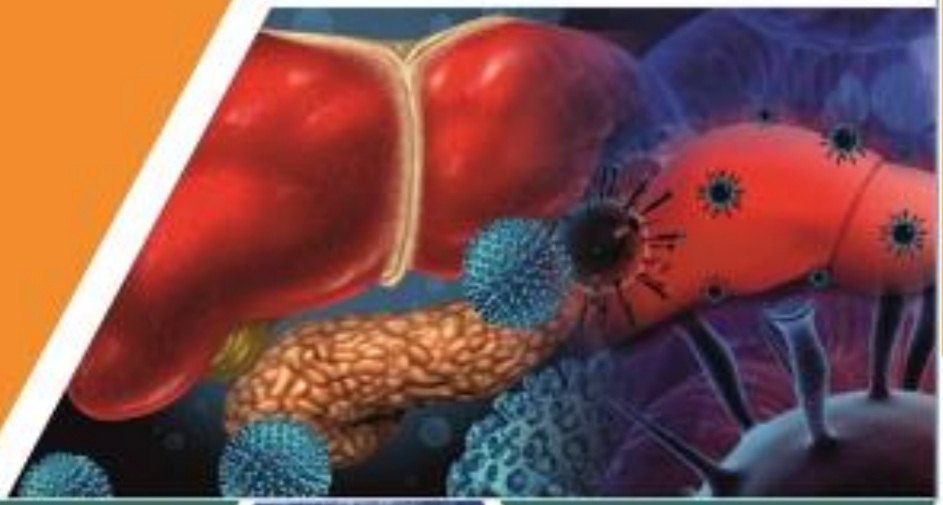
PROJECT PRAKASH

Programmed Approach to Knowledge and Sensitization on Hepatitis

HEPATITIS INDUCTION PROGRAM

FOR DOCTORS



OVERVIEW & EPIDEMIOLOGY OF VIRAL HEPATITIS

Dr. Archana R.
Asst. Professor,
Epidemiology, ILBS

INSTITUTE OF LIVER & BILIARY SCIENCES, NEW DELHI
www.ilbs.in

INSTITUTE OF LIVER & BILIARY SCIENCES, NEW DELHI

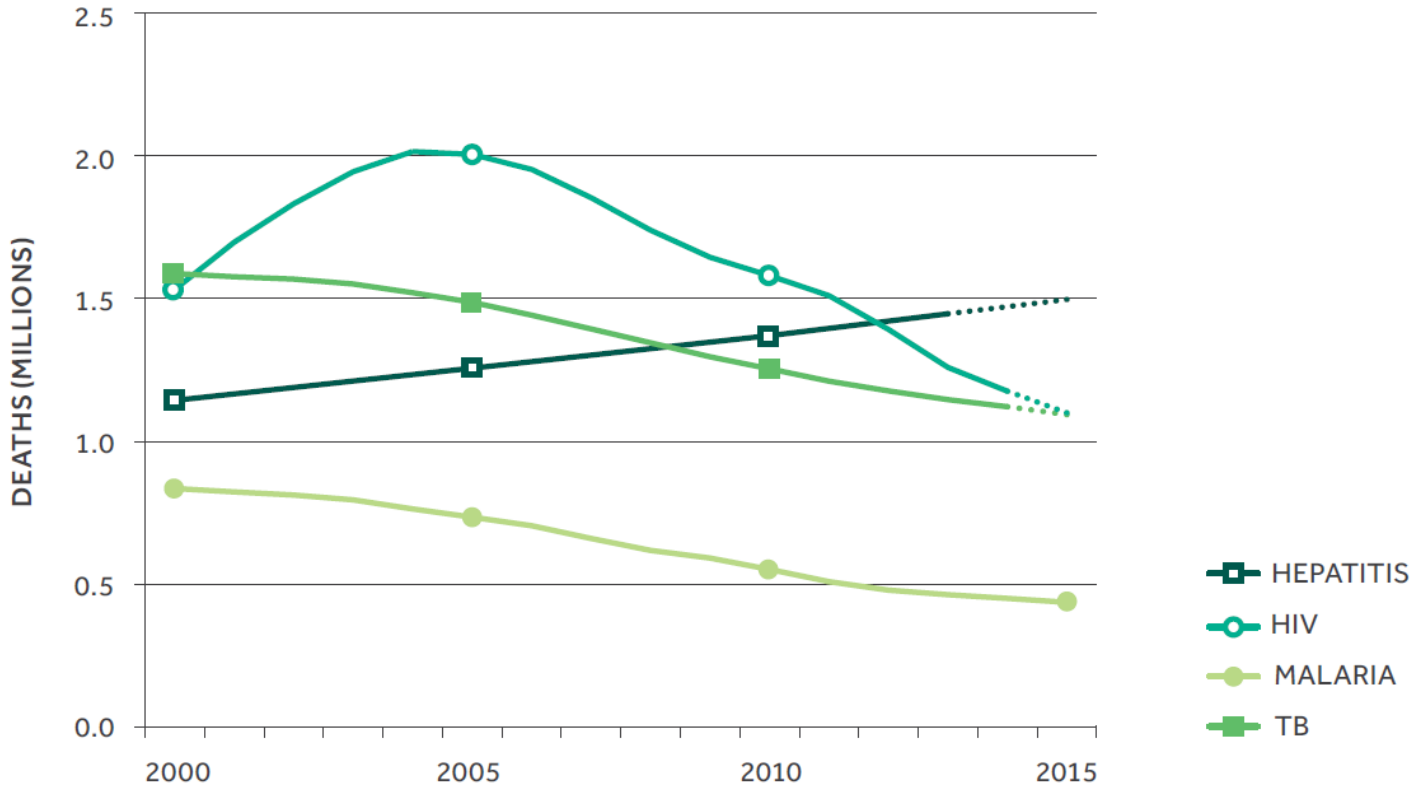
Viral Hepatitis- an overview

Sustainable Development Goals (SDGs)

GOAL 3.3

By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Global Number of deaths due to HIV, Hepatitis , Malaria and TB (2000-2015)

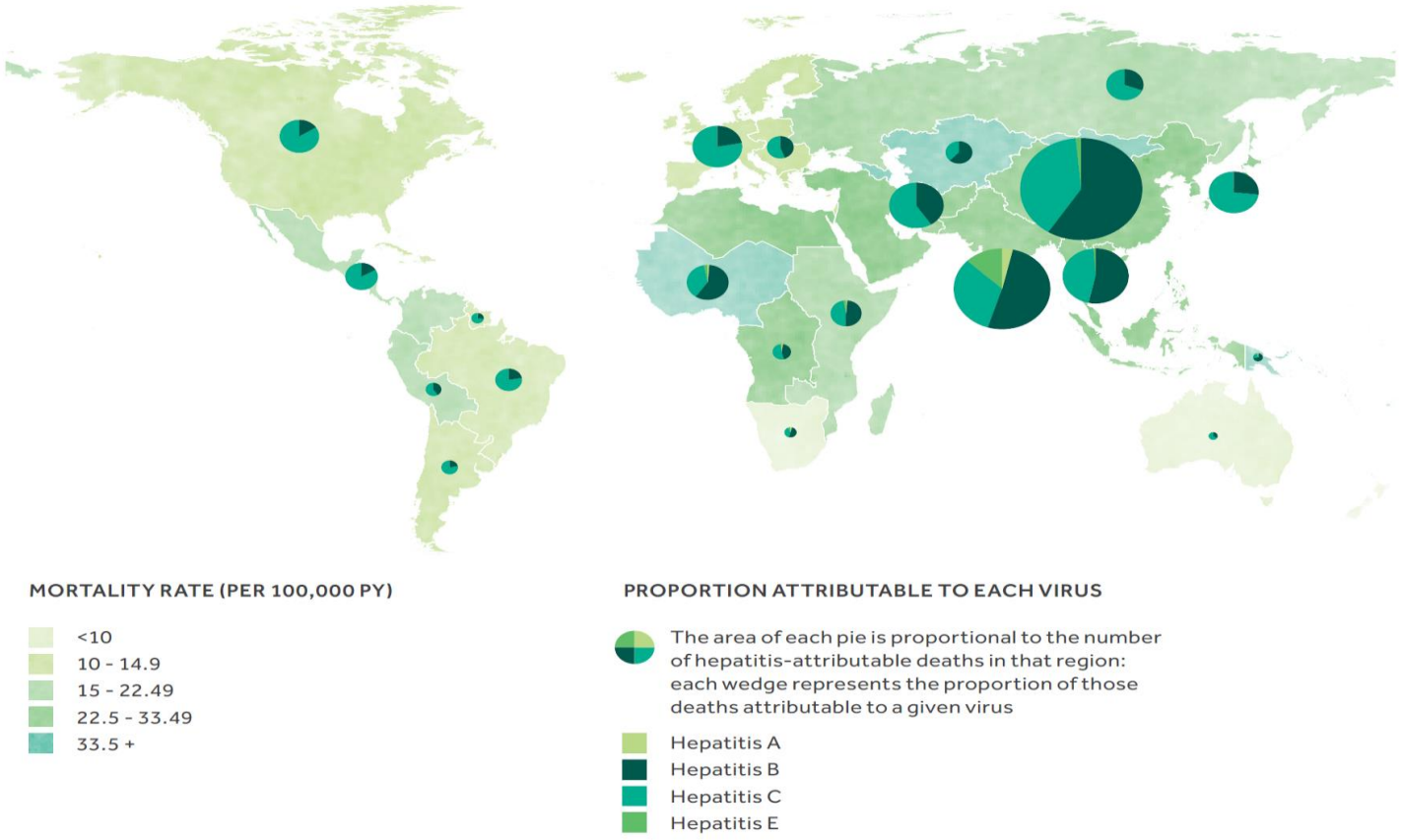


Source: Global Burden of Disease and WHO/UNAIDS estimates, see http://ihmeuw.org/3pms, http://ihmeuw.org/3pmt (accessed 2 April 2016).

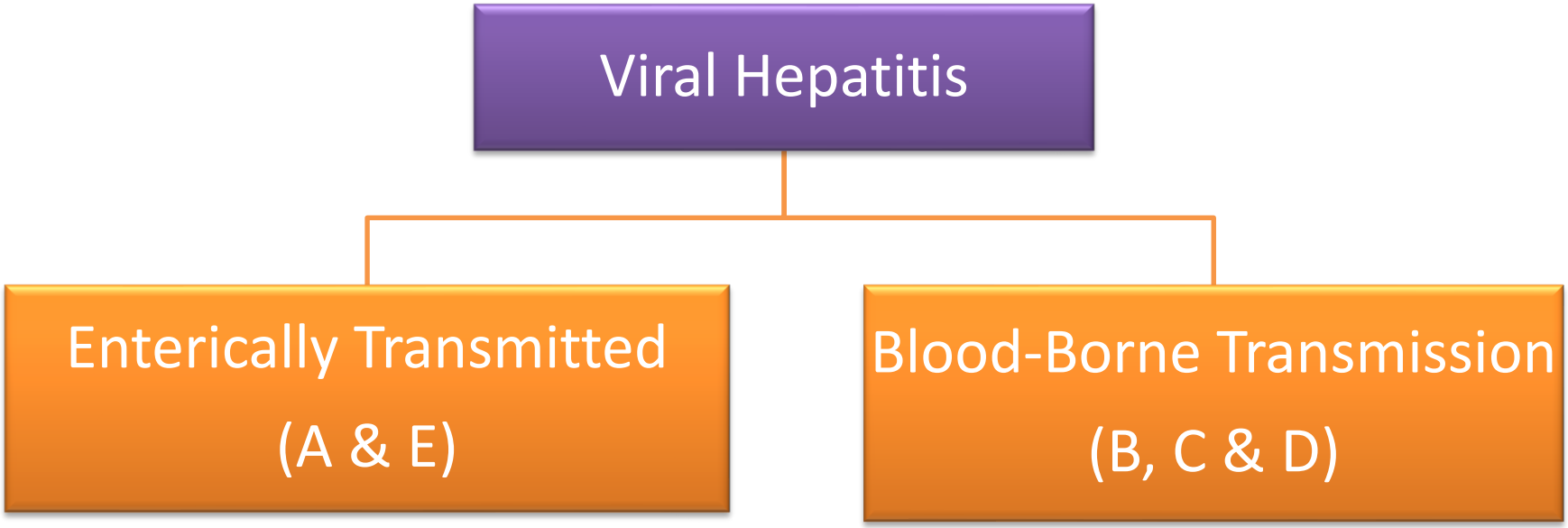
Mortality due to Viral hepatitis

- **1.34 million**
  - Global deaths due to viral hepatitis in 2015
  - 96% of the deaths due to Hep B & C
  - 720 000: deaths due to cirrhosis
  - 470 000 deaths due to hepatocellular carcinoma

REGIONAL DISTRIBUTION OF MORTALITY DUE TO VIRAL HEPATITIS



WHO. GLOBAL HEALTH SECTOR STRATEGY ON VIRAL HEPATITIS 2016–2021


Viral Hepatitis
Enterically Transmitted
(A & E)
Blood-Borne Transmission
(B, C & D)

Hepatitis A

- Causative agent:
  - HAV
  - ssRNA; Picornaviridae
- Globally, 1.4 million cases/ year
- SEARO region: 400,000 cases
- Inversely related to socioeconomic status

Epidemiology- HAV

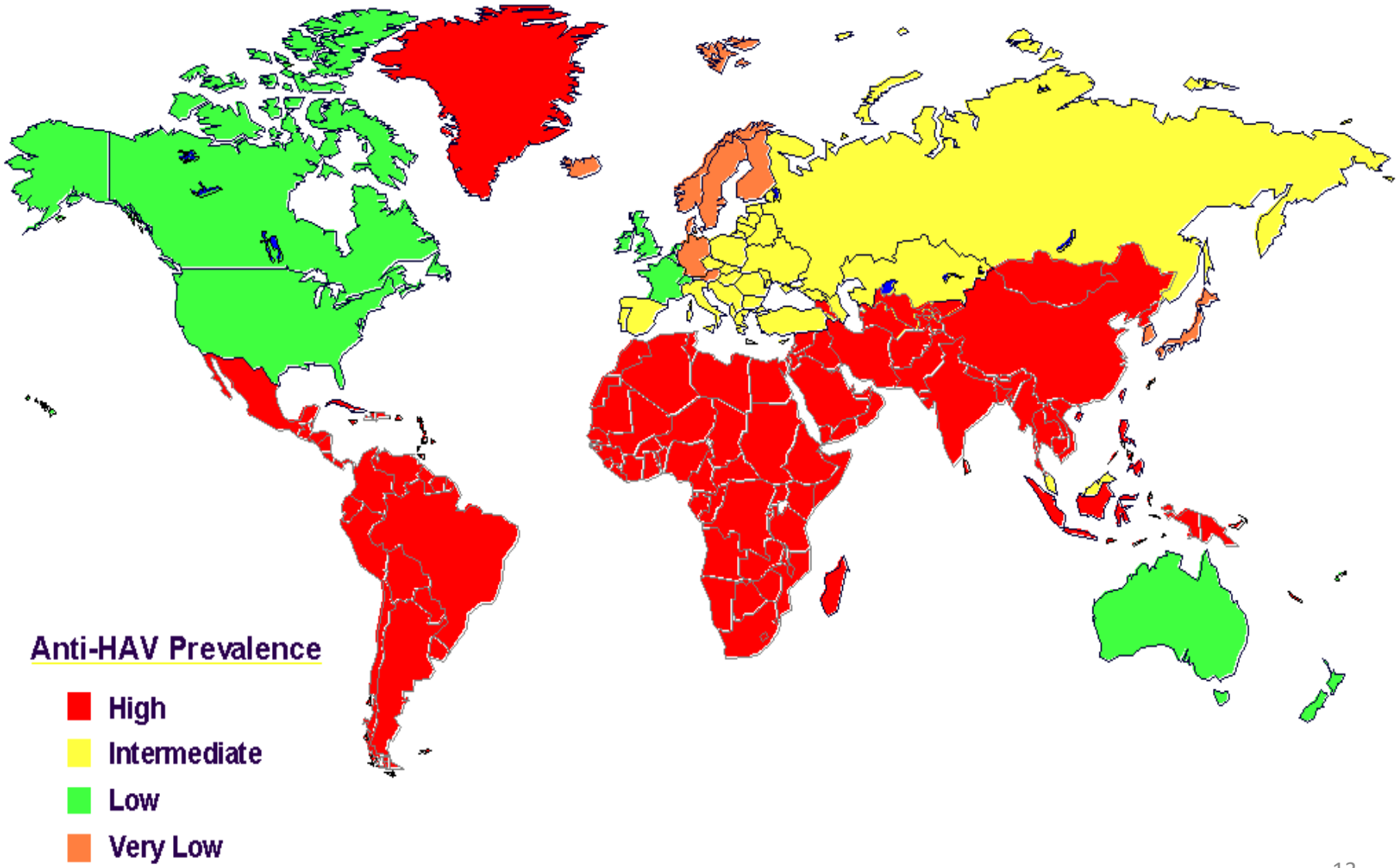
- HAV: Major cause of acute hepatitis in children
- 50% of fulminant hepatic failure in children in India
  - 50% vs 10% in rest of the world
- Does not cause chronic liver disease

Verma YS, Rajput N, Rajput SS. Seroprevalence of hepatitis A virus infection in different age groups of children. Annals of Tropical Medicine and Public Health. 2014 Sep 1;7(5):223.

Epidemiology- HAV

- Mild and subclinical in most of the cases
- Clinical spectrum: linked to age of the infected individual
  - Asymptomatic in young children and leads to lifelong immunity
  - Probability to develop clinical symptoms increases with age

Geographic Distribution of HAV Infection



Epidemiology- HAV

- Epidemiological shift:
  - High to intermediate endemicity
  - Improvement in sanitary conditions
  - Less % of children infected in early childhood
  - Increased possibility of infection in later age and more severe disease

http://www.searo.who.int/entity/emerging_diseases/topics/Hepatitis/en/

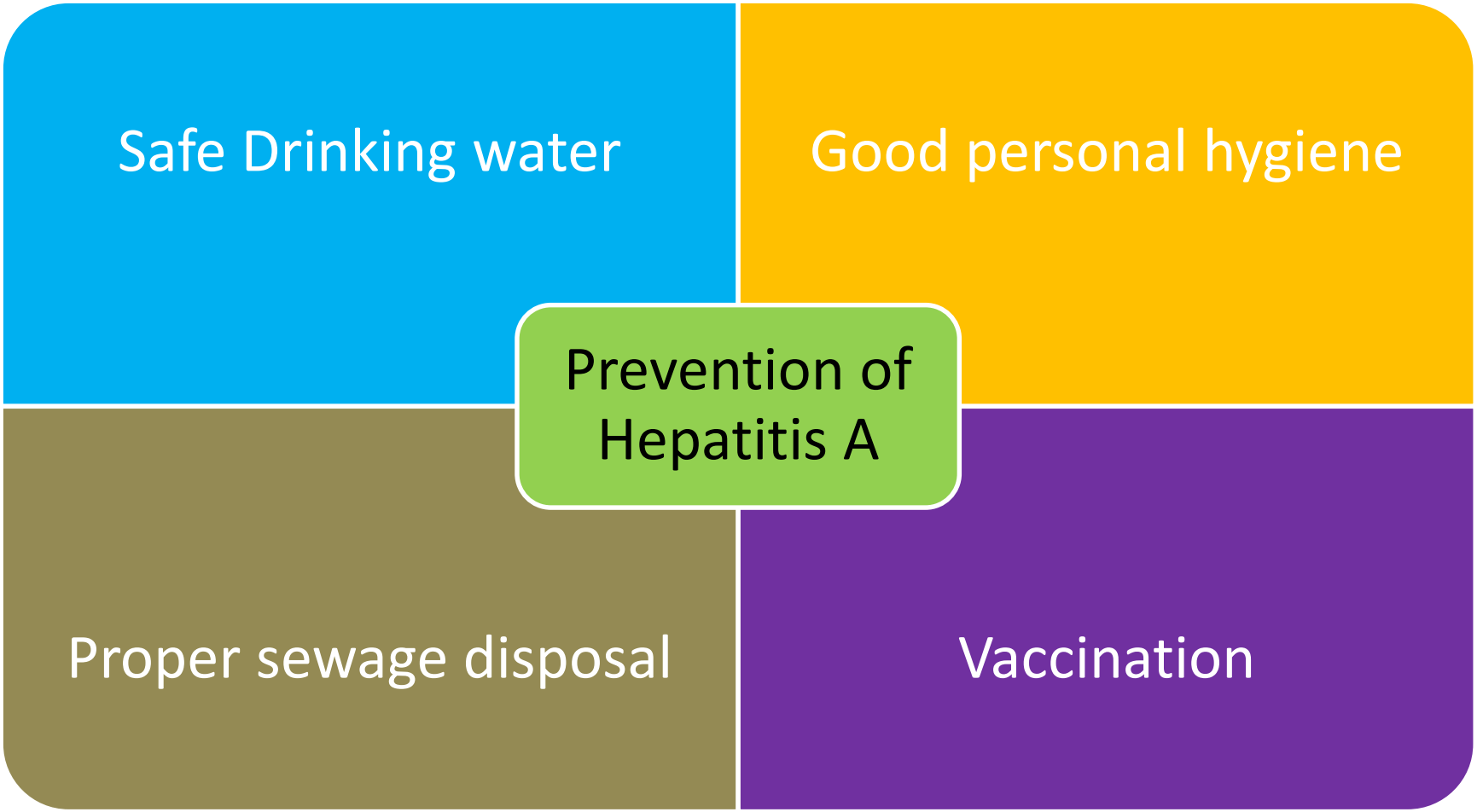
Transmission- HAV

- Feco-oral route
  - Food handlers, Raw food
- Close personal contact
  - Household contact, sexual contact, child care centres

Laboratory diagnosis-HAV

- Acute infection: detection of anti-HAV IgM though EIA
- Past Infection: detection of IgG anti-HAV

Prevention-HAV



HAV-Vaccine

- Killed and live attenuated hepatitis A vaccines
- Most countries:
  - No definite policies for hepatitis A vaccination
- India:
  - Not part of the National Immunisation Schedule
  - IAP recommends two doses 6 months apart after 1 year of age

IAP Immunization schedule 2016

Hepatitis E

- Caused by
  - Hepatitis E virus; ss RNA virus
- Hepatitis E:
  - Enteric and Epidemic
  - Acute, self-limiting
  - Occasionally leads to fulminant hepatitis: pregnant women
- Usually no chronicity

Burden: Hepatitis E

- SEARO Region:
  - 50% of global deaths due to Hepatitis E
  - Annually,
    - 12 million infected
    - 42,000 deaths and
    - 1800 stillbirths

http://www.searo.who.int/entity/emerging_diseases/topics/Hepatitis/en/

Risk factors-HEV

- Age>15yrs
- Lower socio-economic status
- Contaminated water sources
- Higher attack rates are seen in pregnant women

Transmission-HEV

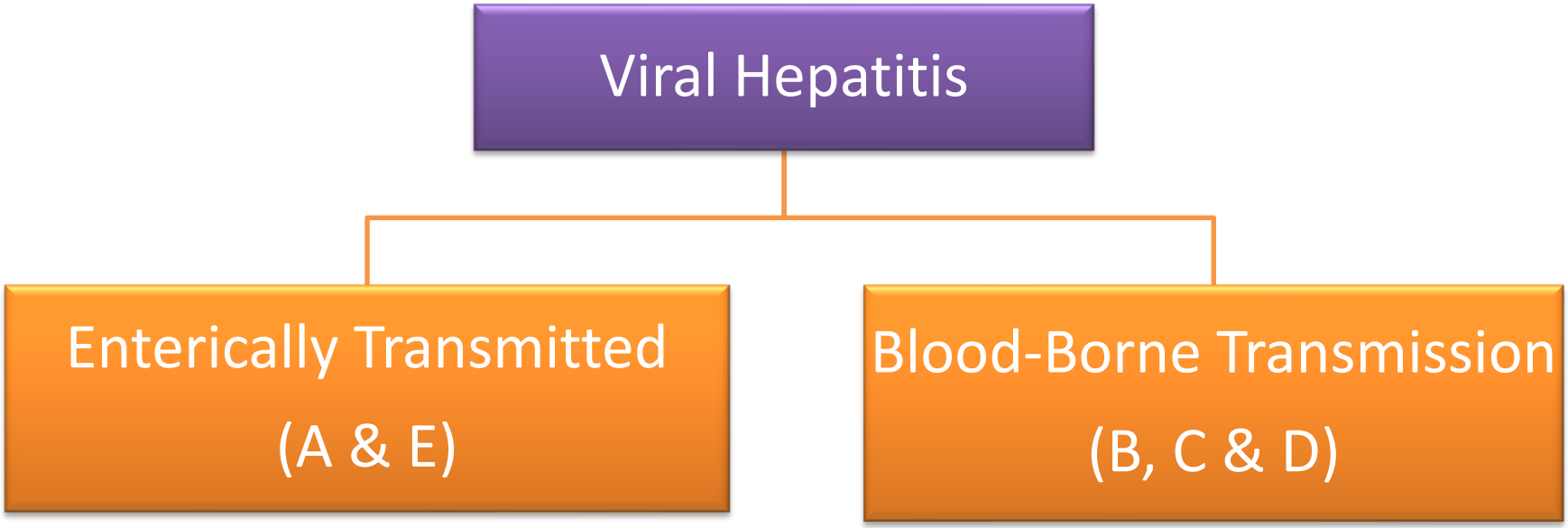
- Feco-oral
- Through contaminated water
  - Outbreaks are more likely due to contaminated water than foodborne infection

Diagnosis-HEV

- Detection of IgM-anti-HEV by ELISA
- In very early acute cases,
  - IgM antibodies may not be detectable
  - HEV RNA: method of choice

Prevention-HEV

- Safe water and sanitation
- Health education
- Personal hygiene
- Vaccine not yet approved in India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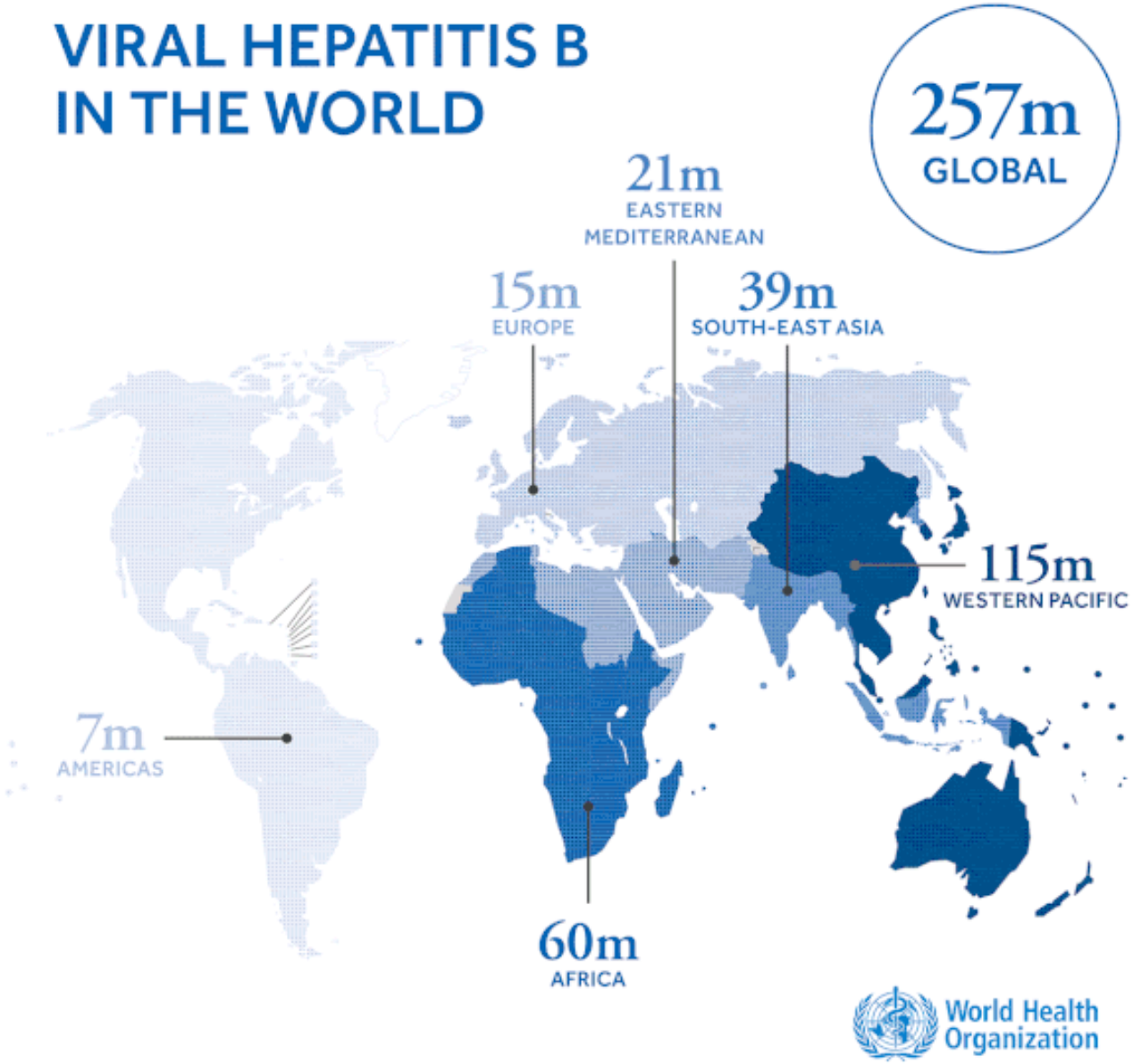
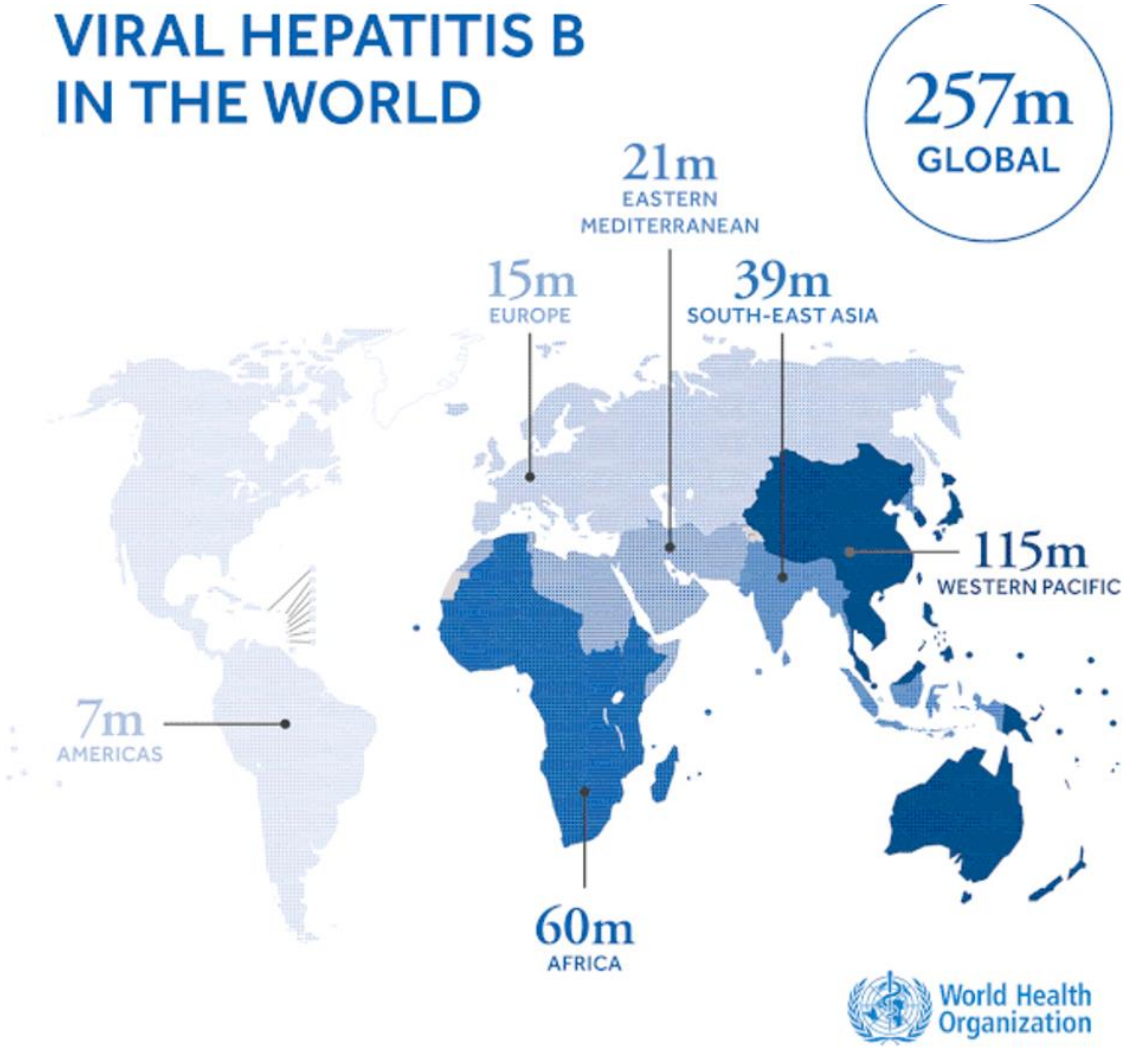

VIRAL HEPATITIS B
IN THE WORLD
257m
GLOBAL
21m
EASTERN
MEDITERRANEAN
15m
EUROPE
39m
SOUTH-EAST ASIA
115m
WESTERN PACIFIC
7m
AMERICAS
60m
AFRICA
World Health
Organization

Hepatitis B

- Causative agent:
  - Hepatitis B virus (HBV); Circular DS DNA
- 3-5% Prevalence
- High risk for Hepatocellular carcinoma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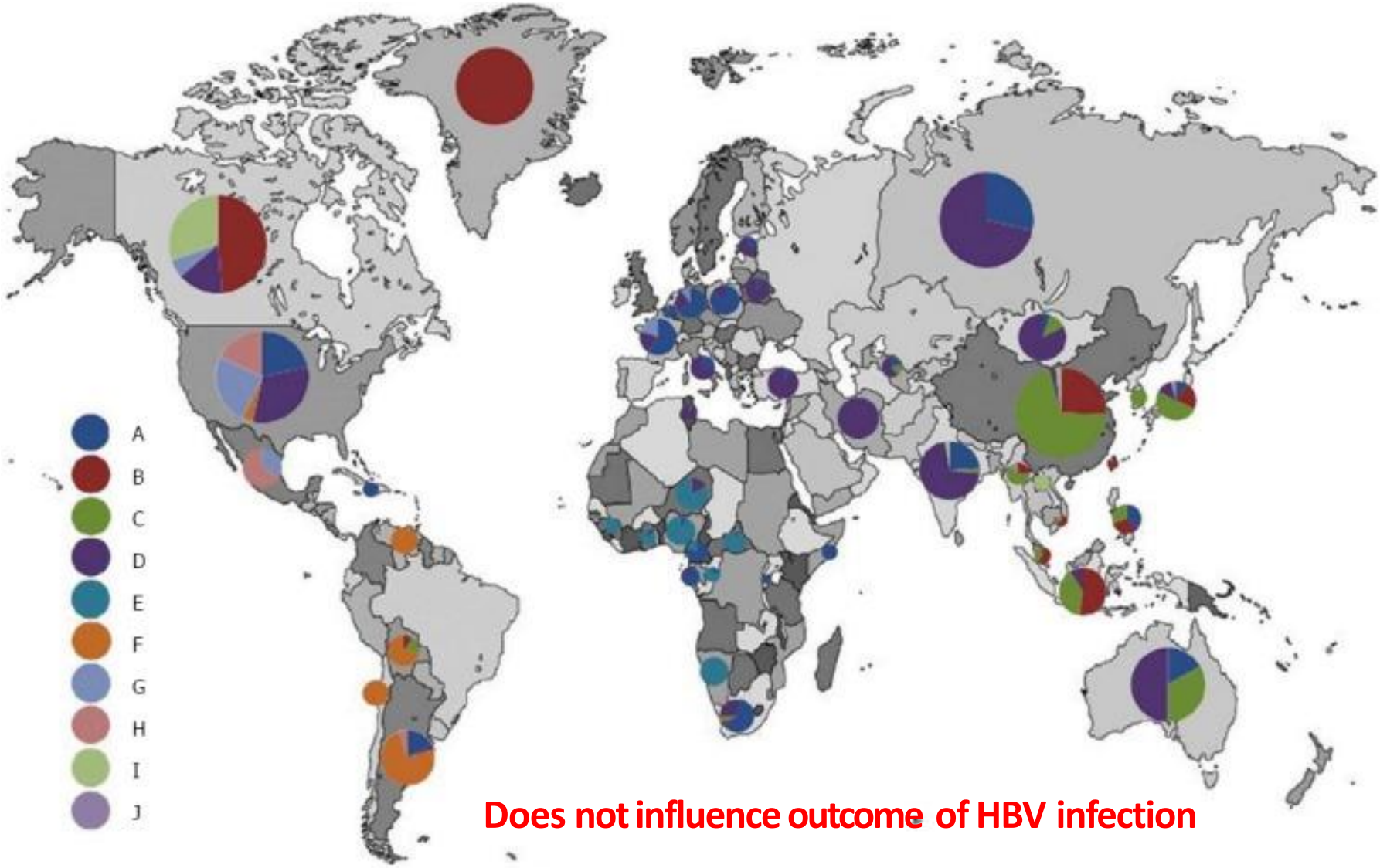
HBV Genotypes



Does not influence outcome of HBV infection

Transmission- HBV

- Percutaneous/ mucosal contact:
  - infectious blood or body fluids
- Routes:
  - **Vertical (Mother to child Transmission)**
  - Horizontal
    - Parenteral
    - Sexual
    - Contact with blood or open sores of an infected person
    - Sharing razors, toothbrushes with an infected person

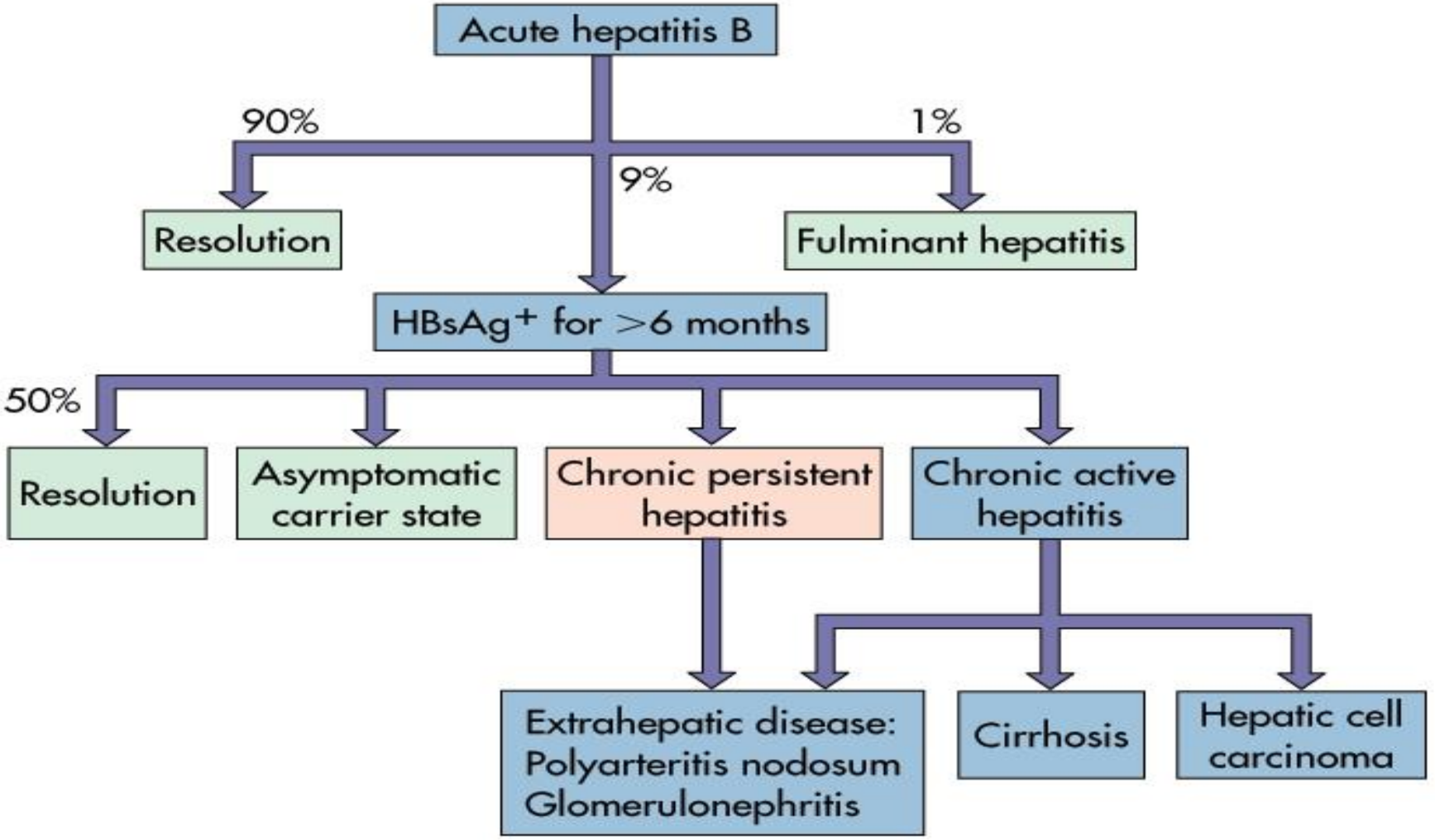
Transmission- HBV

- HBV is not spread through:
  - food or water
  - sharing eating utensils
  - breastfeeding
  - hugging, kissing, hand holding
  - Coughing or sneezing

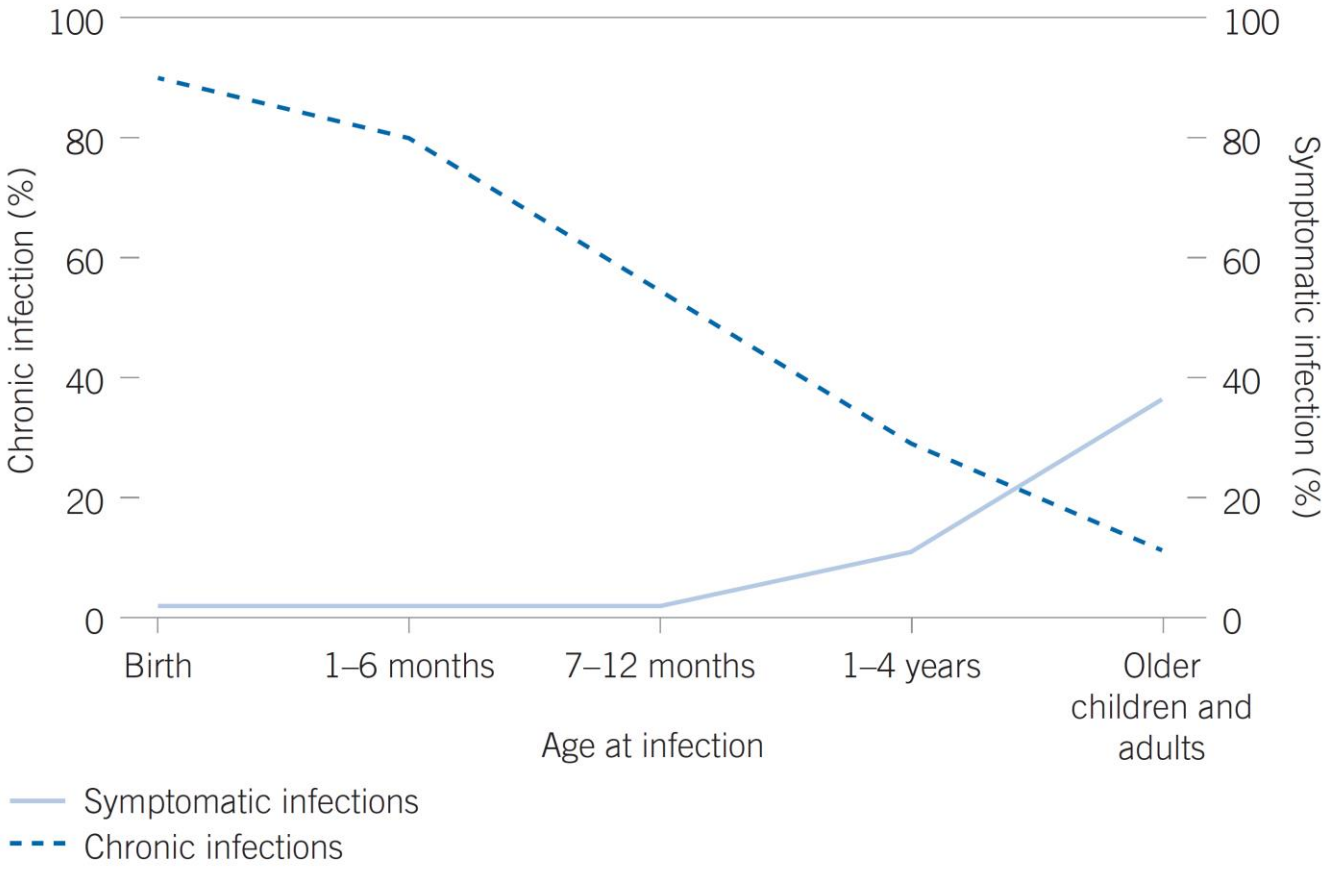
High Risk Groups-HBV

- Infants born to infected mothers
- Sex partners of infected persons
- Men who have sex with men
- Injection drug users
- Household contacts of known persons with chronic HBV infection
- Health care professionals
- Hemodialysis patients

Clinical outcomes of Hepatitis B infections



OUTCOME OF VIRAL HEPATITIS BY AGE AT INFECTION



http://www.who.int/hepatitis/publications/hepatitis-b-guidelines/en/

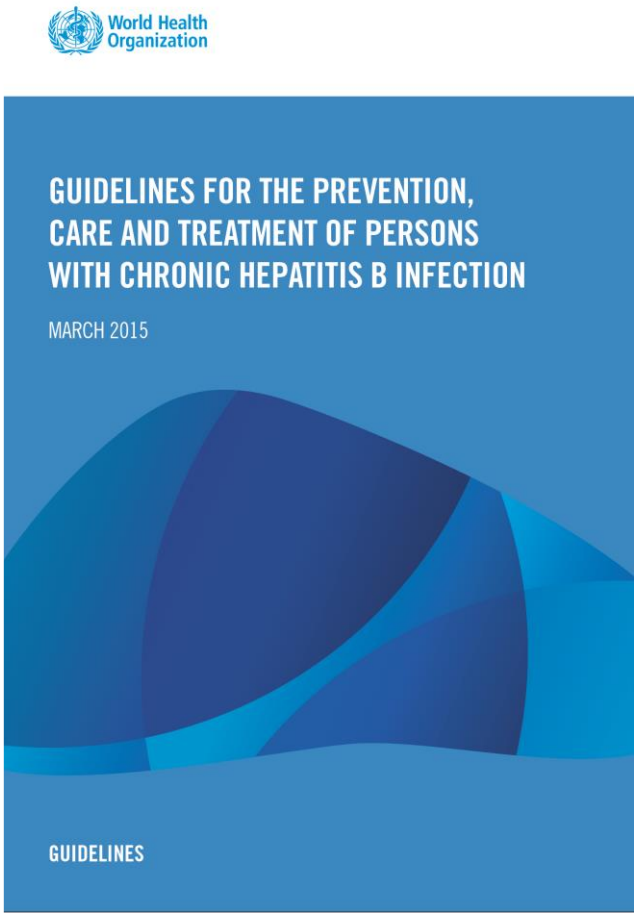
Treatment of HBV

- Acute: treatment is supportive
- Chronic patients:
  - Regular follow up
  - prevent liver damage & HCC
  - Guidelines for treatment

Prevention-HBV

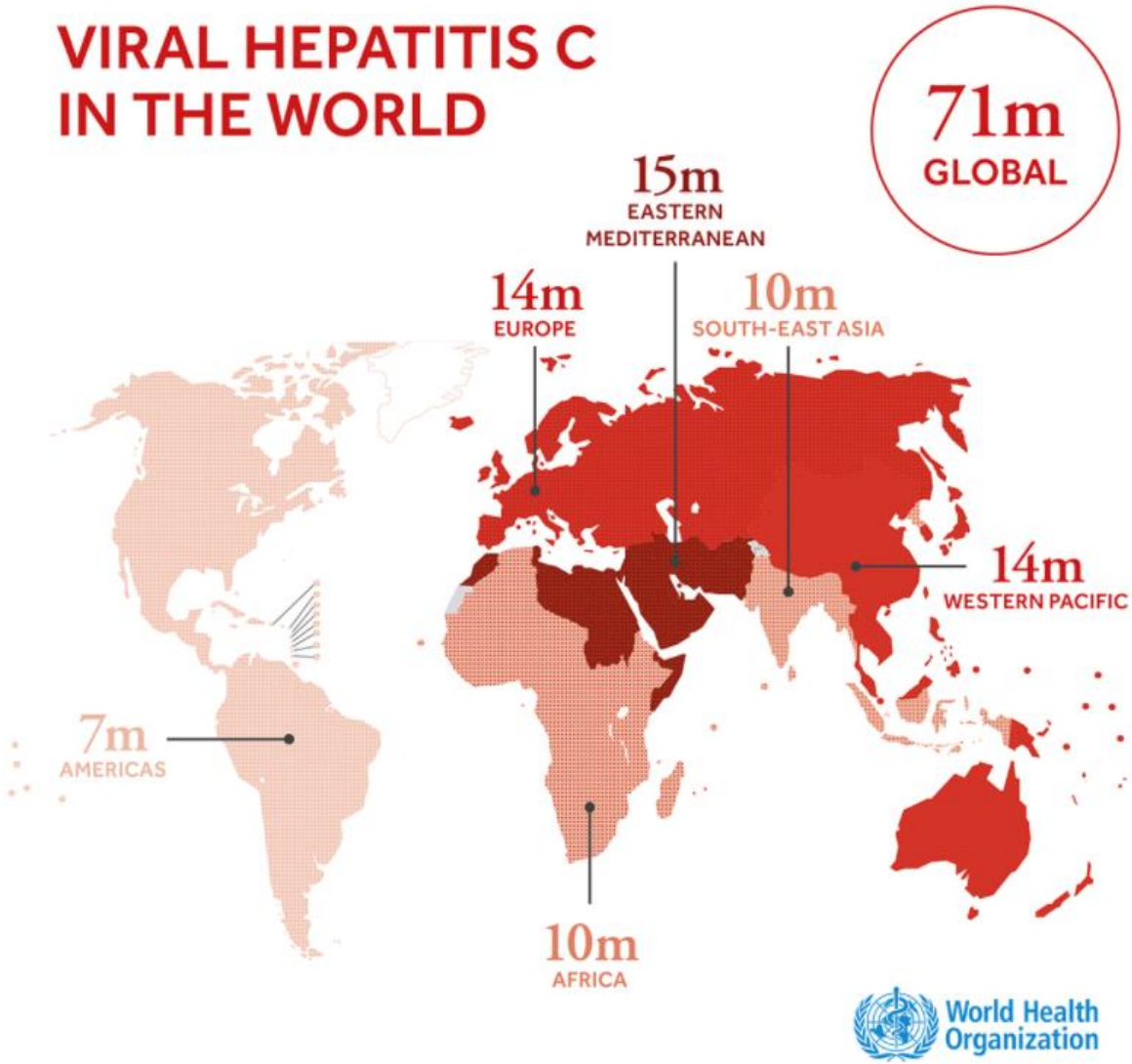
- Hepatitis B vaccine: effective
  - NFHS-4: 66.3% coverage for all 3 doses
- Maternal screening for HBsAg
- Safe sex
- Do not share needles
- Universal precautions for HCWs

Further Reading



Hepatitis C

- Earlier known as post-transfusion non A-non B hepatitis (PT-NANB).
- Viral genotypes (1-6)
- In India:
  - Genotype 3 (70%) and 1 (29%) are common


VIRAL HEPATITIS C
IN THE WORLD
71m
GLOBAL
15m
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14m
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SOUTH-EAST ASIA
14m
WESTERN PACIFIC
7m
AMERICAS
10m
AFRICA
World Health
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Epidemiology-HCV

- Prevalence: general population is 1-2%
- Anti-HCV positivity is high
  - **PWID (People Who Inject Drugs)**
  - **Dialysis patients**
  - **Multiple BTs (Blood transfusions)**
  - **HCWs (Health care workers)**

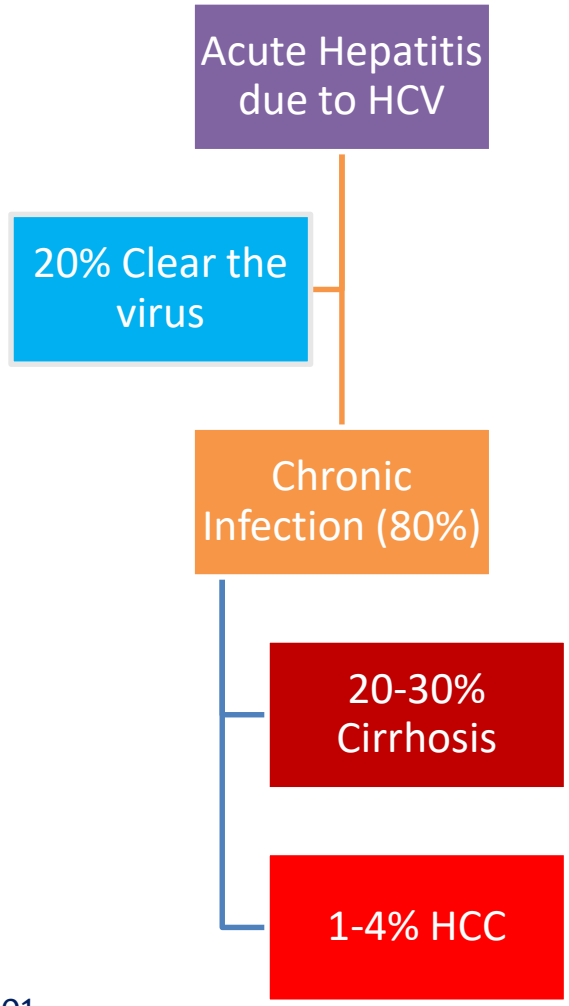
The disease- Hepatitis C

- High chronicity potential (80%)
- Important cause for cirrhosis and primary Hepatocellular carcinoma

Transmission-HCV

- Parenteral transmission
  - infected needles & unsafe injections
- Blood and blood products transfusions (before 2001)
- Other modes like sexual, vertical and intra-familial are infrequent

Natural History of Hepatitis C



Adapted from Lauer and Walker, NEJM 2001

Lab Diagnosis-HCV

- No marker to distinguish between acute and chronic infections
- Anti-HCV screening
- HCV RNA (Qual)
- HCV RNA (Quan) HCV viral load is a very important parameter in disease staging and response to antiviral therapy

Treatment

- Hepatitis C is curable
- Effective Direct acting antivirals (DAAs)
- Genotype based treatment regimens
- Three pan-genotypic regimens approved by WHO
- Treatment duration: 12-24 weeks

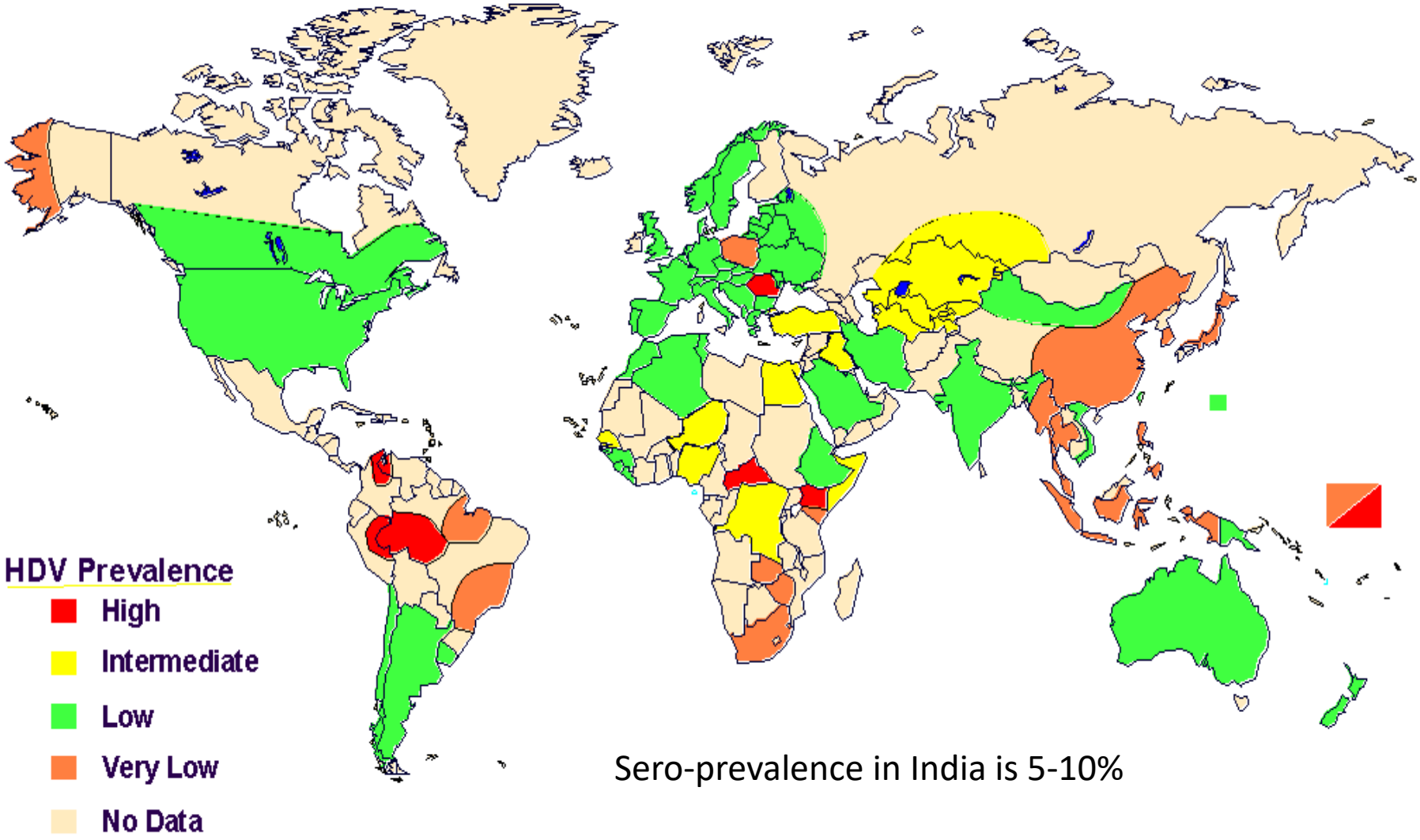
Prevention-HCV

- **Universal precautions**
- Safe injections
- Safe blood

Hepatitis Delta Virus (HDV)

- Defective RNA virus
- Requires HBV replication for its multiplication
- Occurs as co- or super-infection with HBV
- Leads to severe course of liver disease
- Parenterally transmitted

Geographic Distribution of HDV Infection



Sero-prevalence in India is 5-10%

Hepatitis D - Prevention

- HBV-HDV Co-infection

  Pre or post exposure prophylaxis to prevent HBV infection

- HBV-HDV Super-infection

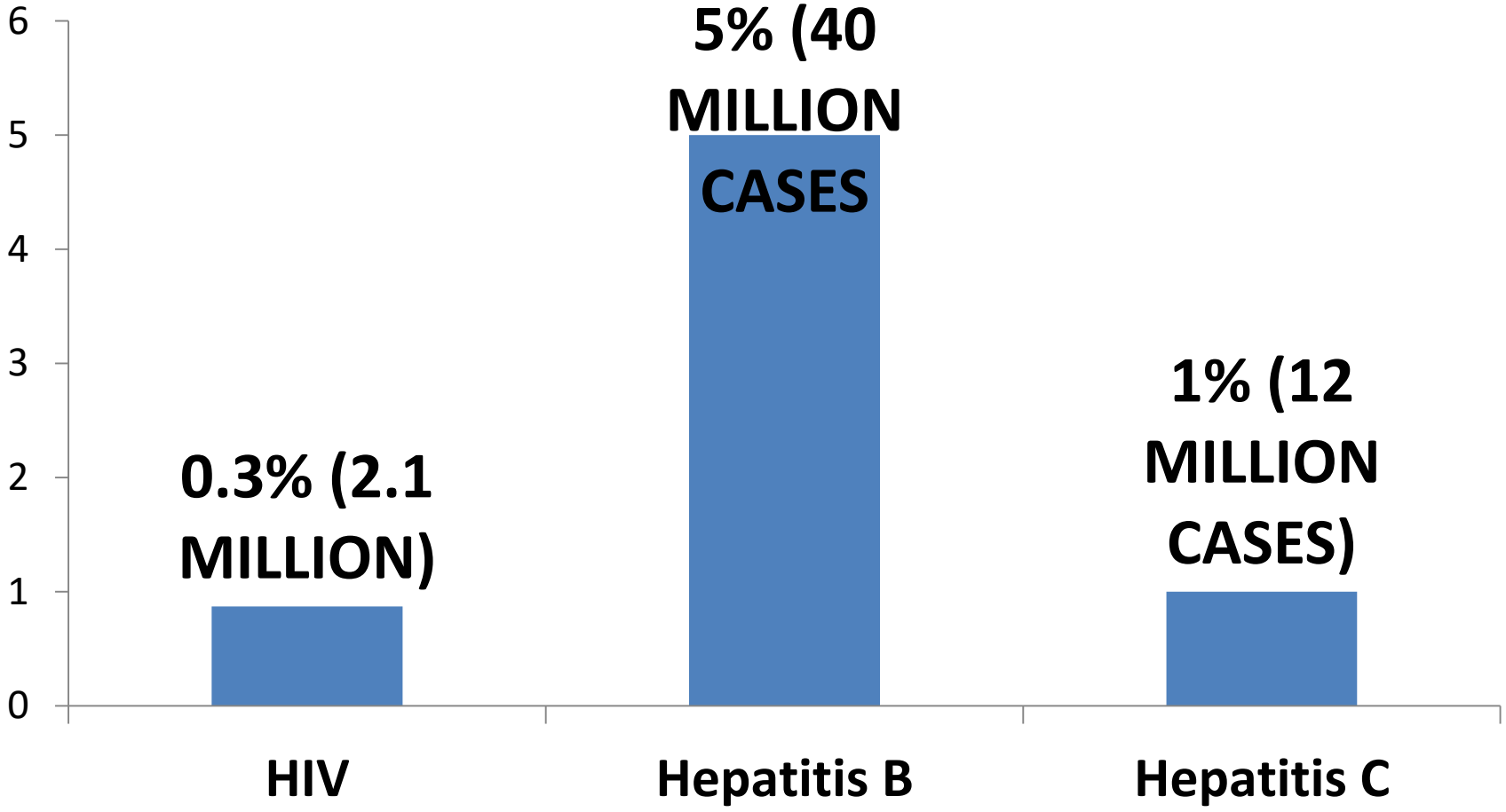
  Education to reduce risk behaviors among persons with chronic HBV infection

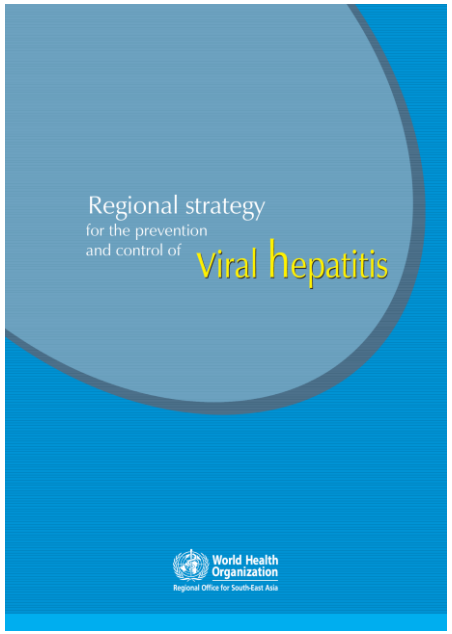
Viral Hepatitis- *An overview*

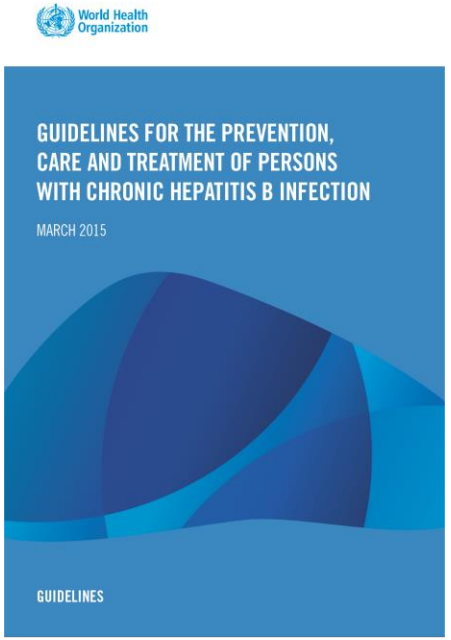
	Types of Viral Hepatitis				
	Hepatitis A	**Hepatitis B**	**Hepatitis C**	**Hepatitis D**	**Hepatitis E**
Classification and Genetic material	Picorna, Linear SS RNA	Hepadna, Circular DS DNA	Flavi, Linear SS RNA	Delta, Circular SS RNA	Calci, Linear SS RNA
Mode of transmission	Feco-oral	Vertical Blood borne Sexual	Blood borne Sexual Vertical	Blood borne Sexual Vertical	Feco-oral
Incubation Period & Chronicity	15-40 days, No	60-180 days, **Yes**	60-120 days, **Yes**	60-180 days, **Yes**	21-42 days, No
Prevention	Vaccine, Safe water and Sanitation	Vaccine, Blood Donor Screening, Risk Behaviour Modification	Blood Donor Screening, Risk Behaviour Modification	Vaccine for HBV, Risk Behaviour Modification	Safe water and Sanitation

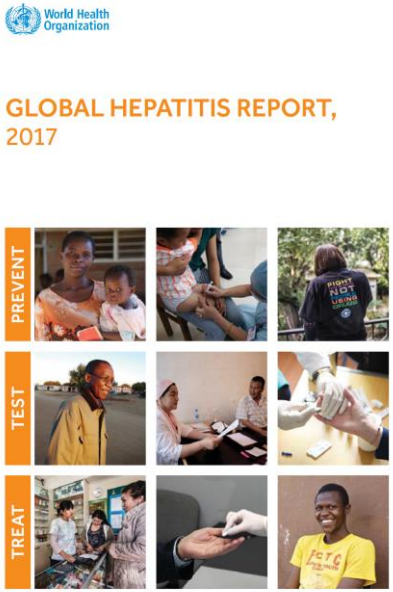
Viral Hepatitis- an overview

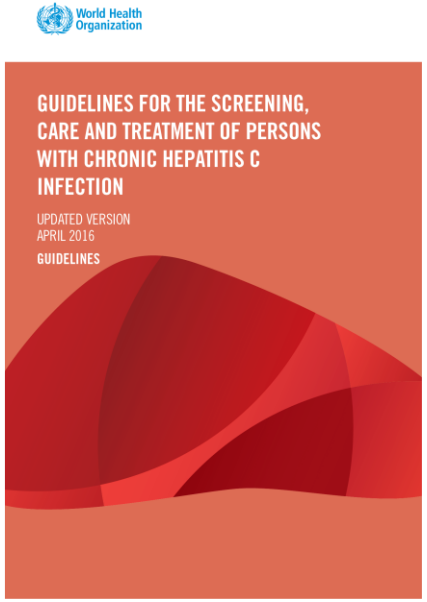
Burden of Hepatitis B and C Vs HIV




Regional strategy
for the prevention
and control of
Viral hepatitis
World Health Organization
Regional Office for South-East Asia


World Health Organization
GUIDELINES FOR THE PREVENTION, CARE AND TREATMENT OF PERSONS WITH CHRONIC HEPATITIS B INFECTION
MARCH 2015
GUIDELINES


World Health Organization
GLOBAL HEPATITIS REPORT, 2017
PREVENT
TEST
TREAT


World Health Organization
GUIDELINES FOR THE SCREENING, CARE AND TREATMENT OF PERSONS WITH CHRONIC HEPATITIS C INFECTION
UPDATED VERSION
APRIL 2016
GUIDELINES

SDG target 3.3 is to combat Viral Hepatitis by 2030

Thank you