



THE UNIVERSITY OF
NEW SOUTH WALES

Traveller's tales

Prevention of hepatitis A and E

Professor Andrew Lloyd

	Hepatitis A	Hepatitis B	Hepatitis C	Hepatitis D	Hepatitis E
Virus	ssRNA	enveloped DNA	enveloped ssRNA	enveloped ssRNA, replication defective	ssRNA
	Picornia	Hepadna	Flavi	Unknown	Calici
Transmission	Faecal-oral	Parenteral, vertical, sexual	Parenteral, vertical	Parenteral, vertical, sexual	Faecal-oral
Incubation (days)	15-45	30-180	20-90	30-50	15-60
Fulminant hepatitis	0.1-0.4%	1-4%	Very rare	3-4% (co-infection)	0.3-3.0%; 20% in pregnancy
Chronic hepatitis	None	5-10% adult infections	50-80%	5% in co-infection 80% in super-infection	None
Pathogenesis of liver disease	Viral cytopathic	Immunopathology	Immunopathology	Unknown	Viral cytopathic
Increased risk of hepatocellular carcinoma	No	50-180X	5-30X	No increase above HBV	No
Diagnostic serology	HAV IgM, HAV IgG seroconversion	HBc IgM, HBsAg	HCV IgG seroconversion	HDV IgM, HDV IgG seroconversion	HEV IgM, HEV IgG seroconversion
Serological tests of viral replication	Not applicable	HBsAg, HBeAg	None available	None available	Not applicable
Molecular tests of viral replication	Not applicable	HBV DNA	HCV RNA	None available	Not applicable

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Ms JH

- 22 yrs, previously healthy
- Returned unwell from S.Africa / Zambia
- OS only 18 days
- Immunisations: typhoid, HAV/HBV
- Backpacker hotels; safari tour
- Bottled water, catered meals

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Ms JH (cont)

- Illness onset ~ 12 days after arrival
- Fever, anorexia, myalgia, dark urine
- RUQ tenderness on examination
- FBC: mild lymphopaenia, plts 120 (150-400)
- LFTs: bili 250; GGT 860; ALT 1300, AST 1252, alb 21
- INR: 1.5
- BSL: normal

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Dr RS, 32 yrs, ICU registrar

- Born in India, emigrated to Australia
- Previously healthy
- No immunisations
- Visited India for wedding
 - Village setting in northern India
 - Bottled drinks, catered meals
- Illness onset three weeks after return

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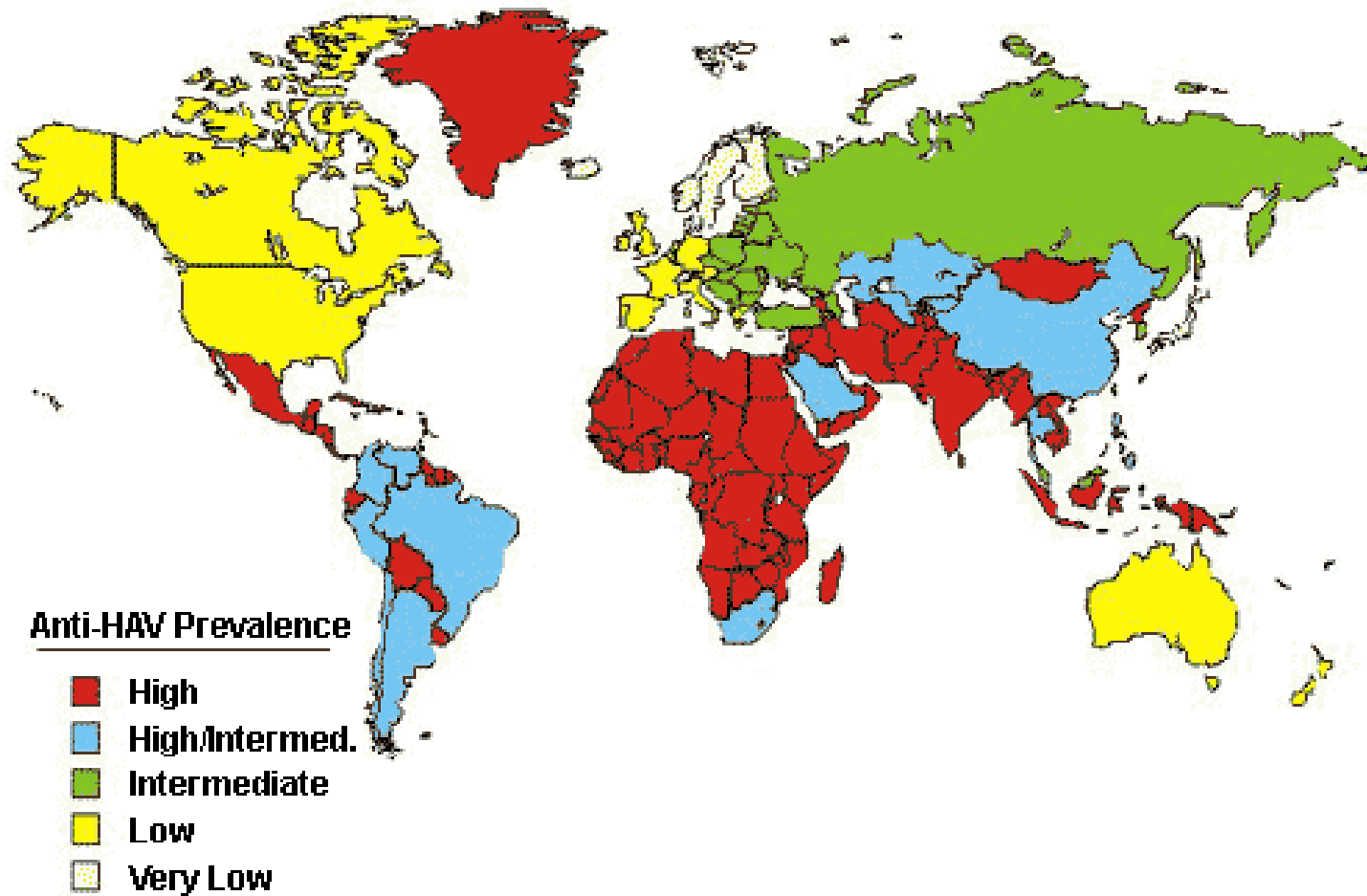
Dr RS (cont)

- Fever, anorexia, arthralgia, dark urine
- Examination unremarkable, except icterus
- FBC: normal
- LFTs: bili 96; ALT 586; AST 328; albumin 30
- INR: 1.0
- HAV IgM positive

Hepatitis A



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Hepatitis A



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Clinical features

TABLE 4. *Predicted outcome after an infection with hepatitis A virus^a*

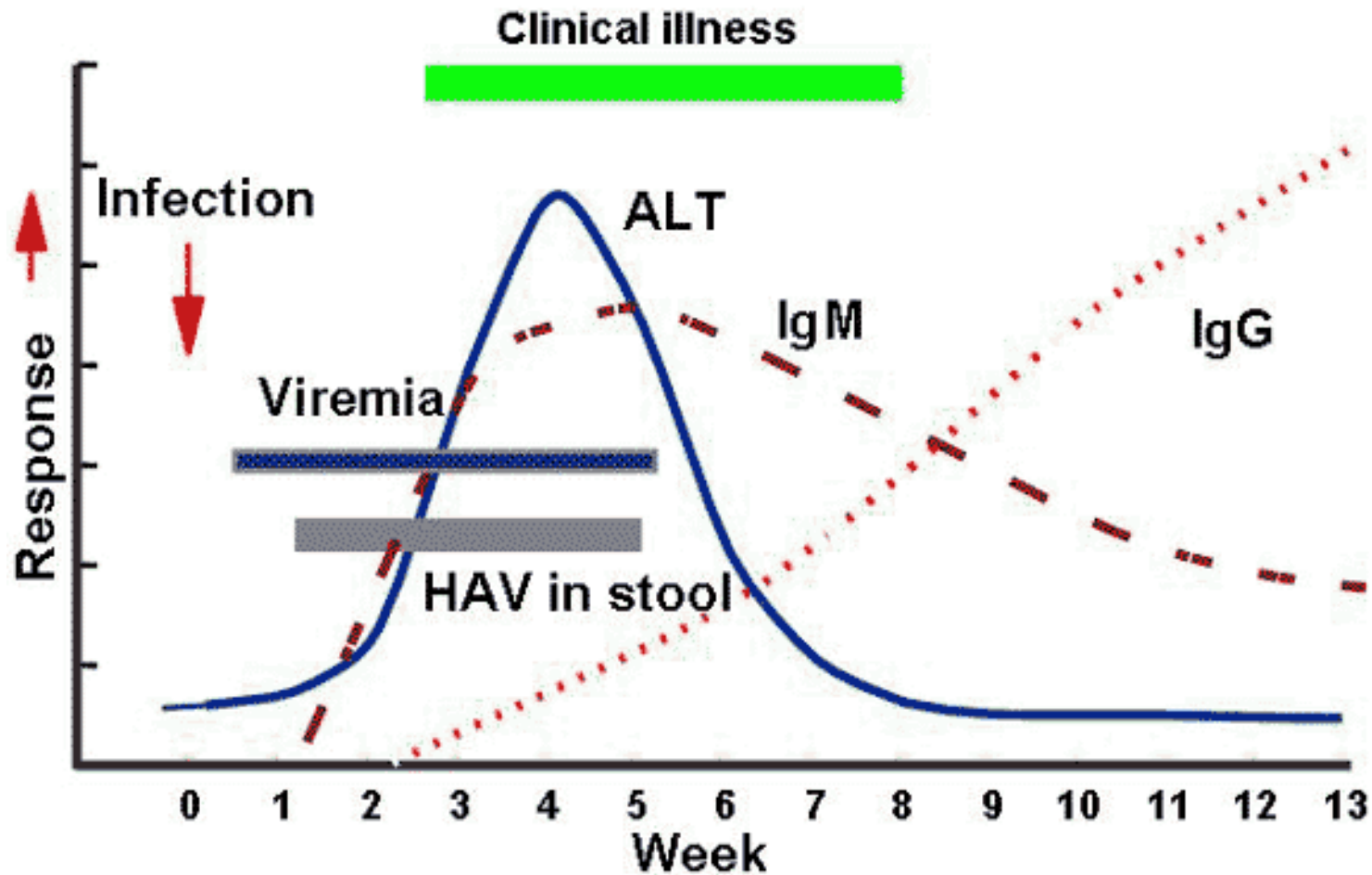
Parameter	Predicted outcome	
	Children (<5 yr)	Adults
Inapparent infection	80–95%	10–25%
Anicteric or icteric disease	5–20%	75–90%
Complete recovery	99+%	98+%
Chronic disease		None
Mortality rate		
≤14 yr		0.1%
15–39 yr		0.3%
≥40 yr		2.1%

Hepatitis A



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Laboratory diagnosis



Hepatitis A



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Prevention

- Food and water precautions, handwashing
- Immunisation (0, 1, 6-12)
 - Monovalent (Avaxim, Havrix, VAQTA)
 - Combination HAV/HBV (Twinrix)
 - Combination HAV/Typhoid (Vivaxim)
- Post-exposure
 - Normal human immunoglobulin

Hepatitis A



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Indications for immunisation

- Travellers to endemic areas
- Children of Aboriginal and Torres St Is. background
- Occupational risk (aid workers, plumbers, sewage workers, sex workers)
- Intellectually disabled
- Patients with chronic liver disease

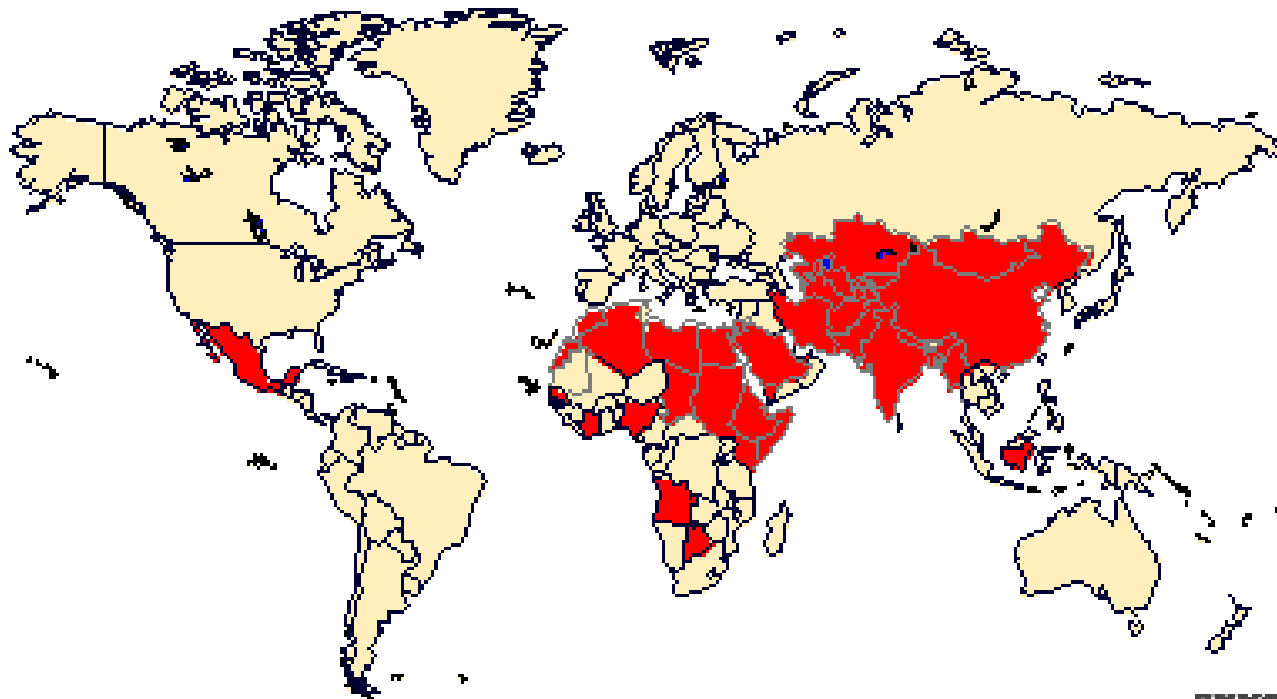
Hepatitis E



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Geographic Distribution of Hepatitis E

Outbreaks or Confirmed Infection in > 25% of Sporadic Non-ABC Hepatitis



Hepatitis E



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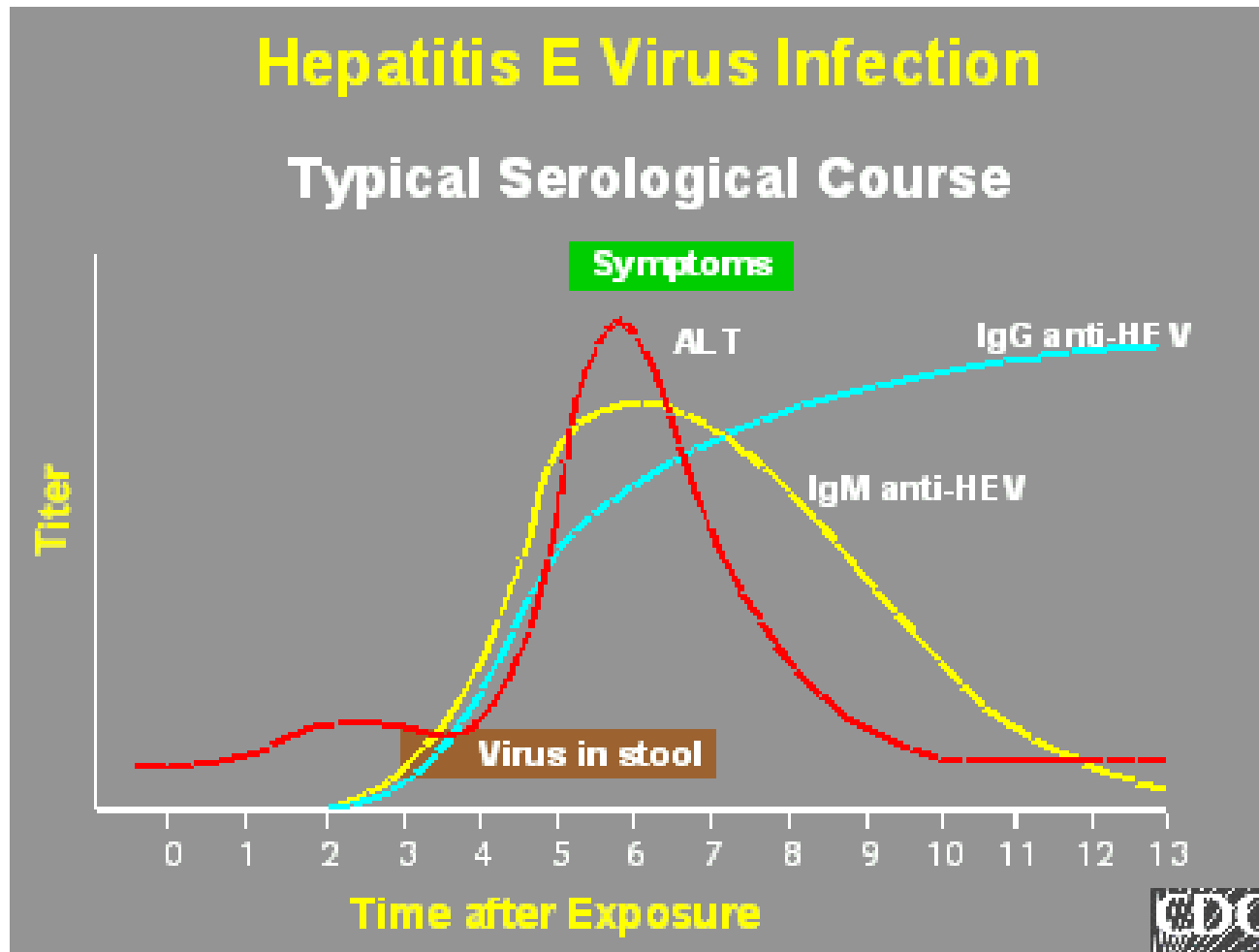
Clinical features

- Predominantly asymptomatic
- Low mortality (0.5-4%)
- Peak age clinical disease: 15-34 years
- Mortality in pregnant women (~10-42% %)
- Water-borne outbreaks
- Zoonotic origin: pigs, monkeys, cattle, sheep, goats, ducks
- Low secondary attack rate (~2%; cf HAV ~20%)

Hepatitis E



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Hepatitis E



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Prevention

- Food and water precautions, handwashing
- Immunisation
 - Recombinant HEV protein (ORF2) - VLP
 - Oral administration 0, 1, 6 months
 - Effective in Phase III clinical trials
 - Not commercialised
- Post-exposure
 - Normal human immunoglobulin ineffective

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- Ms JH 22 yrs, ex S.Africa / Zambia
- Stormy course with deep jaundice
- Seroconversion to leptospirosis at 6 weeks
- Dr RS, 32 yrs, ICU registrar, visit to India
 - Uncomplicated course
 - HAV IgM negative on repeat
 - HEV IgM and IgG seroconversion