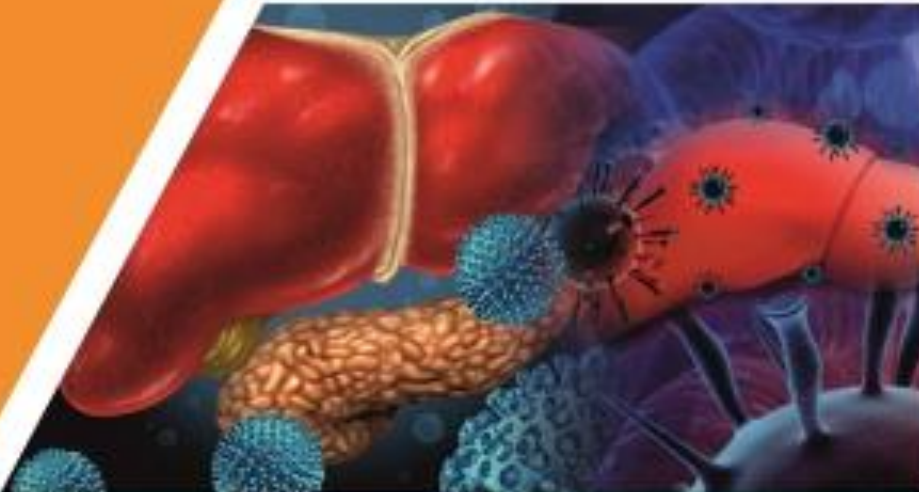




PROJECT PRAKASH

Programmed Approach to Knowledge and Sensitization on Hepatitis



HEPATITIS INDUCTION PROGRAM FOR DOCTORS

IDENTIFICATION AND TREATMENT OF COMPLICATIONS OF VIRAL HEPATITIS

**Dr. Ashok Chaudhary,
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ILBS**

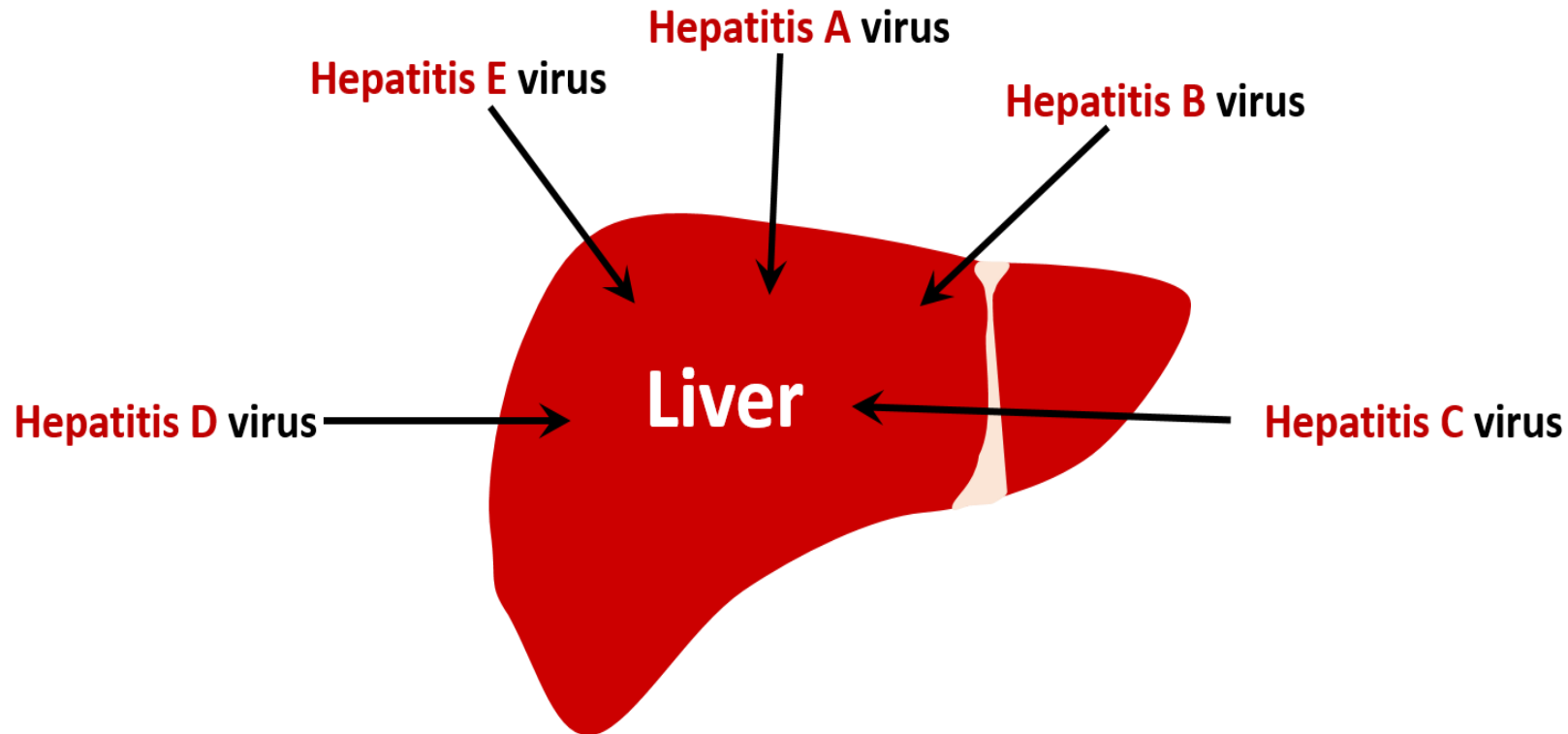
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Hepatitis

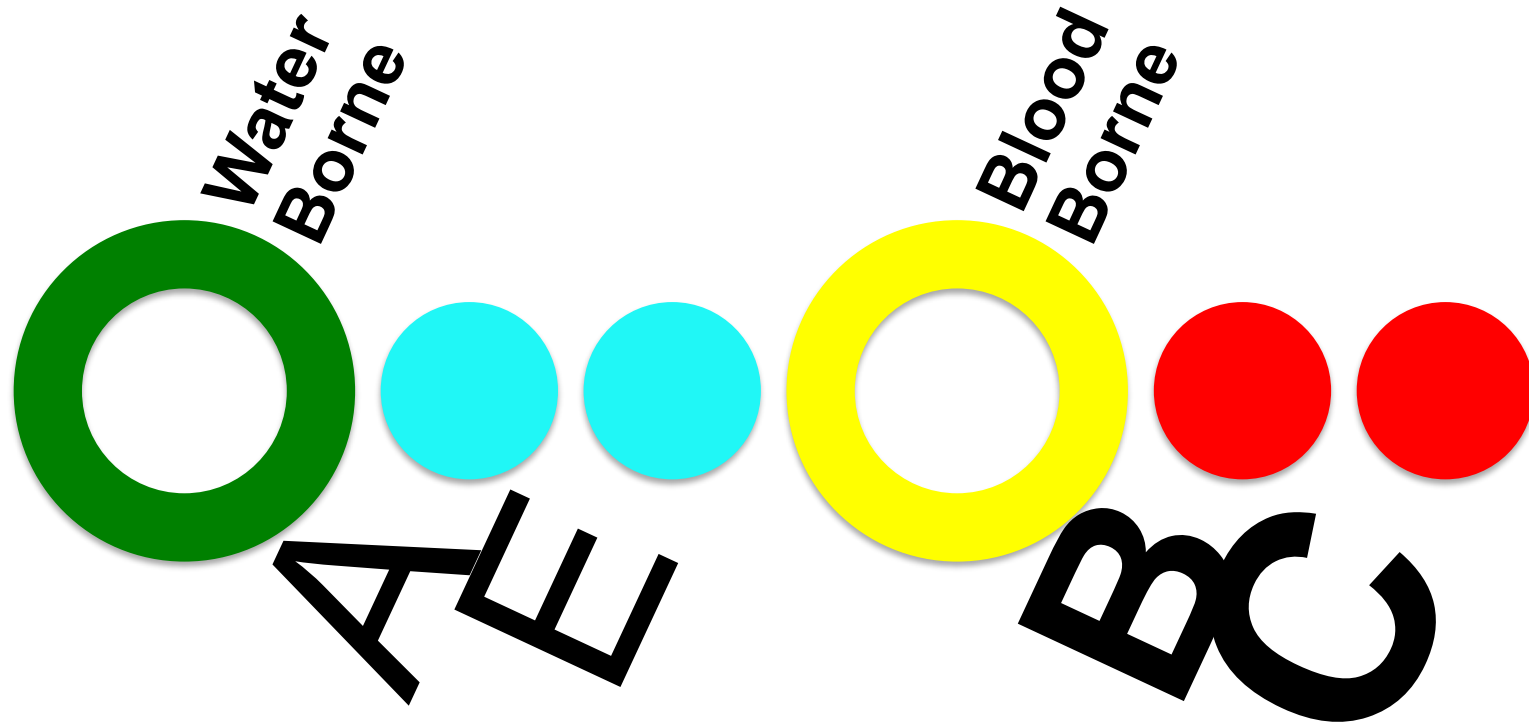


Of an estimated 1.4 million deaths per year caused by hepatitis virus:

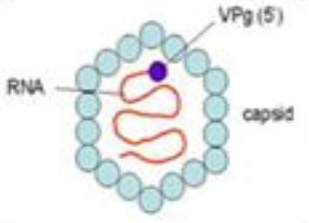
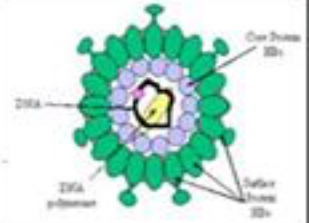
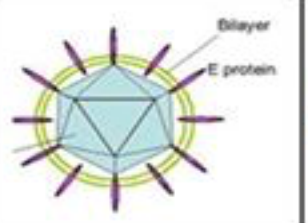
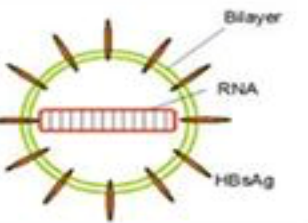

- ~47% are attributable to hepatitis B
- 48% to hepatitis C
- ~5% to hepatitises A and E,

(World Health Organization)

Hepatitis

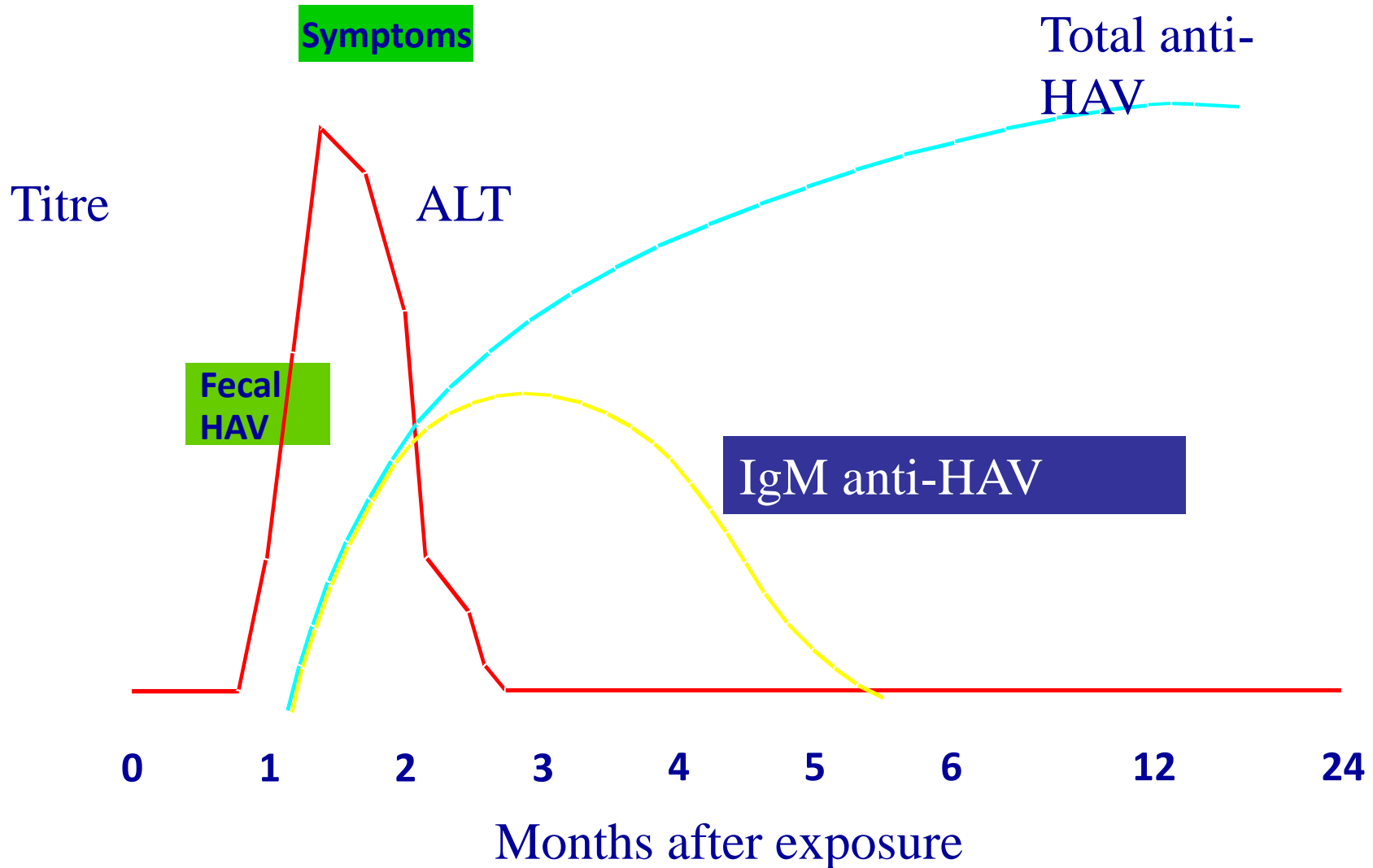


Viral Hepatitis -types

					
Name of Virus	Hepatitis A Virus (HAV)	Hepatitis B Virus (HBV)	Hepatitis C Virus (HCV)	Hepatitis D Virus (HDV)	Hepatitis E Virus (HEV)
Classification	Picornavirus	Hepadnavirus	Flavivirus	Deltavirus	Hepevirus
Viral genome	ssRNA	dsDNA	ssRNA	-ssRNA (-ve)	ssRNA
Transmission	Enteric	Parental	Parental	Parental	Enteric
Incubation period	15-45 days	45-160 days	15-150 days	30-60 days	15-60 days
Chronic Hepatitis	No.	Yes. 10% chance	Yes. >50% chance	Yes. <5% of coinfectious >80% of superinfectious	No.
Cure?	No cure. Treatments usually tackle the symptoms.	No cure. Treatments usually tackle the symptoms.	No cure. Treatments usually tackle the symptoms.	No cure. Treatment: Alpha interferon for 12 months.	No cure. Treatments usually tackle the symptoms.

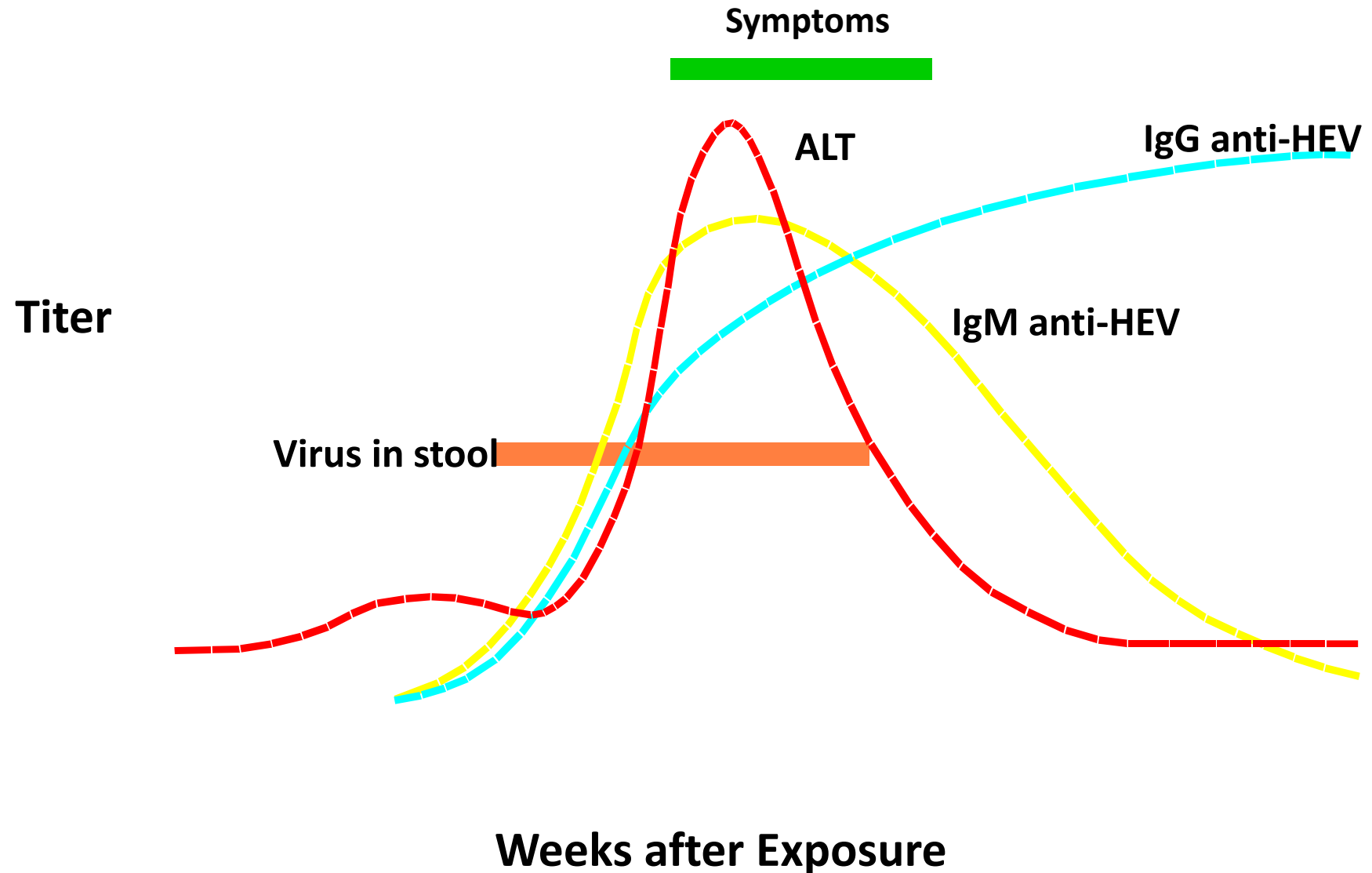
Hepatitis A Infection

Typical Serological Course



Hepatitis E Virus Infection

Typical Serologic Course



Acute Viral hepatitis-Phases

Phases

1. Incubation period

A: 4 weeks

B: 10 weeks

C: 7 weeks

D: 6 weeks

E: 2-8 weeks

2. Pre-icteric phase: anorexia, nausea, vomiting, malaise, fatigue, headache, fever

3. Icteric phase (1-4 weeks): jaundice, dark color urine, enlarged liver Liver function test positive

4. Post-icteric phases (2-12 weeks):

Recovery

Chronic phase

Fulminating hepatitis

Acute Viral hepatitis-HAV

- Incubation period:
- Jaundice by age group:
- Complications:
- Chronic sequelae:

Range 15-50 days

Average 30 days

<6 yrs, <10%

6-14 yrs, 40%-50%

>14 yrs, 70%-80%

Fulminant hepatitis

Cholestatic hepatitis

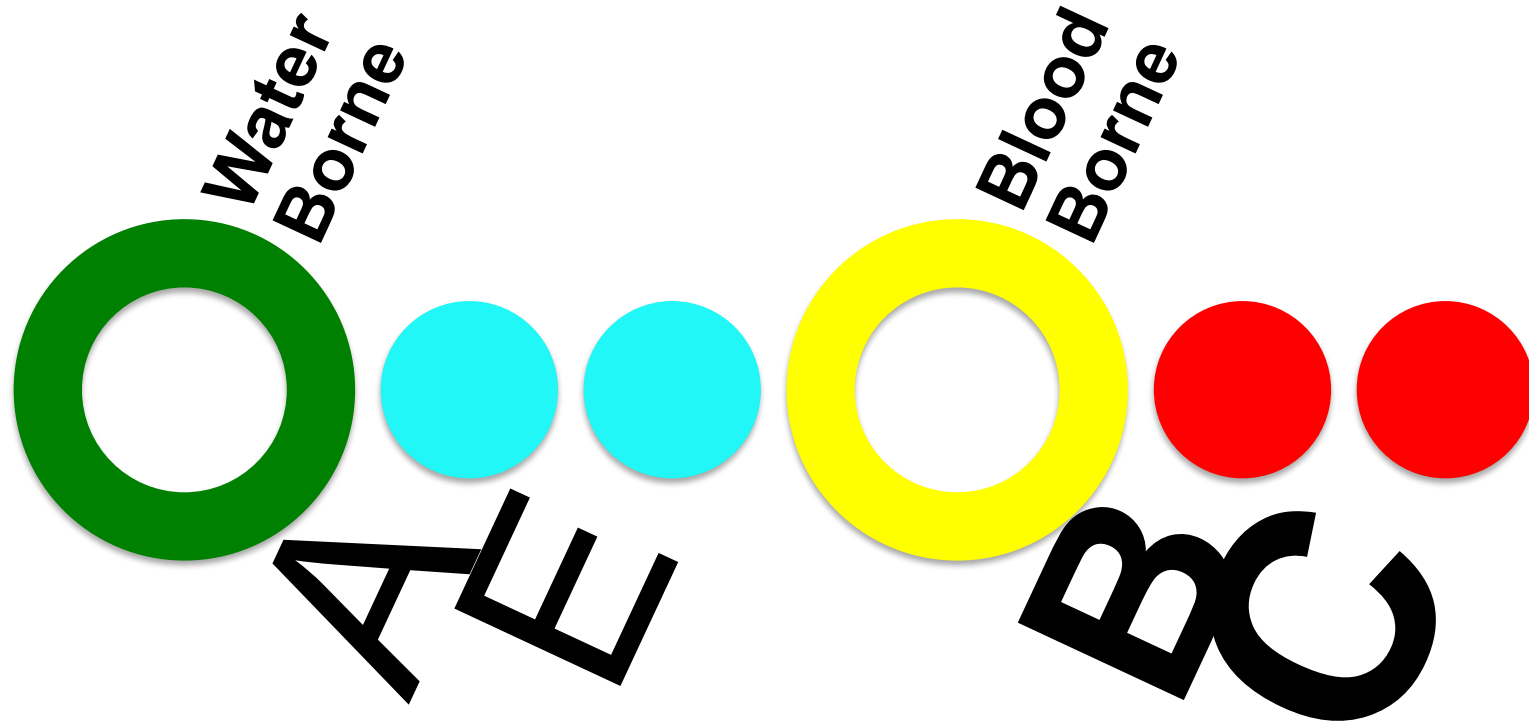
Relapsing hepatitis

None

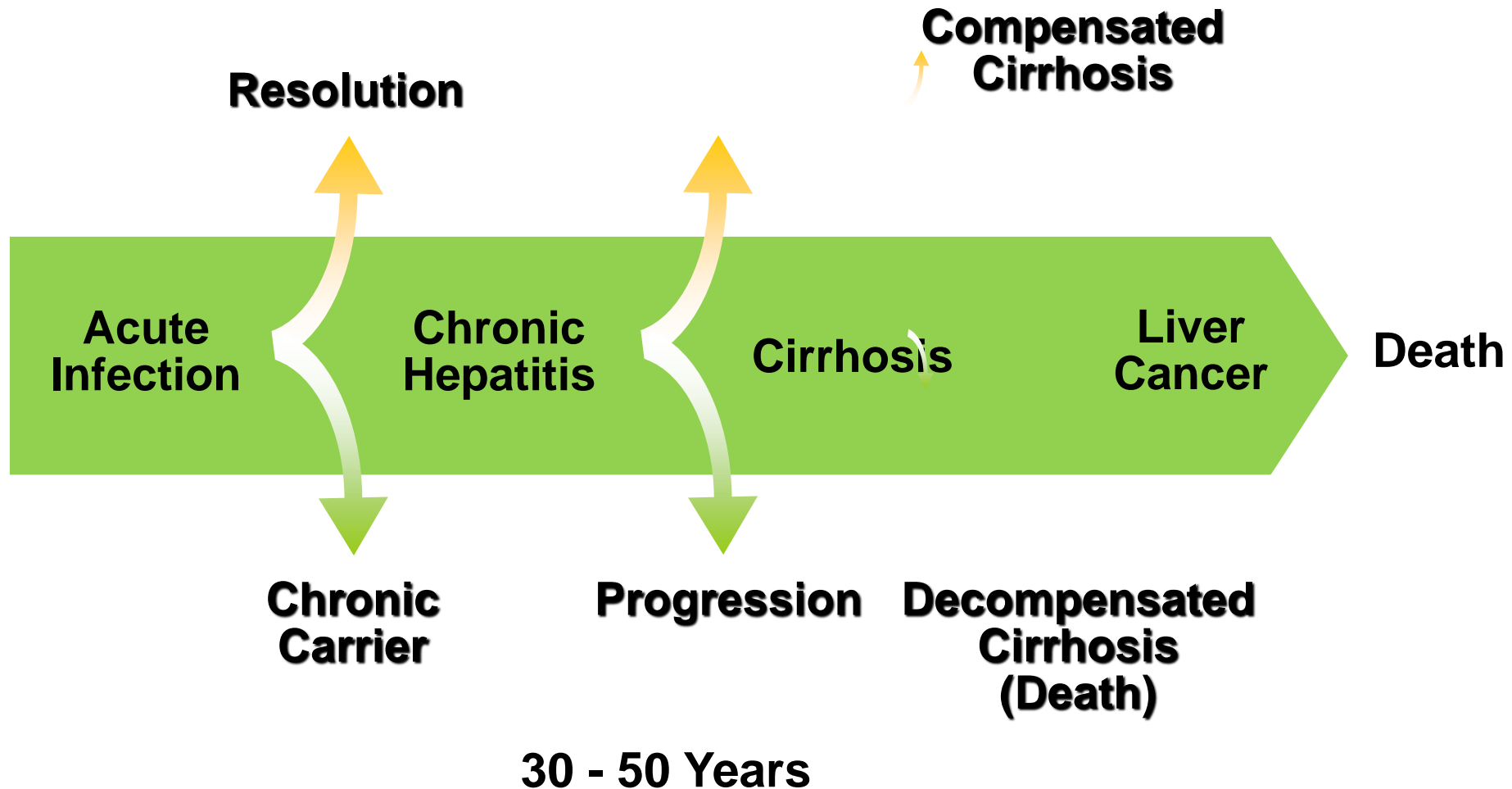
Acute Viral Hepatitis – HEV related

- Incubation period: Average 40 days
Range 15-60 days
- Case-fatality rate: Overall, 1%-3%
Pregnant women,
15%-25%
- Illness severity: Increased with age
- Chronic sequelae: None identified

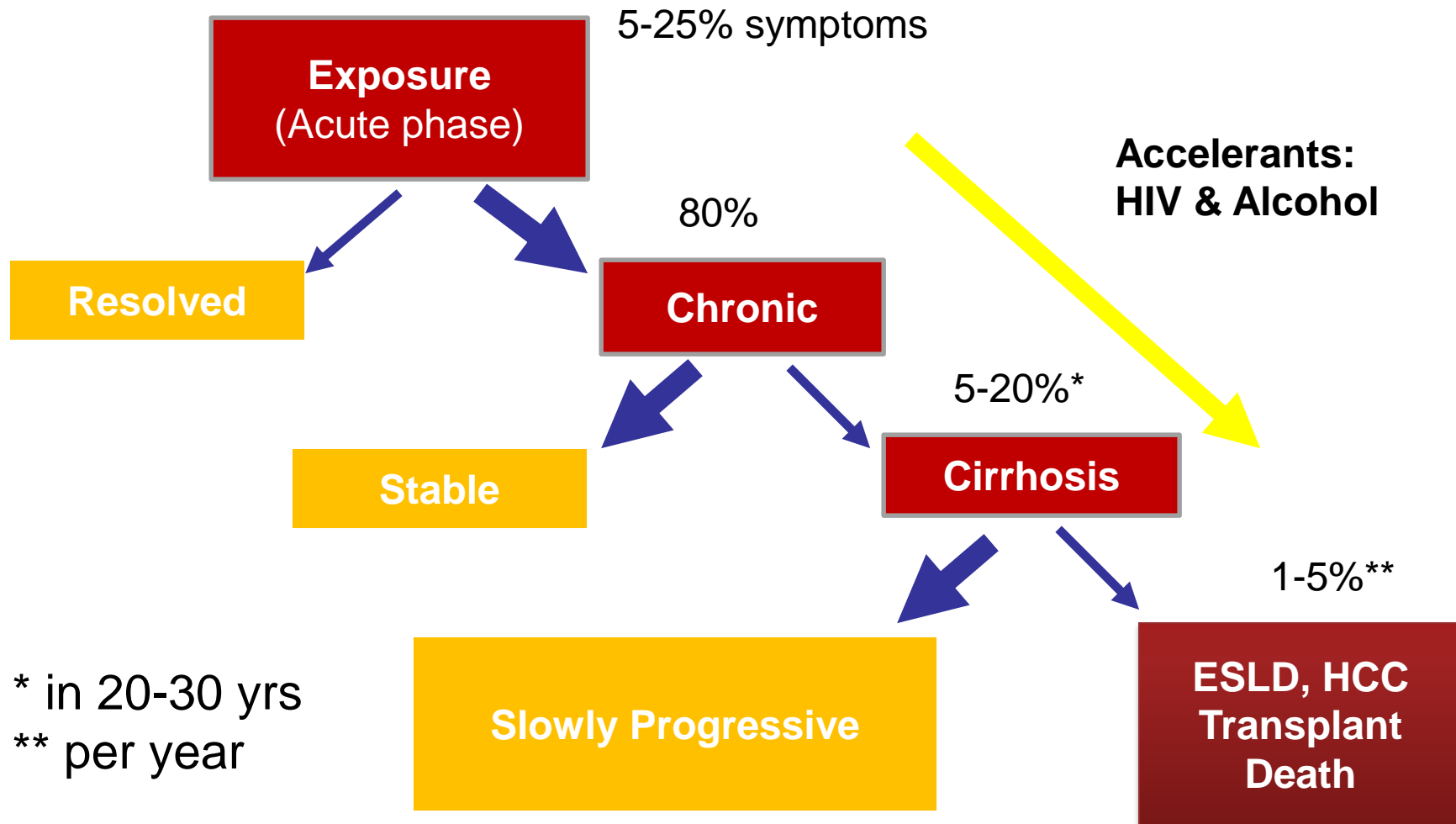
Hepatitis



Natural history of chronic HBV infection

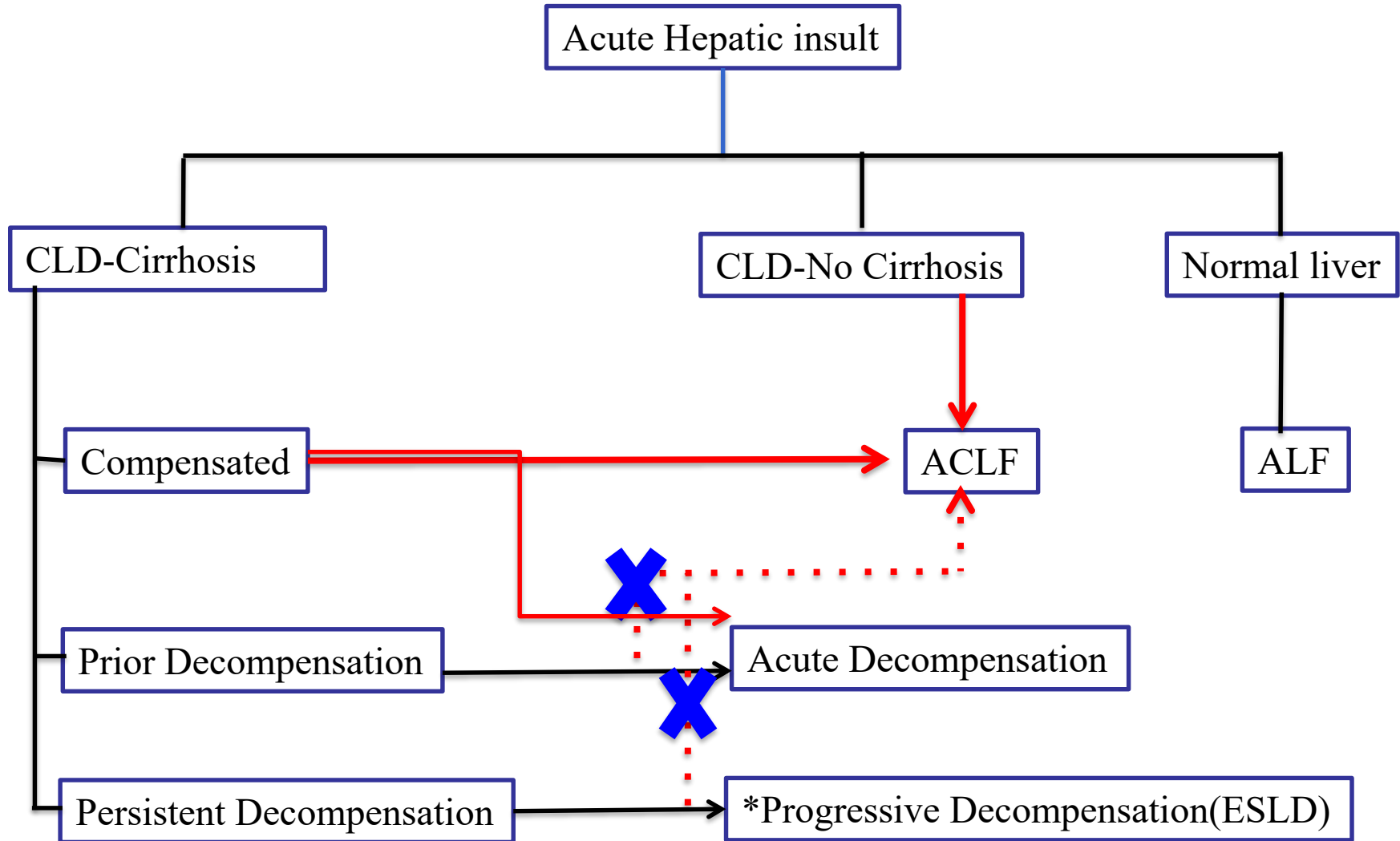


Natural history of Hepatitis C



* in 20-30 yrs
 ** per year

Decompensation events in CLD



X = Needs validation

The dotted line indicates the controversy in ACLF

Complications of Viral Hepatitis

Acute

- Severe hepatitis
- ALF
- FCH
- LOHF
- Extra hepatic
- Multi-organ involvement

Chronic

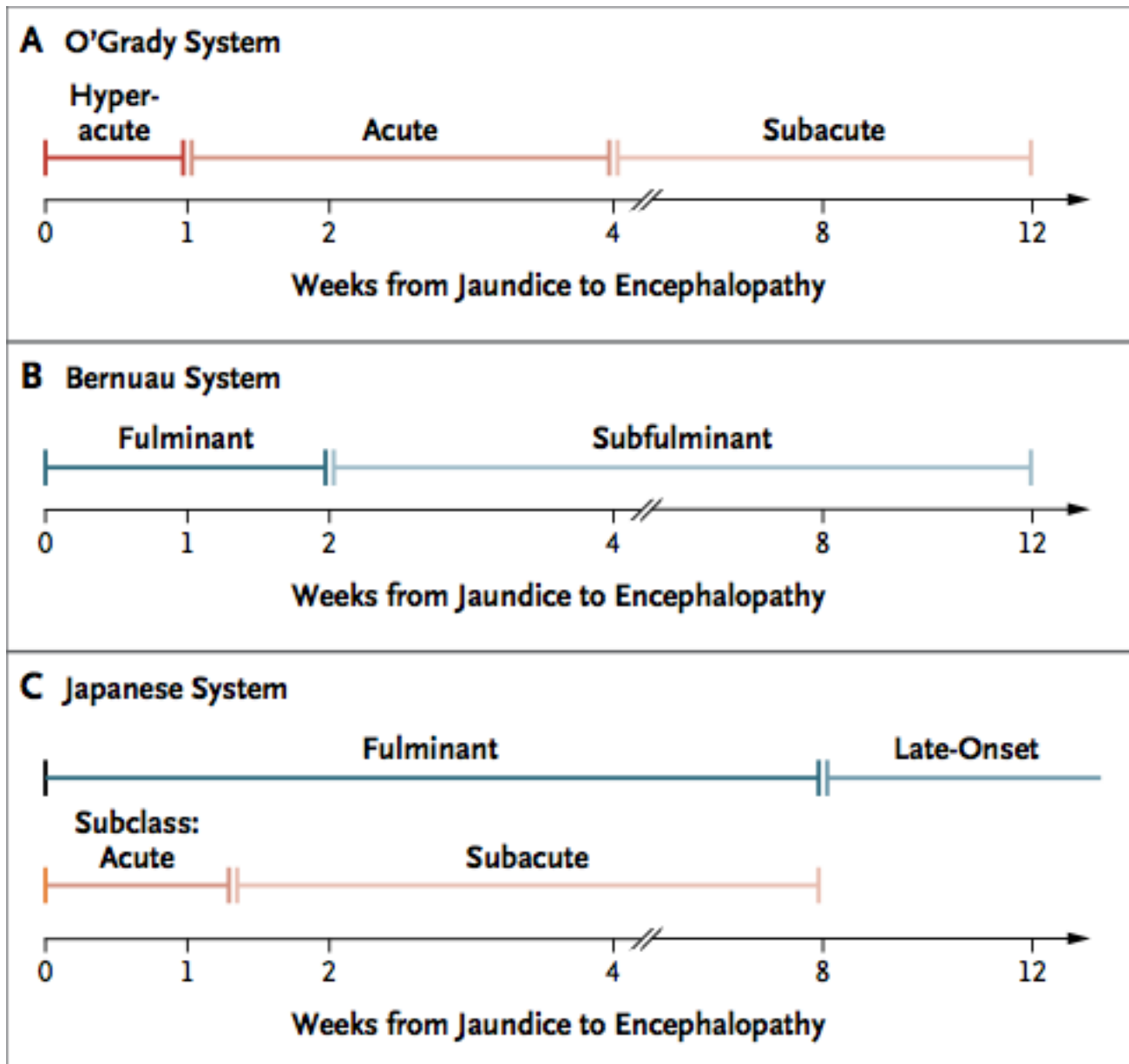
- Cirrhosis
- Decompensation
- Cancer –HCC
- Extra Hepatic

Defining Acute Liver Failure

- INR > 1.5
- Altered mental status
- Illness of < 26 weeks duration

- Hyperacute < 7 days
- Acute 7-21 days
- Subacute > 21 days and < 26 weeks

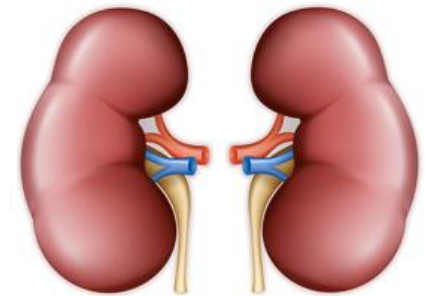
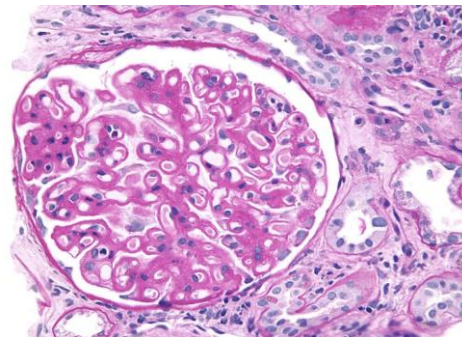
- Fulminant (2 wks) vs subfulminant (2-12 wks)



Clinical Manifestations



Acrodermatitis lesions



Complications of Acute Liver Failure

- CNS disturbances
 - Hepatic encephalopathy
 - Cerebral edema
- Hemodynamic Collapse
- Infections
- Coagulopathy and bleeding
- Renal failure
- Metabolic derangements

King's College Criteria

- **Acetaminophen-Induced ALF:**
- Strongly consider OLT listing if:
- arterial lactate >3.5 mmol/L after early fluid resuscitation
- List for OLT if: pH <7.3 Or
- arterial lactate >3.0 mmol/L after adequate fluid resuscitation
- List for OLT if all 3 occur within a 24-hour period:
- 1- presence of grade 3 or 4 hepatic encephalopathy
- 2- INR >6.5
- 3- Creatinine >3.4 mg/dL

King's College Criteria

- **Non-acetaminophen:**
- INR > 6.5 OR
- Any 3 of the following 5:
 - Age < 10 or > 40
 - Serum bilirubin > 18
 - Jaundice to encephalopathy interval > 7 days
 - INR > 3.5
 - Unfavorable Etiology
 - Non-A, non-B hepatitis, halothane, idiosyncratic drug reaction, Wilson's

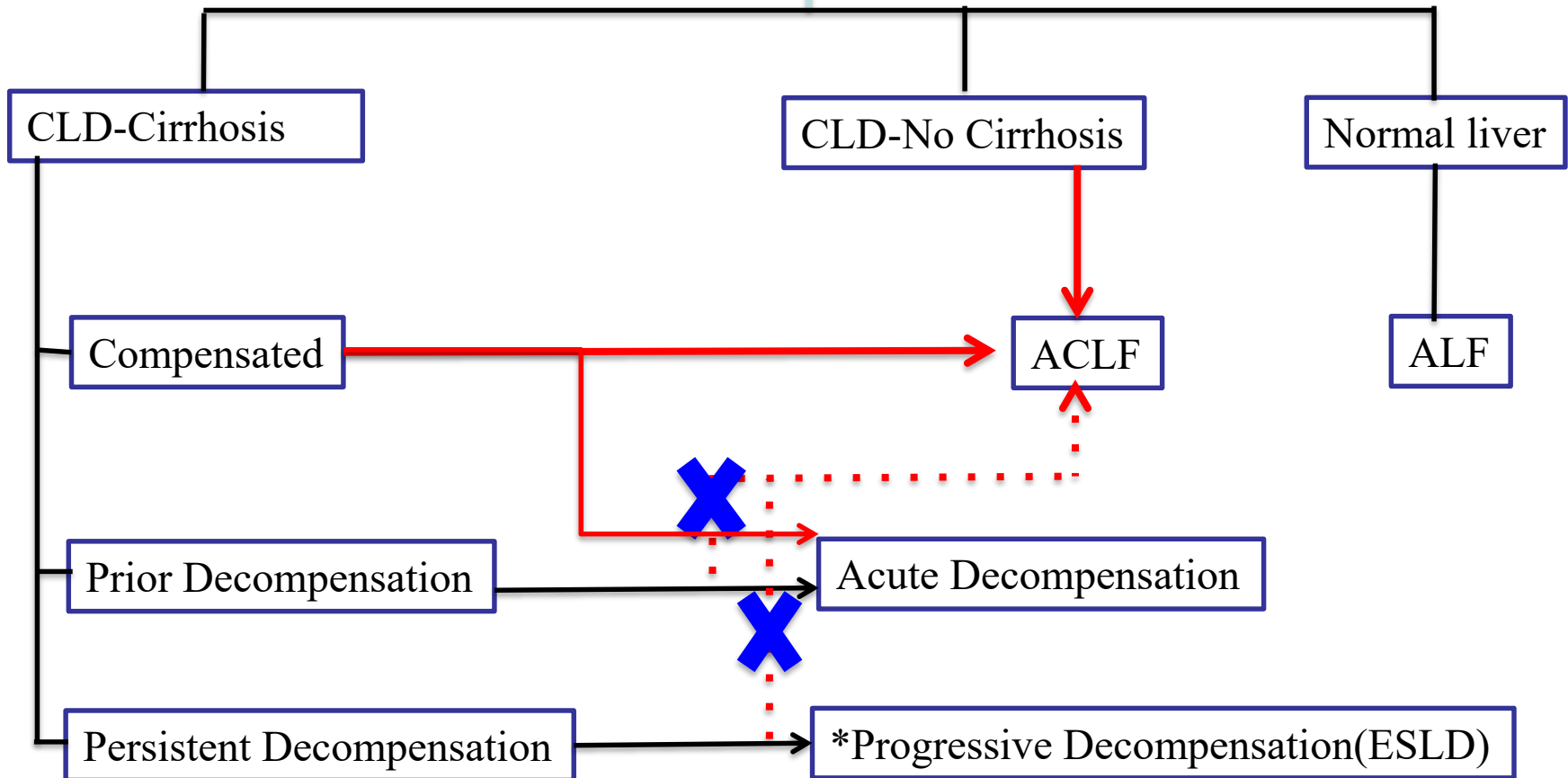
HBV Markers in ALF

IgM Anti HBc	100%
HBsAg	90%
HBV DNA (Abbott)	10%

*Absence of HBsAg favors better prognosis (47% v 17%).
Higher frequency ALF with mutant HBV form

Decompensation events in CLD

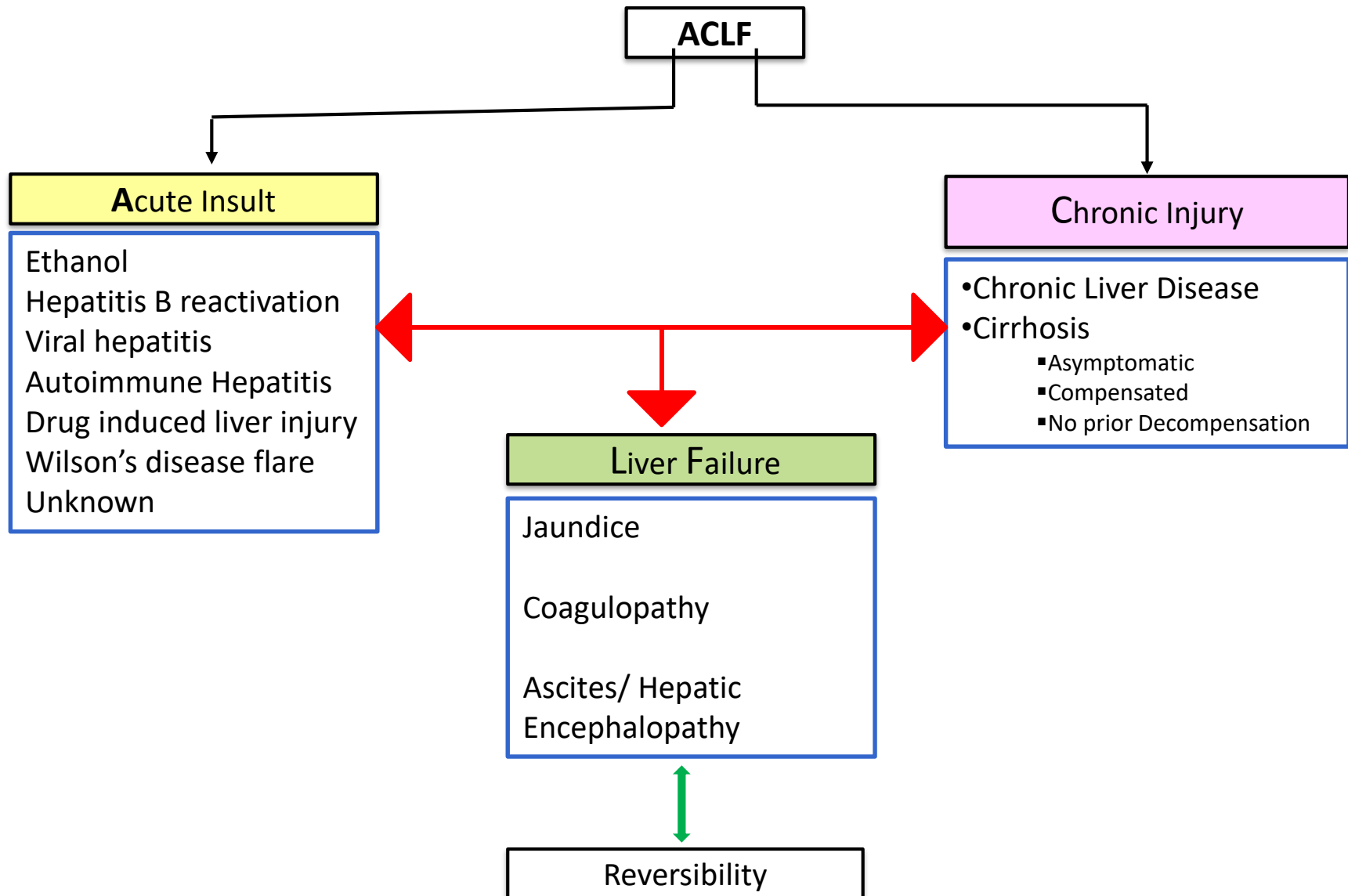
Acute Hepatic insult



X = Needs validation

The dotted line indicates the controversy in ACLF

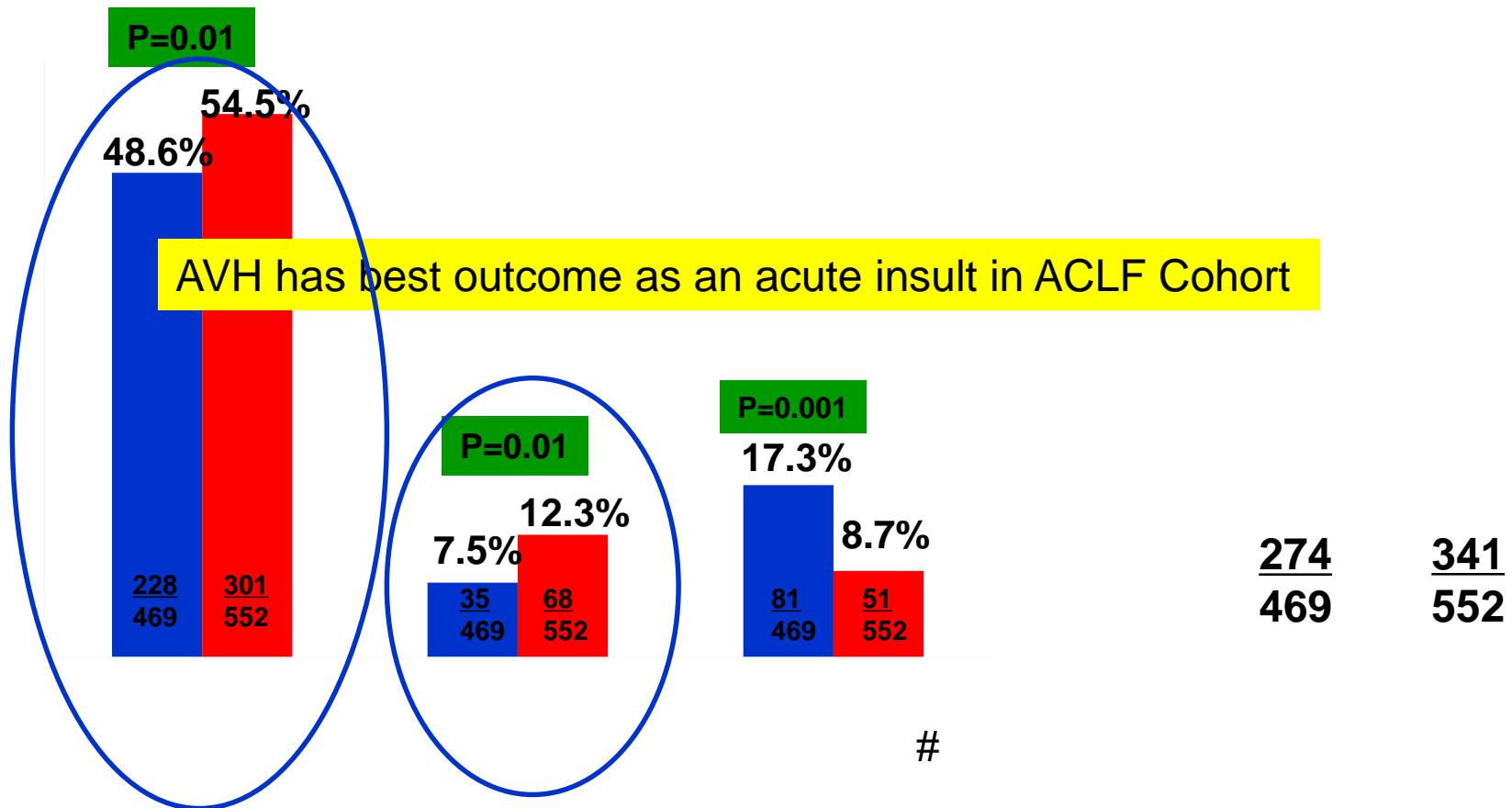
ACLF: Concept



AVH and ACLF

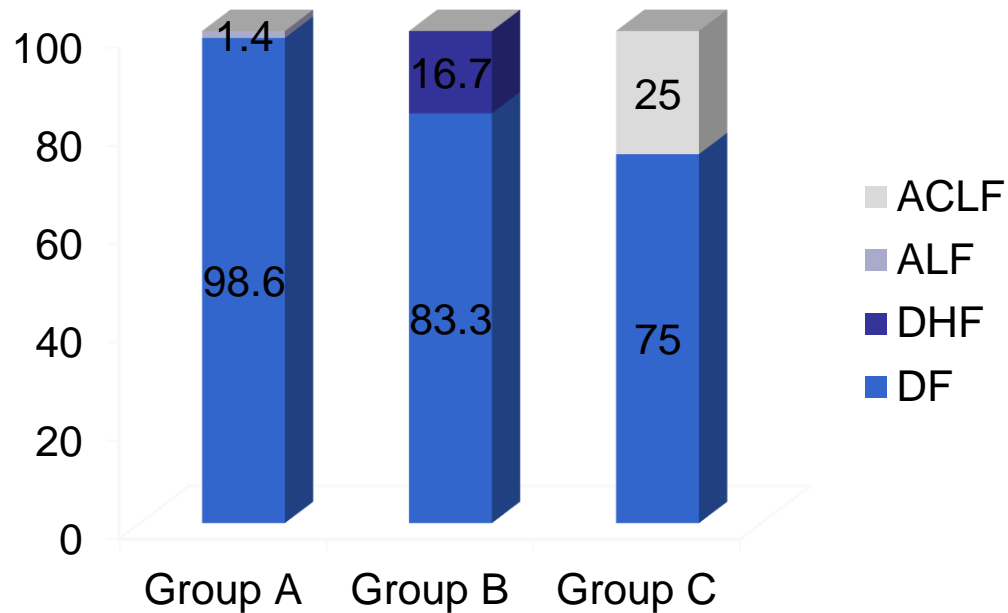
- AVH as an acute insult in 9.4% (132/1402)-AARC Data(Choudhury et.al Hep Int 2017)
- HEV is common
- HAV
- Non hepatotropic viruses
 - CMV
 - EBV
 - HSV
 - Dengue

Acute Insult and Outcome



#Acute Hepatitis- both HAV & HEV. Hepatitis E Virus constitute 93% (120/129)

Dengue and presentation with Decompensation/liver failure

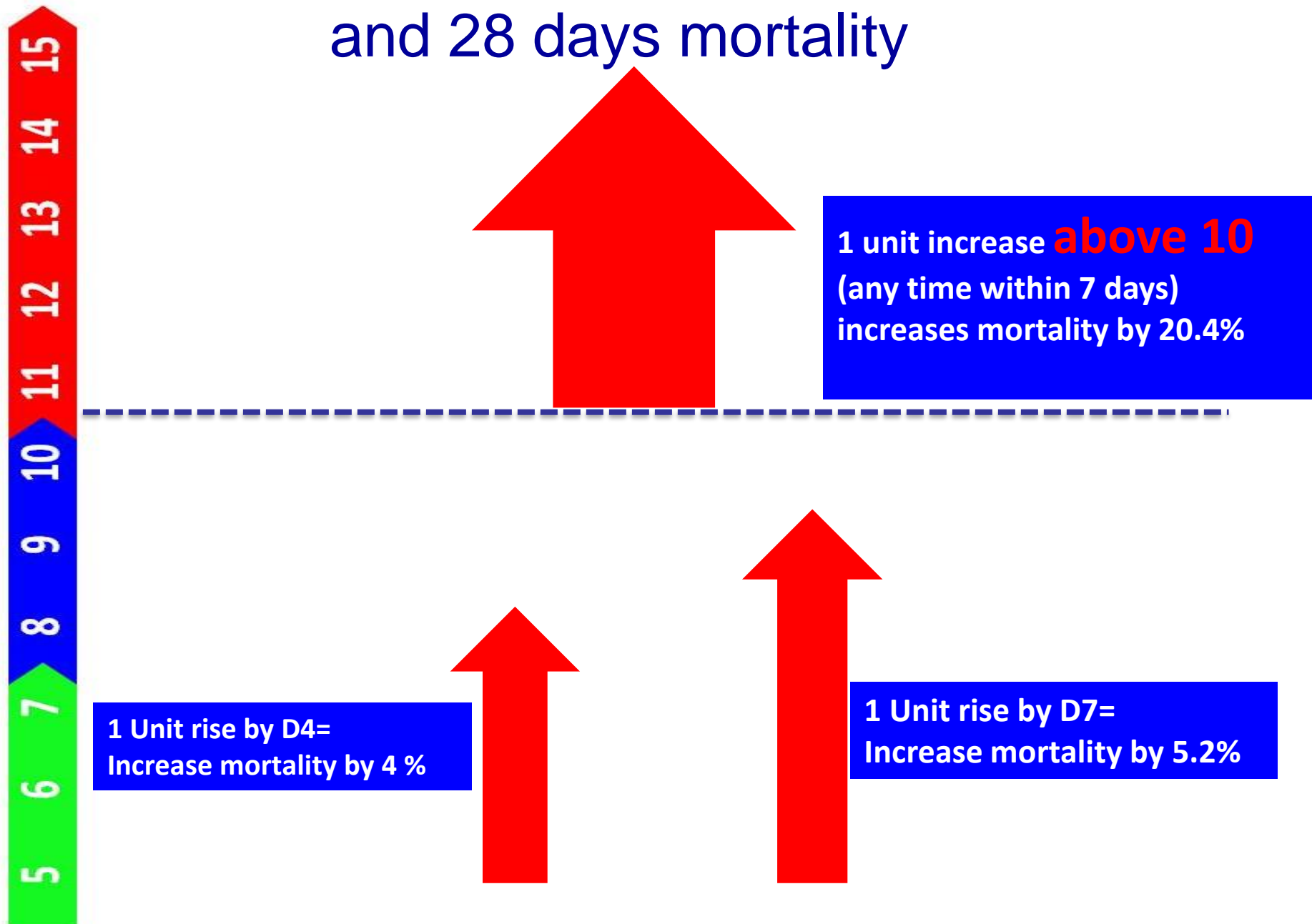


AARC ACLF Score and Grade: Early prioritization

AARC ACLF Score\$

Points	Bilirubin (mg/dl)	HE Grade	INR	Lactate (mmol/lit)	Creatinine (mg/dl)
1					
2	APASL-ACLF definition for ACLF and LT is better				
3	<ul style="list-style-type: none"> • Infection excluded as an acute insult • Organ failure-extra hepatic are not at the beginning • Provision for LT early 				
	C		11-15		

Dynamic change in Score and 28 days mortality



Complications of Viral Hepatitis

Acute

- Severe hepatitis
- ALF
- FCH
- LOHF
- Extra hepatic
- Multi-organ involvement

Chronic

- Cirrhosis
- Decompensation
- Cancer –HCC
- Extra Hepatic

Chronic HCV Infection Affects Many Sites Beyond the Liver

Pulmonary
fibrosis

Neurological
(e.g. cognitive
impairment)

Cardiovascular
Diseases
(CAD)

Renal
(e.g. glomerulonephritis)



Metabolic
(e.g. diabetes)

Lymphoproliferative
(e.g. B cell
lymphoma)

Immune Complex
(e.g.
cryoglobulinemic)

Dermatological
(e.g. porphyria
cutanea tarda)

Progression to Cirrhosis

- Longer duration of infection
- HBV genotype C
- High levels of HBV DNA
- HBeAg positive
- Habitual Alcohol
- Concurrent infections with HIV, HCV, HDV
- Carcinogens – aflatoxin, smoking

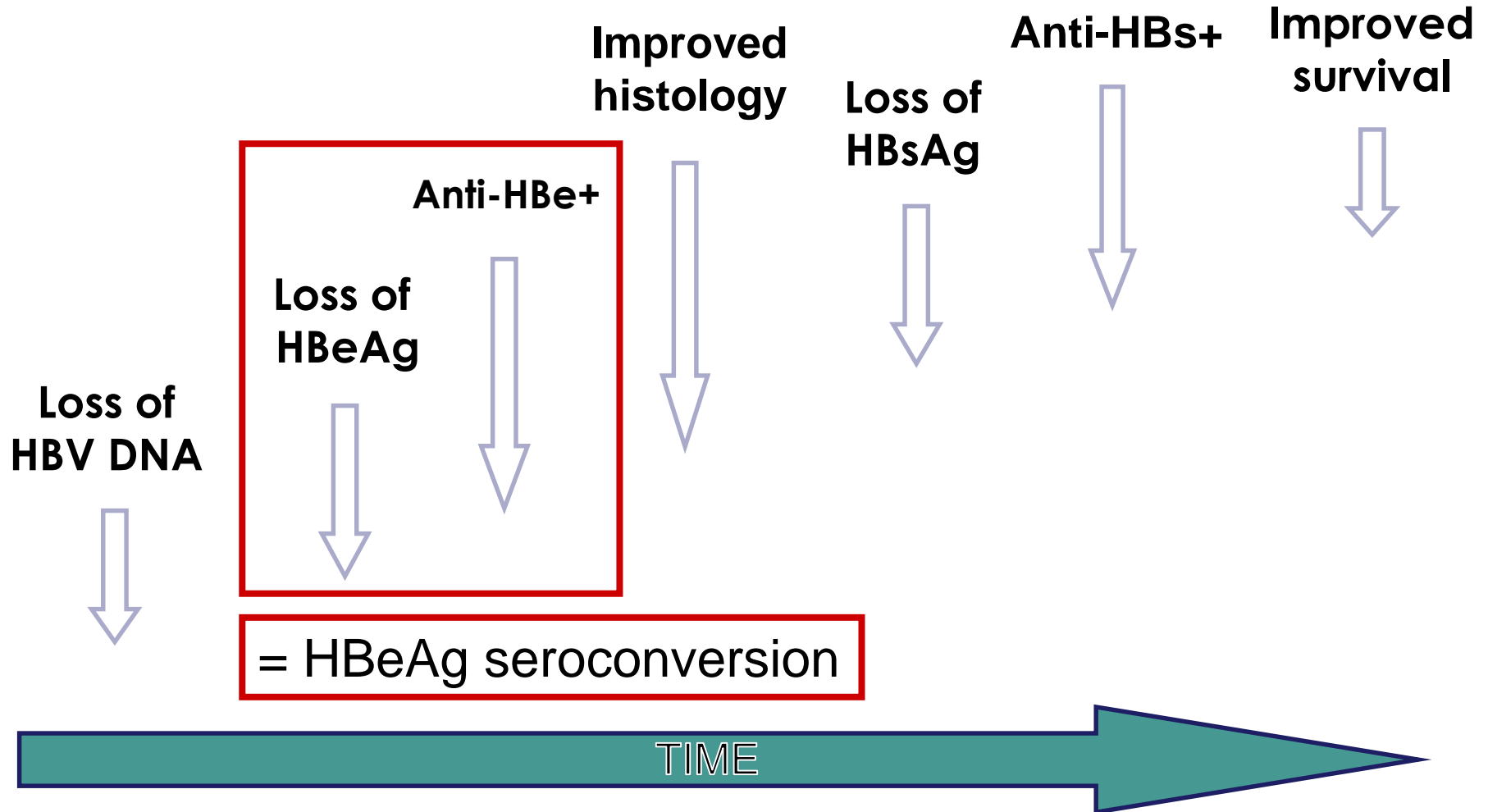
Progression to HCC

- Longer duration of infection
- Male gender; family history of HCC
- HBV genotype C
- Cirrhosis
- High levels of HBV DNA
- HBeAg positive ; history of reversion to HBeAg
- Habitual Alcohol
- Concurrent infection with HCV
- Carcinogens – aflatoxin, smoking

Screening for HCC

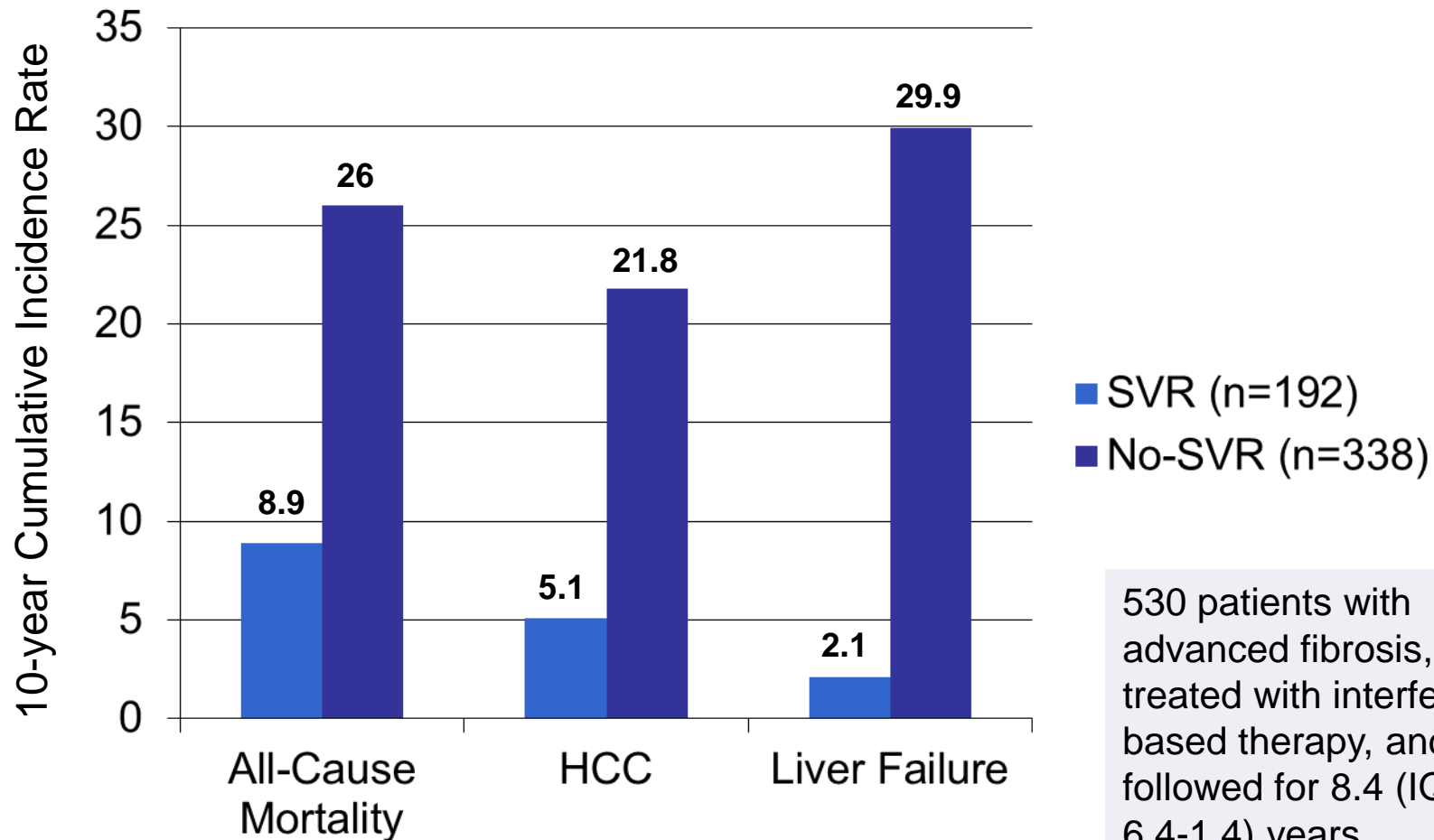
- AFP every 6 – 12 months
- Ultrasound every 6-12 months
- Frequency depends on assessment of risk

Therapeutic Endpoints



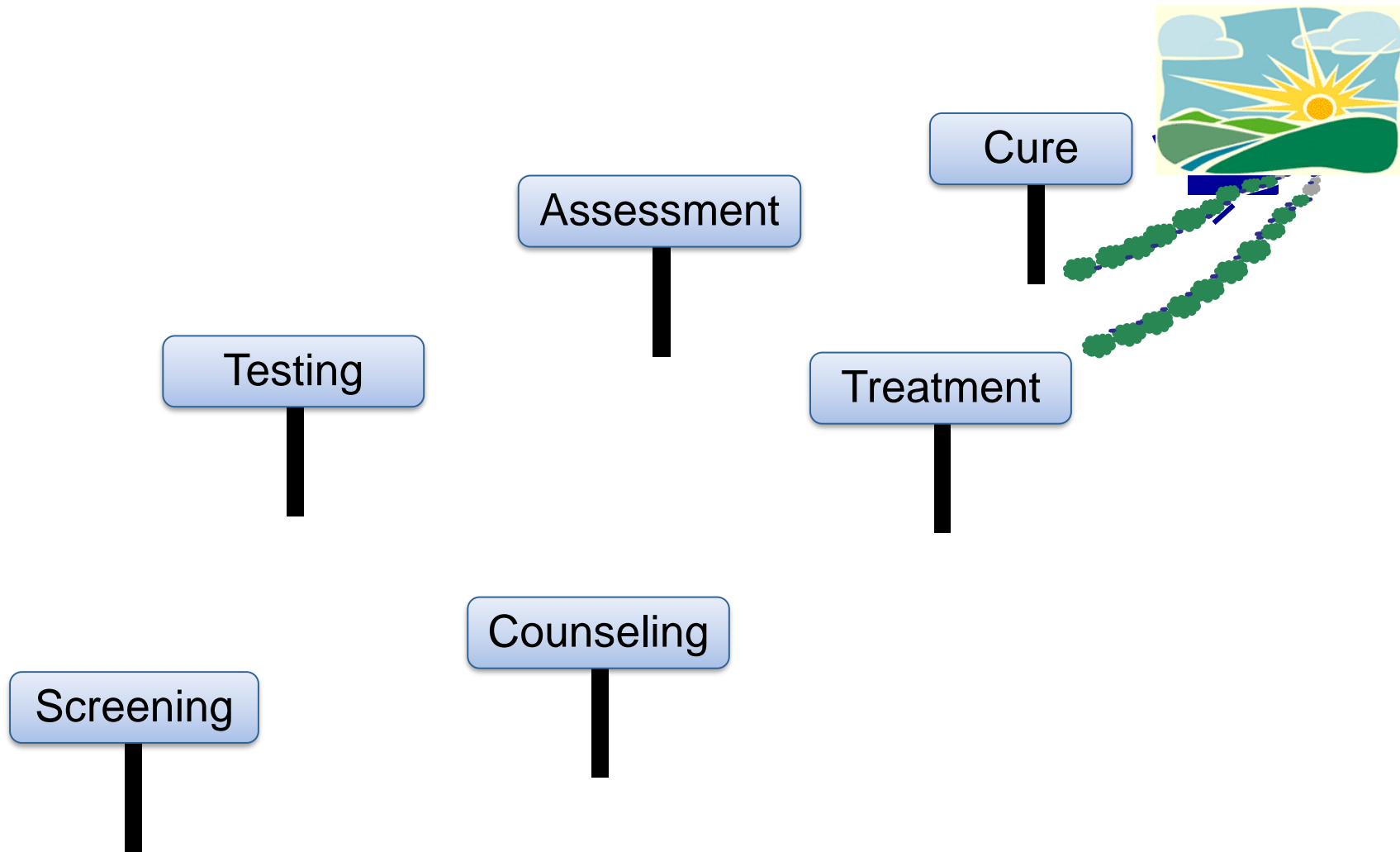
With current drugs available cure is not possible

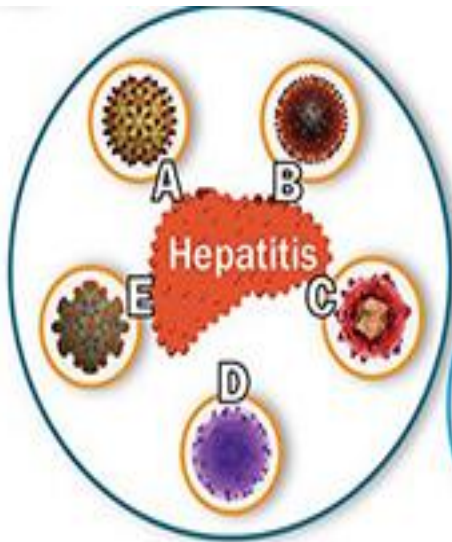
SVR (Cure) Associated with Decreased All-Cause Mortality



Therapy complications

- DAA
 - Kidney failure
- Nucs
 - Bone
 - kidney
- Interferon
 - Cytopenia
 - Constitutional symptoms





One in 12 people worldwide is living with either chronic hepatitis B or C.
'Am I Number 12?'



500 million people in the world are currently infected with HBV & HCV

3 out of 4 people with Hepatitis C infection are not aware of it

4 Crore HBV carriers in India Equal to **~66%** Of Karnataka's population

HBV and HCV are the major causes of liver cancer.

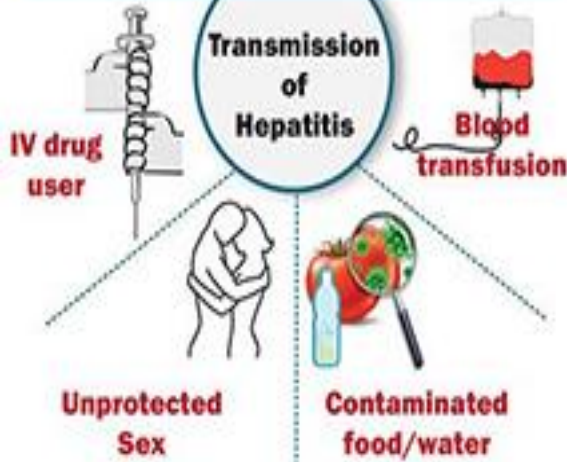
50X HBV is 50 to 100 times more infectious than HIV

A/E: Contaminated food or water

B: Blood or body fluids, unprotected sex

C: Direct blood to blood contact

Transmission of Hepatitis



B/C: Both infections does not usually spread through everyday contact, e.g. shaking hands



A/E: Highest rates of infection in developing countries including India due to poor sanitation.

E: A previous outbreak of HEV in UP had affected **~79,000** people

Know the main routes of transmission of hepatitis

	B	C
1 Unprotected sex	✓	?
2 Blood transfusions	✓	✓
3 Sharing needles	✓	✓
4 Mother to child	✓	✓
5 Using the toilet	✗	✗
6 Sharing utensils	✗	✗
7 Sharing (toothbrushes & razors)	✓	✓

What you can do

	B	C
1 See a doctor	✓	✓
2 Get vaccinated	✓	✗

* The risk of transmission of hepatitis C during unprotected sex is considered very low, especially if you are in a long-term, stable relationship. This risk may be higher among men who have sex with men or if blood is involved.

Thank You!