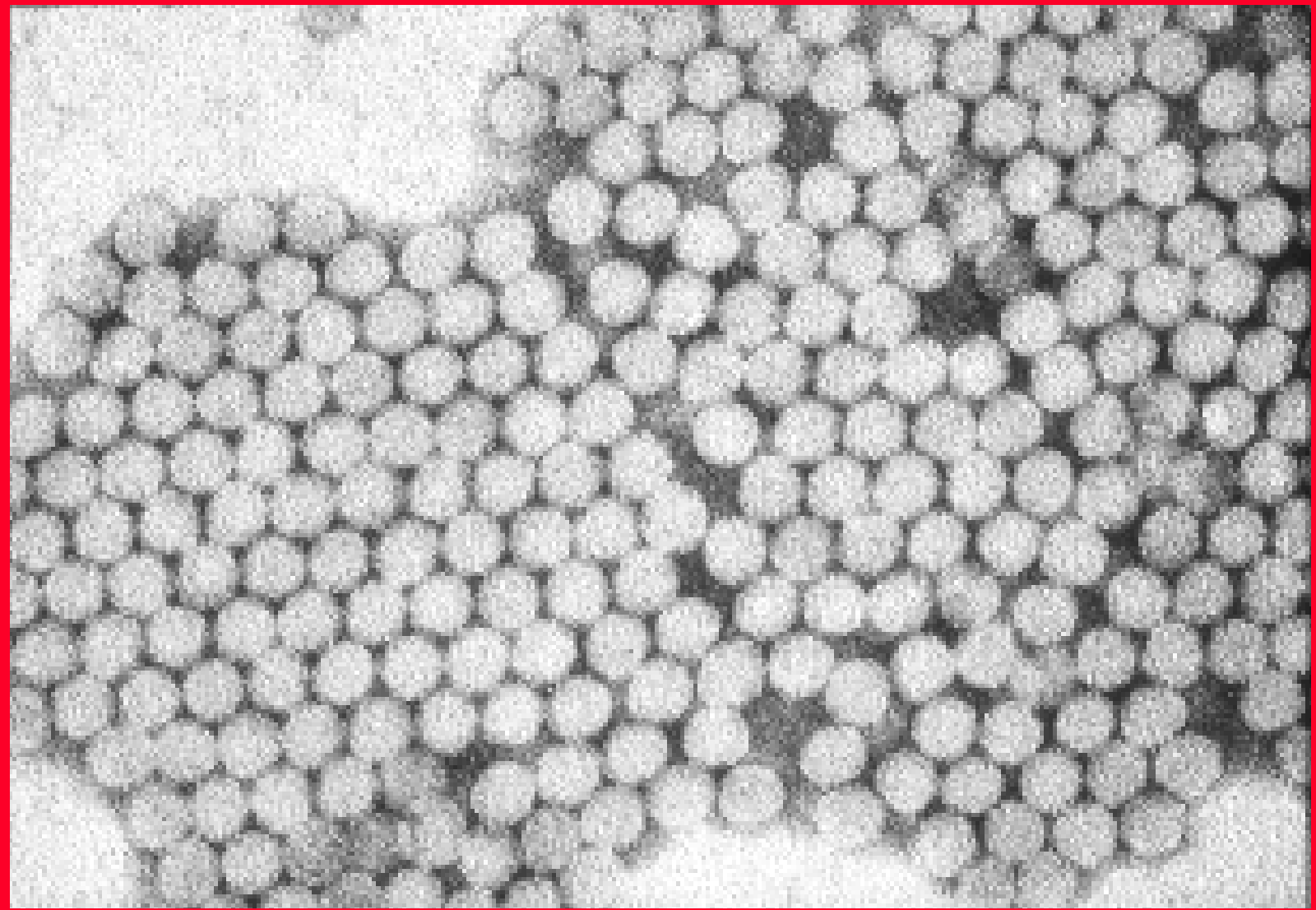


# Hepatitis A Virus



# Hepatitis A - Clinical Features

- Incubation period: Average 30 days  
Range 15-50 days
- Jaundice by age group:
  - <6 yrs, <10%
  - 6-14 yrs, 40%-50%
  - >14 yrs, 70%-80%
- Complications:
  - Fulminant hepatitis
  - Cholestatic hepatitis
  - Relapsing hepatitis
- Chronic sequelae: None

# Age-specific Mortality Due to Hepatitis A

<u>Age group (years)</u>	<u>Case-Fatality (per 1000)</u>
<5	3.0
5-14	1.6
15-29	1.6
30-49	3.8
>49	17.5
<b>Total</b>	<b>4.1</b>

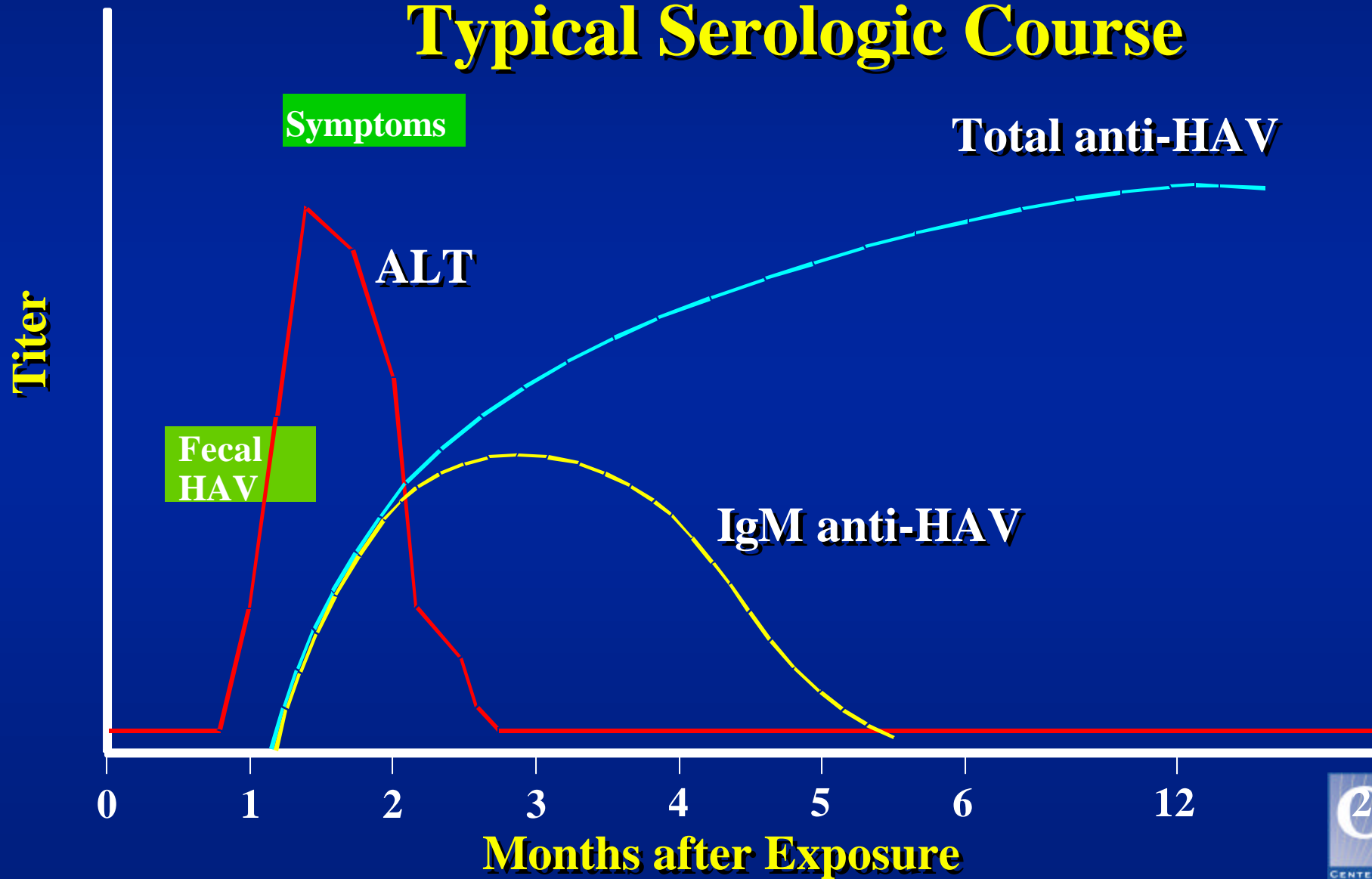
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Source: Viral Hepatitis Surveillance Program, 1983-1989



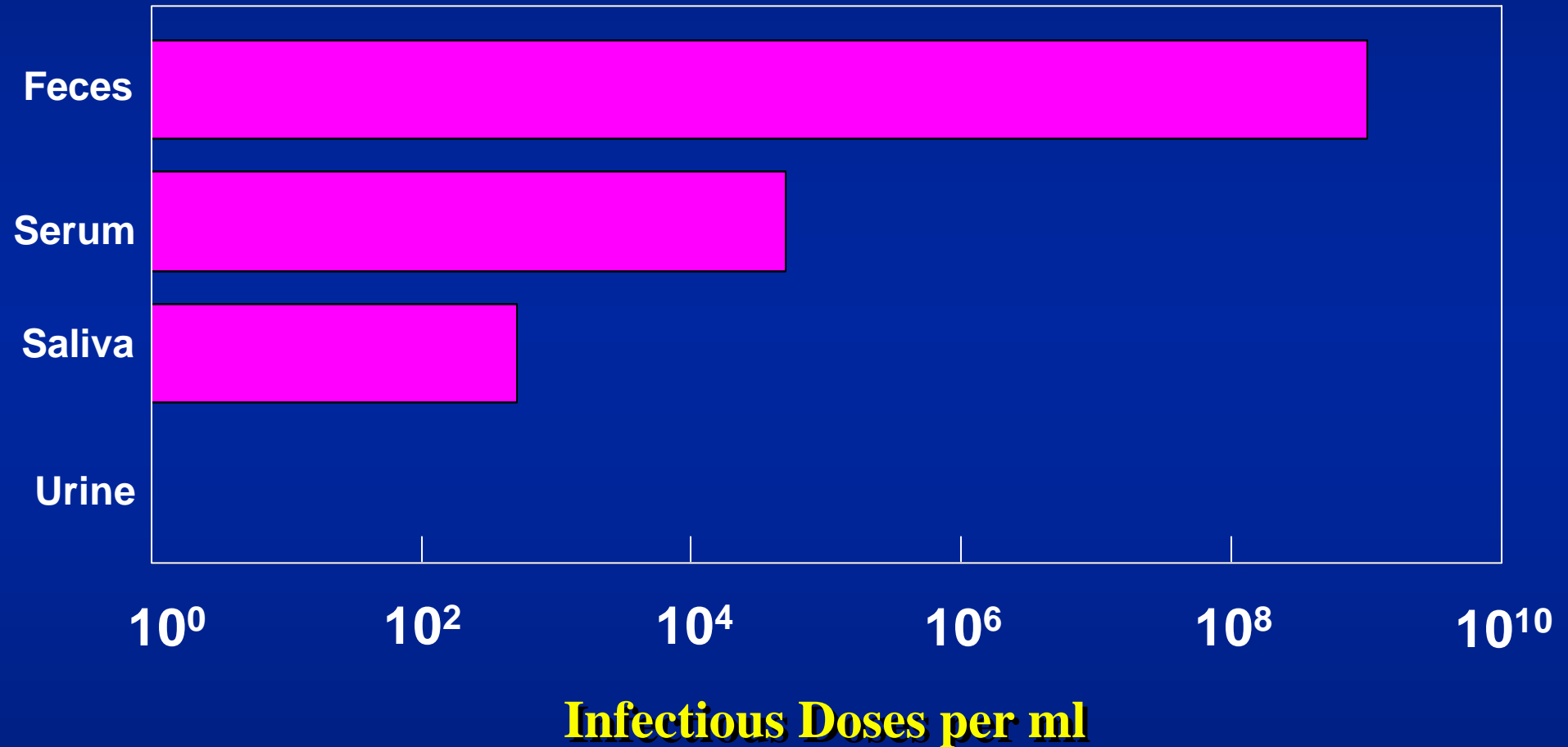
# Hepatitis A Virus Infection

## Typical Serologic Course



# Concentration of Hepatitis A Virus in Various Body Fluids

Body Fluid

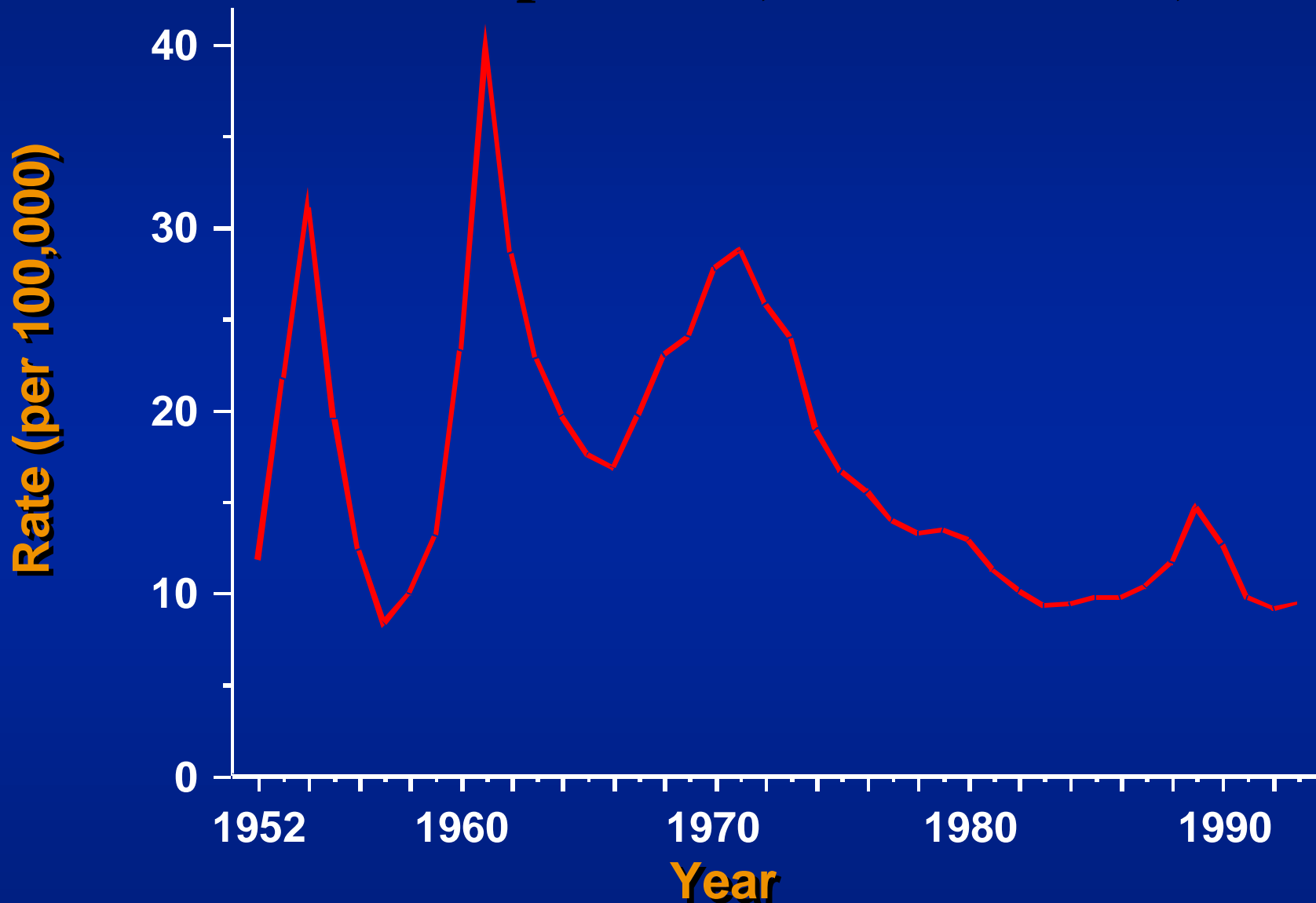


Source: Viral Hepatitis and Liver Disease 1984;9-22  
J Infect Dis 1989;160:887-890

# Hepatitis A Virus Transmission

- **Close personal contact**  
(e.g., household contact, sex contact, child day care centers)
- **Contaminated food, water**  
(e.g., infected food handlers, raw shellfish)
- **Blood exposure (rare)**  
(e.g., injecting drug use, transfusion)

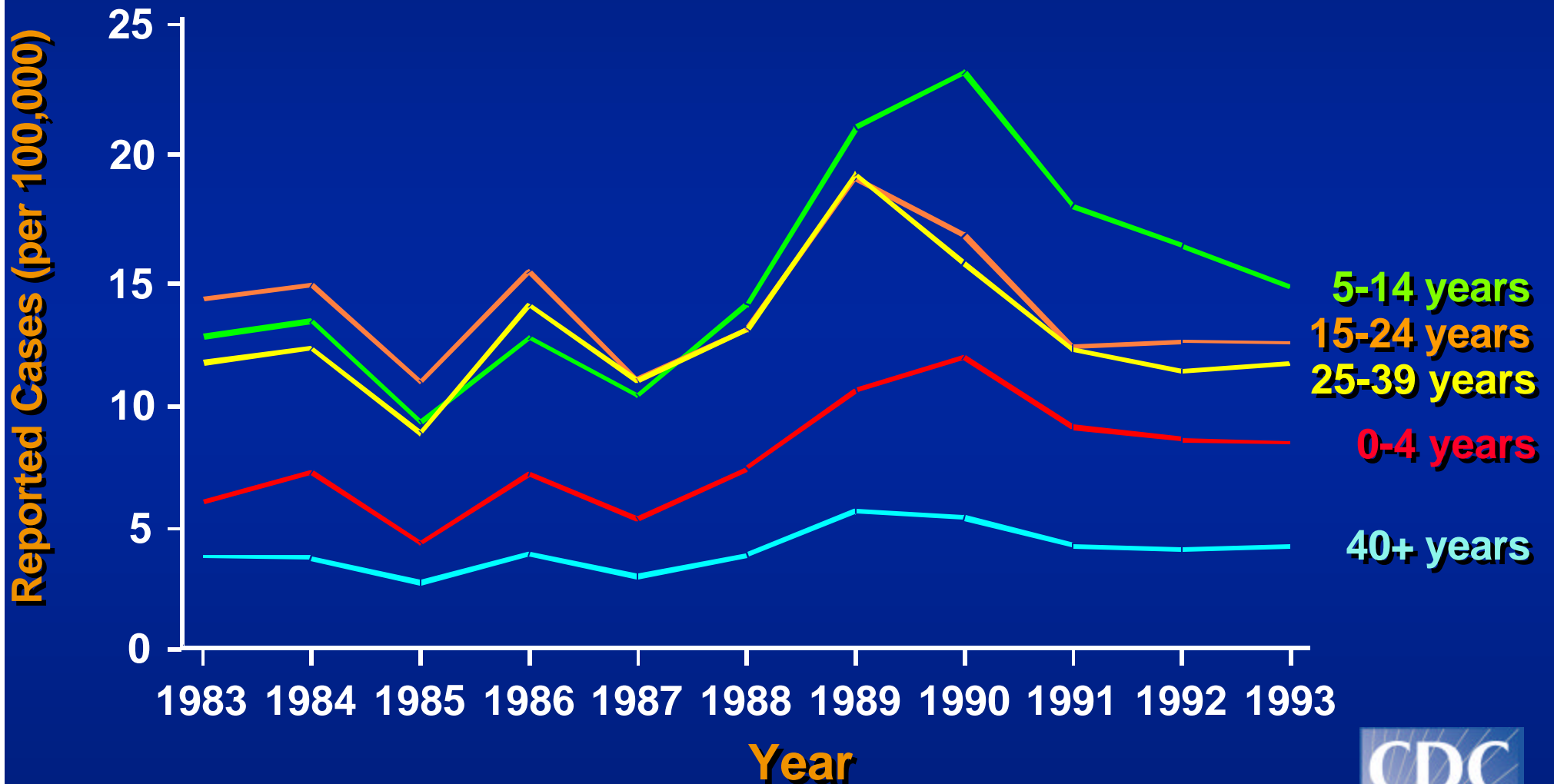
# Incidence of Hepatitis A, United States, 1952-1993



Source: CDC, National Notifiable Diseases Surveillance System



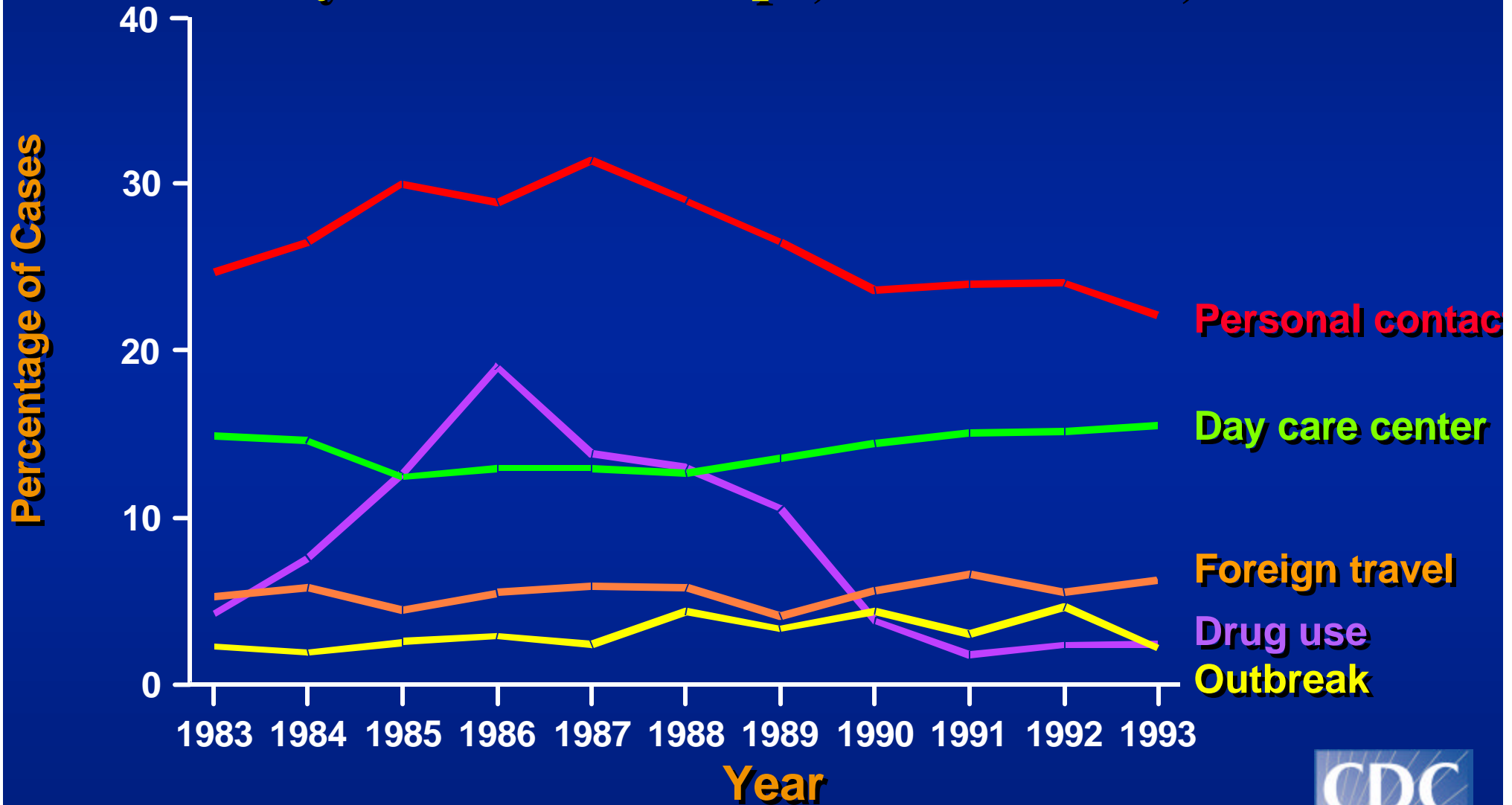
# Age-specific Incidence of Hepatitis A United States, 1983-93



Source: CDC, National Notifiable Diseases Surveillance System



# Sources of Hepatitis A Virus Infection by Mutually Exclusive Groups, United States, 1983-93



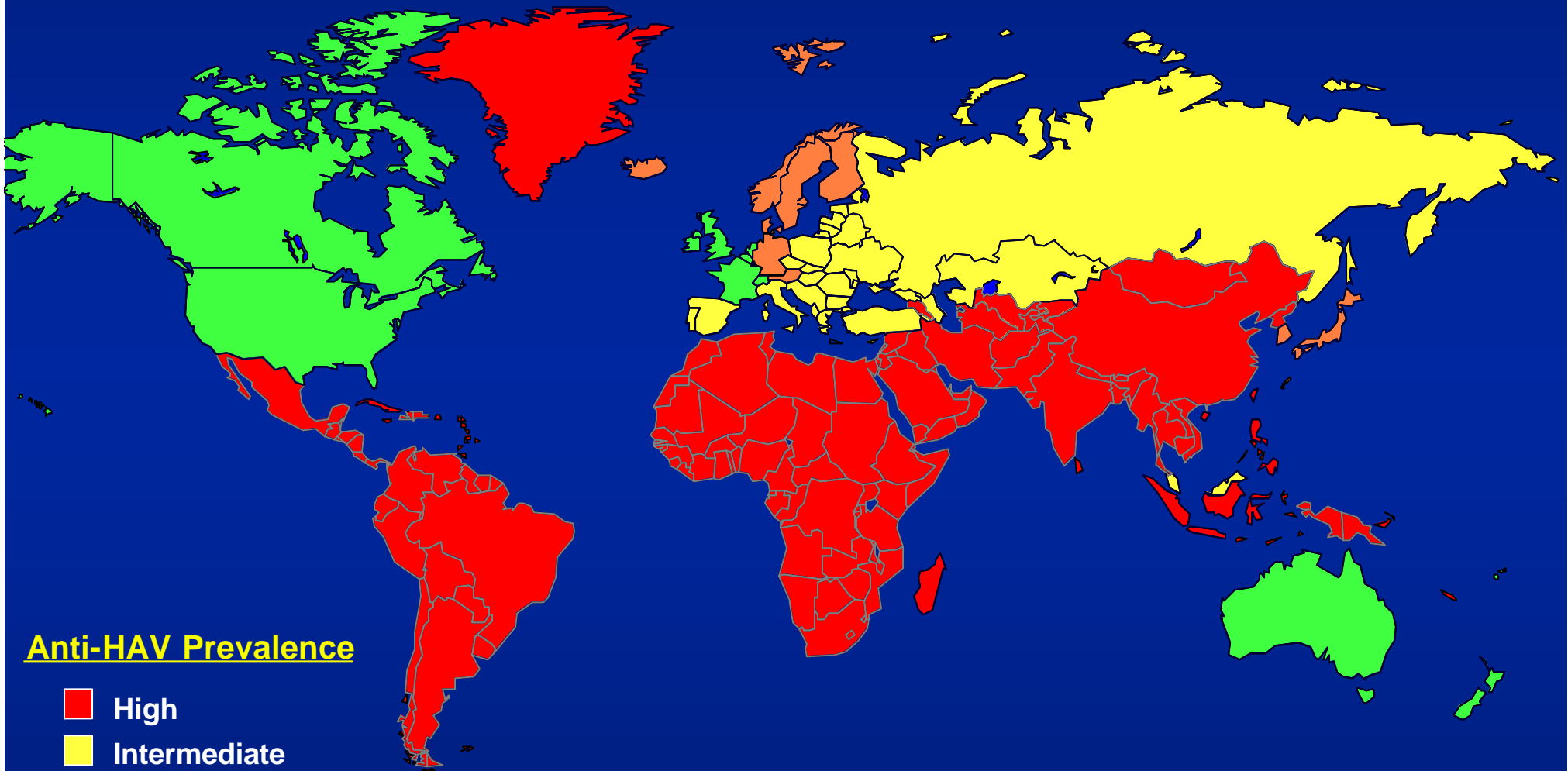
Source: CDC, Viral Hepatitis Surveillance Program



# Global Patterns of Hepatitis A Virus Transmission

<b>Endemicity</b>	<b>Disease Rate</b>	<b>Peak Age of Infection</b>	<b>Transmission Patterns</b>
High	Low to High	Early childhood	Person to person; outbreaks uncommon
Moderate	High	Late childhood/ young adults	Person to person; food and waterborne outbreaks
Low	Low	Young adults	Person to person; food and waterborne outbreaks
Very low	Very low	Adults	Travelers; outbreaks uncommon

# Geographic Distribution of HAV Infection



## Anti-HAV Prevalence

- High
- Intermediate
- Low
- Very Low

# Hepatitis A Vaccine Efficacy Studies

<b>Vaccine</b>	<b>Site/Age Group</b>	<b>N</b>	<b>Vaccine Efficacy (95% CI)</b>
HAVRIX <sup>®</sup> (SKB) 2 doses 360 EL.U.	Thailand 1-16 yrs	38,157	94% (79%-99%)
VAQTA <sup>®</sup> (Merck) 1 dose 25 units	New York 2-16 yrs	1,037	100% (85%-100%)

JAMA 1994;271:1363-4

N Engl J Med 1992;327:453-7



# Hepatitis A Vaccination Strategies

## Epidemiologic Considerations

- Many cases occur in community-wide outbreaks
  - no risk factor identified for most cases
  - highest attack rates in 5-14 year olds
  - children serve as reservoir of infection
- Persons at increased risk of infection
  - travelers
  - homosexual men
  - injecting drug users

# Routine Childhood Hepatitis A Vaccination

- **Benefits**
  - established delivery system
  - vaccination before risk period
  - potential to interrupt transmission
- **Unresolved issues/considerations**
  - immunogenicity in infants
  - development of combination vaccines
  - duration of protection
  - cost-effectiveness

# ACIP Recommendations - Hepatitis A Vaccine

## Preexposure Vaccination

- **Persons at increased risk for infection**
  - travelers to intermediate and high HAV-endemic countries
  - homosexual and bisexual men
  - drug users
  - persons with chronic liver disease
- **Communities with high rates of hepatitis A (e.g., Alaska Natives, American Indians)**
  - routine childhood vaccination

# Features of Community-wide Hepatitis A Outbreaks

Type of Community	Anti-HAV Prevalence	Usual Age of Case-patients	Annual Incidence/ 100,000	Outbreak Periodicity	Populations
High rate	<5 yrs old 30%-40% >15 yrs old 70% -100%	5-14 yrs	700-1000	5-10yrs	well defined geographically or ethnically
Intermediate rate	<5 yrs old 10%-25% >15 yrs old <50%	5-29 yrs	50-200	may be periodic	less defined than in high-rate communities



# ACIP Recommendations - Hepatitis A Vaccine

## Control of Community-wide Outbreaks

### High-rate communities

- Routine vaccination of young children
- Accelerated catch-up vaccination of older children

# ACIP Recommendations - Hepatitis A Vaccine

## Control of Community-wide Outbreaks

### Intermediate-rate communities

- Targeted vaccination can be considered for groups or areas with highest disease rates (e.g., specific age groups, census tracts, drug users)
- Factors to consider:
  - feasibility of vaccinating target groups
  - program cost
  - ability to sustain vaccination of young children

# ACIP Recommendations - Hepatitis A Vaccine

## Prevaccination Testing

### Considerations:

- cost of vaccine
- cost of serologic testing (including visit)
- prevalence of infection
- impact on compliance with vaccination

### Likely to be cost-effective for:

- adults born, or who lived in, high endemic areas
- adults >40 years of age
- older adolescents and young adults in certain groups (American Indians, Alaska Natives, Pacific Islanders)

# ACIP Recommendations - Hepatitis A Vaccine

## **Postvaccination Testing**

- Not recommended because of the high response rate among vaccinees
- No commercially available test to measure vaccine response

# Recommended Doses and Schedules of Hepatitis A Vaccine

Group	Age	HAVRIX <sup>â</sup>		
		No. Doses	Doses EL.U.* (ml)	Schedule (months)
Children and adolescents	2-18 years	3	360 (0.5)	0, 1, 6-12
Adults	>18 years	2	1,440 (1.0)	0, 6-12

\*ELISA units



# Hepatitis A Prevention - Immune Globulin

- **Preexposure**
  - travelers to intermediate and high HAV-endemic regions
- **Postexposure (within 14 days)**
  - Routine**
    - household and other intimate contacts
  - Selected situations**
    - institutions (e.g., day care centers)
    - common source exposure (e.g., food prepared by infected food handler)