Hepatitis and the Internationally Adopted Child

Jean Pappas Molleston, MD

Professor of Clinical Pediatrics
Pediatric Gastroenterology, Hepatology and Nutrition
Indiana University School of Medicine
James Whitcomb Riley Hospital for Children

Hepatitis A

- Hepatitis A is an acute, not chronic, hepatitis
- Transmitted via fecal-oral route (stool)
- Endemic in many countries, child may already be seropositive on arrival
- Children with chronic liver disease should be immunized against Hepatitis A if not already immune

Hepatitis B

Hepatitis B: Demographics

- Endemic areas: SE Asia, Africa, Arctic*
- High-risk sexual behavior or IV drug use
- Institutionalized children
- Healthcare workers
- Household contacts
- Blood product recipients/dialysis patients
- Internationally adopted children*

Hepatitis B: Transmission

- Blood
- Body fluids
- Vertical transmission (mother to child)
- Special issues:
  - Saliva
  - Horizontal spread
  - Insects
  - Daycare

Prevention of Hepatitis B

- Universal immunization
- Babies born to carrier moms: HBIG within 12 hours of birth, begin immunization immediately
- After exposure: HBIG and immunization if unimmunized
- Immunize family members, avoid sharing razors/ clippers, clean blood spills with bleach and gloves
- Educate regarding safe sex

Clinical Manifestations of Hepatitis B

- Asymptomatic
- Acute hepatitis
- Fulminant hepatic failure
- Cirrhosis and chronic liver disease
- Hepatocellular carcinoma

- Also rash, serum sickness, kidney disease

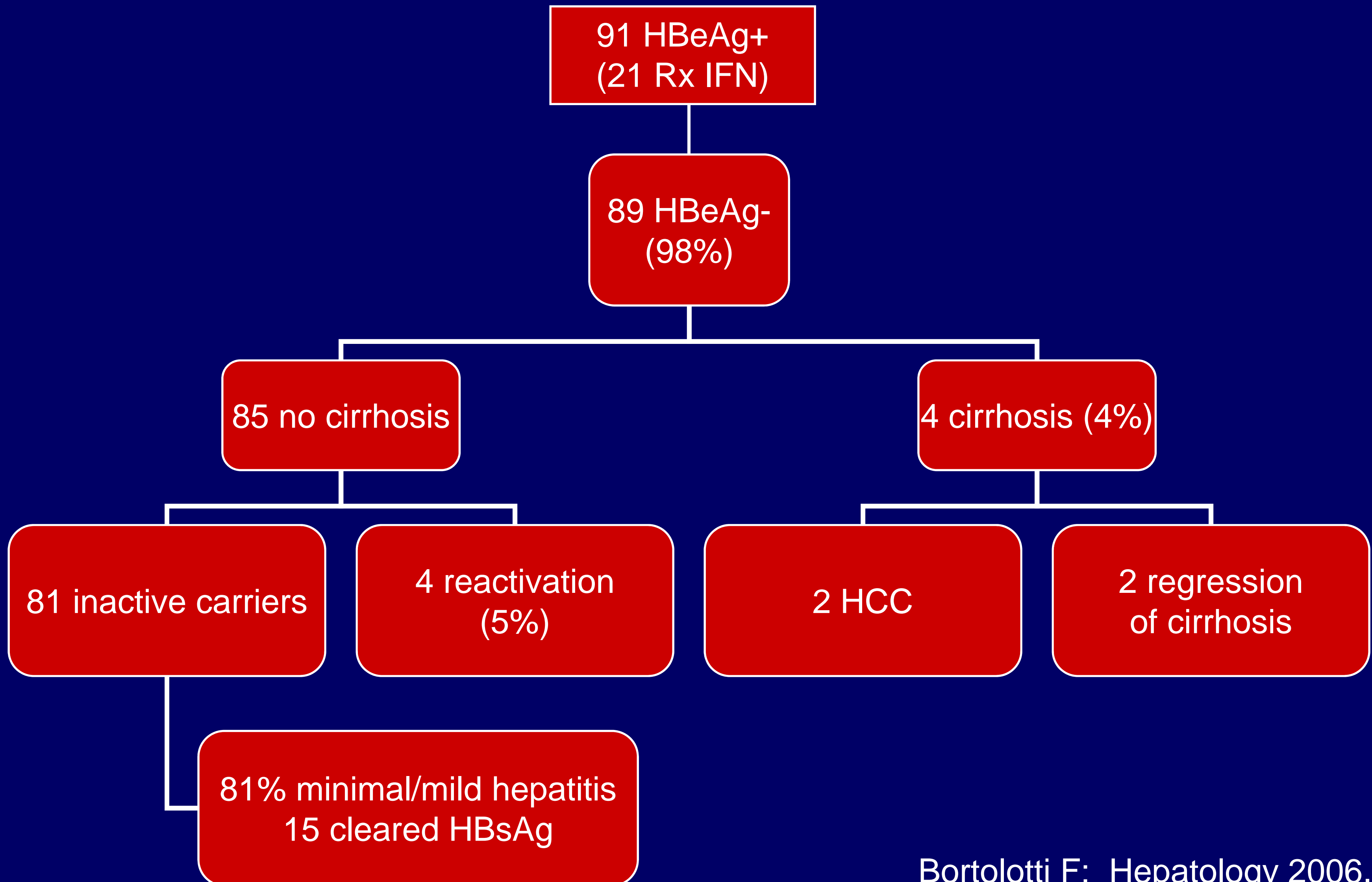
Diagnosis of Hepatitis B

- HBsAg: Hepatitis B present
- HB DNA: Quantitates viral load
- HBeAg: Active viral replication
- HBc IgG: Previous exposure to the infection
- IgM: Current infection
- HBsAb: Cleared infection/immune response
- ALT: Reflects necroinflammatory activity
- (Other: Genotype, mutation analysis)

Outcome of Hepatitis B

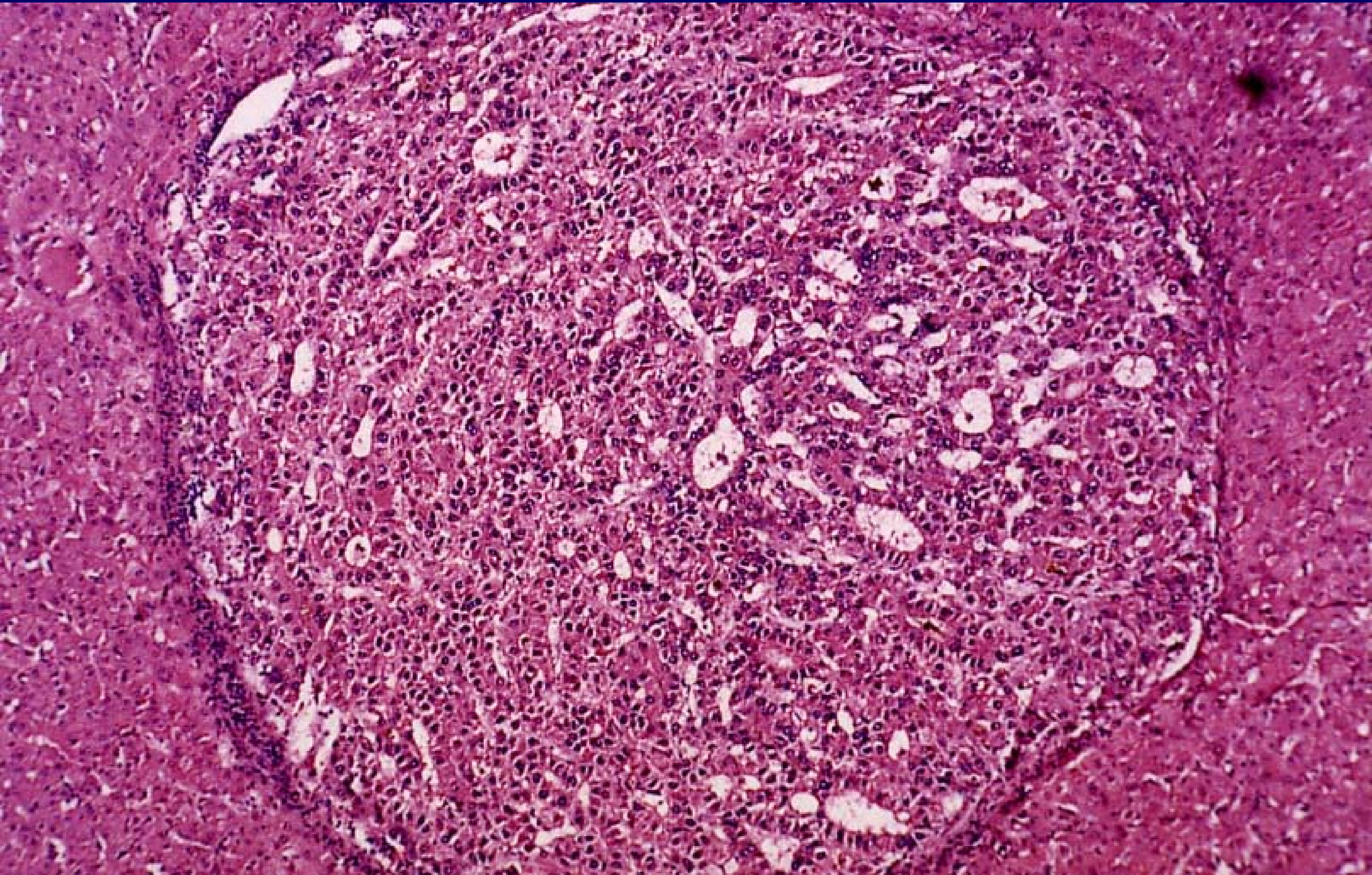
- In adults:
  - 90% Recover, becoming HBsAb+
  - 5-10% Chronic infection
  - 1% Fulminant hepatic failure
- In children: Rate of chronic infection is very high when infected in infancy (90%) and decreases with increasing age at infection

29 Year Followup of Hepatitis B in 91 Children



Bortolotti F: Hepatology 2006.

Liver Cancer is Increased in Hepatitis B



Treatment of Hepatitis B in Children

"All who drink of this remedy recover in a short time. Except those whom it does not help, who all die. It is obvious, therefore, that it only fails in incurable cases".

Galen (circa 150 AD)

Treatment of Chronic Hepatitis B in Children (with Elevated ALT)

- Alpha interferon* injections:
  - Response rate approximately 30%
  - Responders* HBeAg-/DNA- but usually remain HBsAg+
- Lamivudine orally:
  - Response rate approximately 30%*
  - Induces mutant virus in 40%

Responder = Less active

*Virus, not elimination

Hepatitis C

Hepatitis C: Transmission

- Blood products, including some IVIG
- IV Drugs
- Healthcare workers
- Sexual (very small risk unless promiscuous)
- *Vertical transmission (from mother) = 5%
- Unknown (up to 40%)

Hepatitis C: The Infection

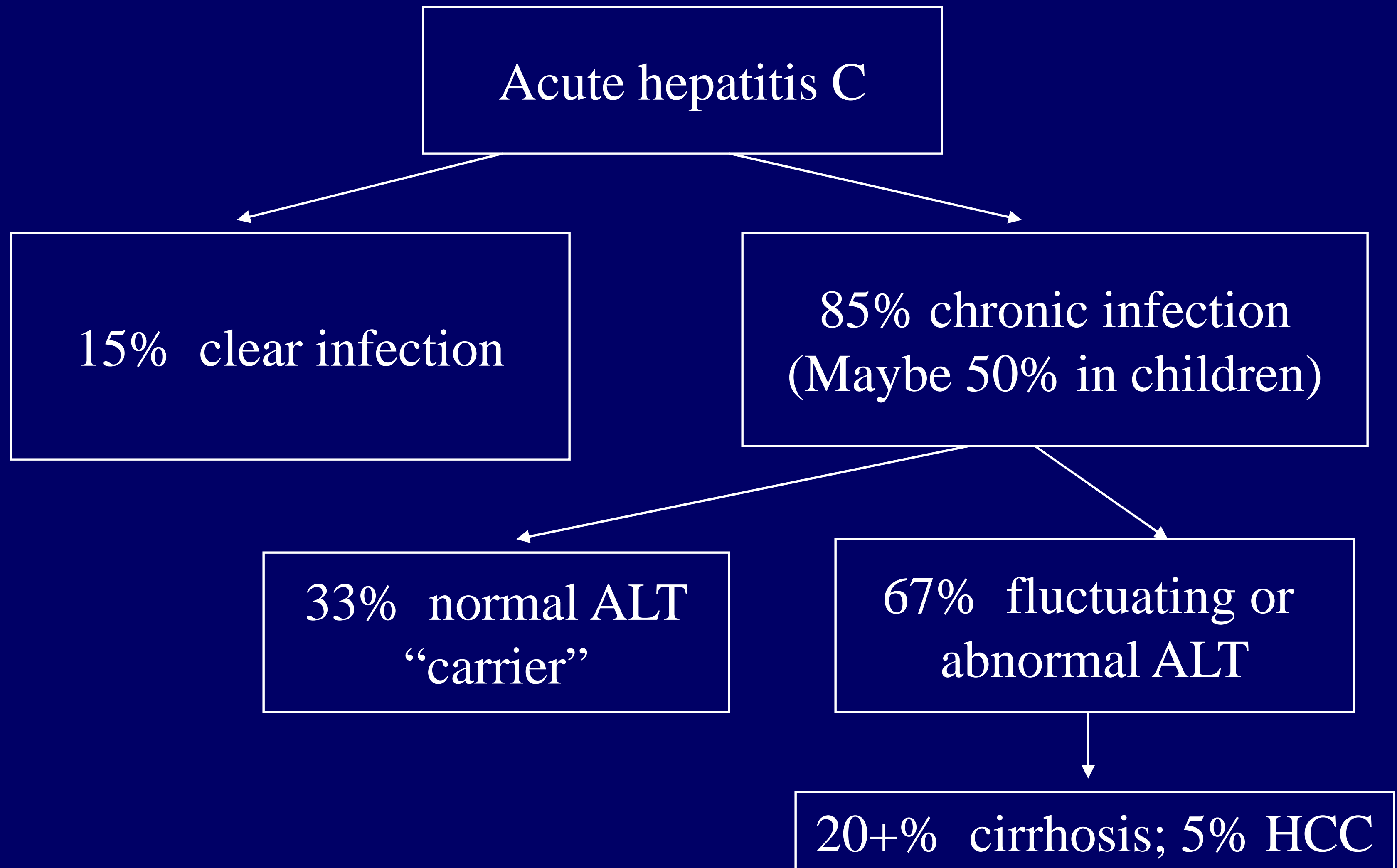
- Incubation 15 - 150 days (mean 50)
- Most patients are asymptomatic although 25% may have malaise, anorexia, jaundice
- Fulminant liver failure rarely if ever occurs
- Antibodies develop by 2 to 6 months

Diagnosis of Hepatitis C

• Screening:	Hepatitis C Ab
• Confirmation:	HCV RNA PCR (RIBA)
• Research/therapy:	Quantitative PCR

Genotype

Natural History of Hepatitis C



In chronic hepatitis C

1+1=46%*

The New Formula for Success in the Treatment of Relapsers

Therapy for Hepatitis C in Children

- Interferon/Ribavirin combination therapy: Licensed for treatment of hepatitis C in children
- Pegylated Interferon/Ribavirin therapy recently studied: >50% response (HCV-)
- Future directions: Protease inhibitors, other nucleosides, new interferons

PEDS C Study: Peg IFN +/- Ribavirin for Treatment of Pediatric HCV

- Multicenter RCT of Peg IFN vs Peg/Ribavirin
  - 118 kids nationally; 13 at Riley Hospital
- Compassionate crossover design
- Results at Riley:
  - Overall, 7 of 12 responded
  - IFN monotherapy: 0/6 responded
  - Combo therapy: 7/11 responded
- Results of trial:
  - 53% response rate with combo therapy

Side-Effects from Interferon/Ribavirin Therapy

- Fevers, flu-like symptoms
- Irritability, behavior issues, depression
- Injection site reaction
- GI symptoms
- Headache
- Weight loss
- Neutropenia/anemia

Caring for the Child with Hepatitis B or C

- Teach about transmission
- Avoid hepatotoxins (drugs, EtOH, obesity)
- Avoid immunosuppressing if possible
- Keep weight reasonable (avoid NASH – nonalcoholic steatohepatitis)
- Immunize for Hepatitis A and B (unless patient has Hepatitis B virus)
- Monitor PE for evidence of portal hypertension
- Monitor labs for disease activity (ALT)
- Follow alpha-fetoprotein (AFP)/ultrasound for liver cancer

Hepatitis Summary: When to Worry

- Evidence of portal hypertension (enlarged liver/ spleen, low platelets)
- Jaundice
- Marked laboratory evidence of hepatocellular necrosis - ALT's in 100s or more
- Mental status changes

Viral Hepatitis: Common Questions from Parents

- What will happen to my child in the long run?
- What should I tell the school?
- Are my other children at risk?
- Do herbals work?
- What can I do to help my child's health?

Good Resources
Regarding Viral Hepatitis

- (RHC) Riley Hospital for Children website
- (ALF) American Liver Foundation website
- (CDC) Centers for Disease Control website
- (AAP) American Academy of Pediatrics Redbook
- (PKIDS) Parents of Kids with Infectious Diseases website