

Introduction to Communicable Disease Surveillance and Investigation in North Carolina



Hepatitis A

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Learning Objectives

1. Recognize the impact of vaccination on hepatitis A epidemiology in the United States
2. Identify common risk factors for hepatitis A
3. Determine who needs prophylaxis after exposure to a person with hepatitis A

Hepatitis A Virus (HAV)

- Common causes of acute liver disease
 - 25,000 estimated new infections in 2007
- 1/3 of US population has evidence of infection*
 - ¾ of all persons > 70 years of age

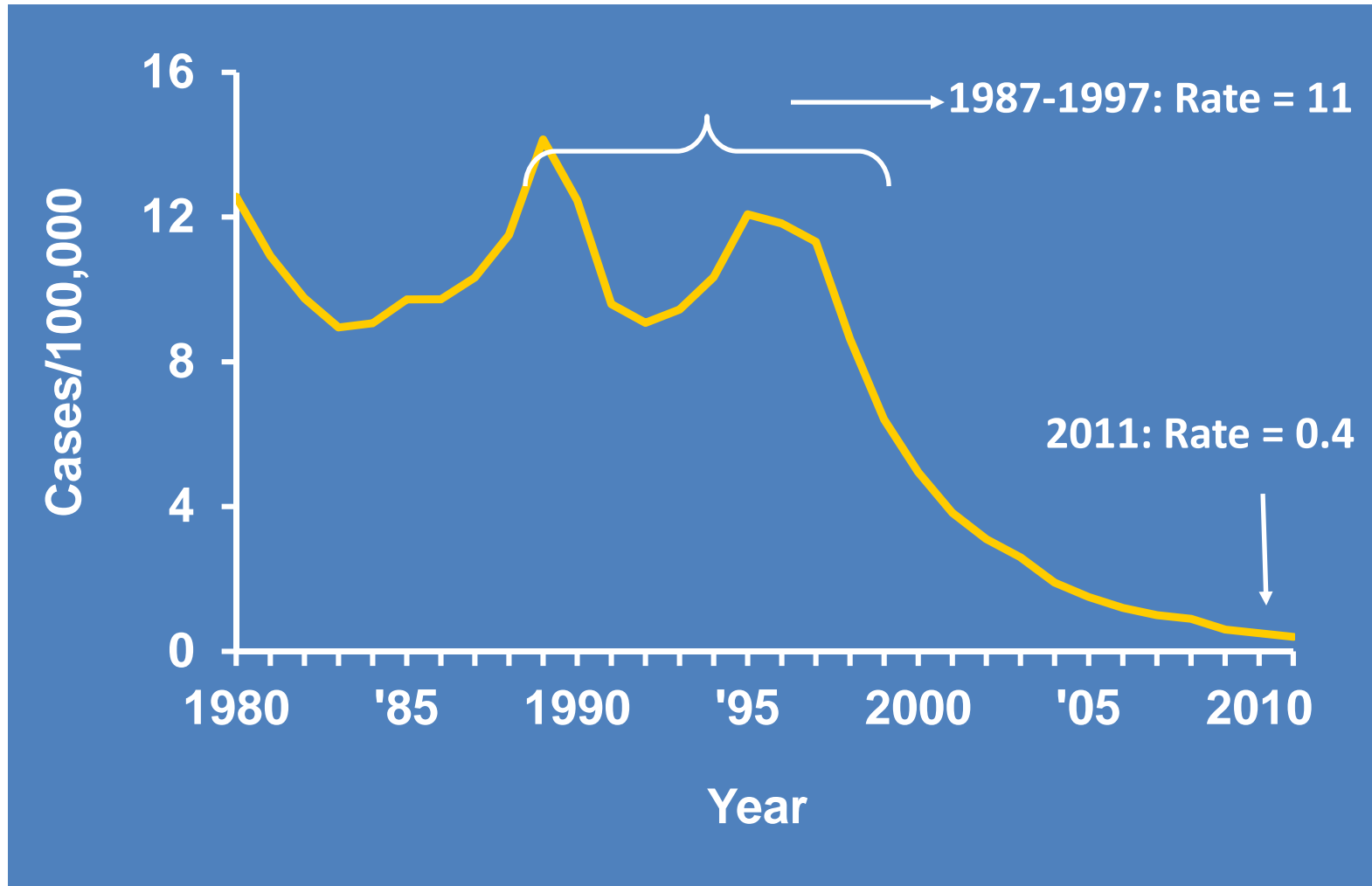
*NHANES III, 1988-1994

Hepatitis A Vaccine

- Available since 1995
- Recommended for
 - High-risk groups (1996)
 - Children in high-incidence areas (1999)
 - All children 12–23 months of age (2006)
 - Post-exposure prophylaxis* (2007)
 - Household members/close contacts of international adoptees (2009)

* Vaccine is for ages 1 – 40 with no contraindications

Hepatitis A Incidence, United States 1980–2011



Hepatitis A in Public Health

- Still frequently reported nationally
- Major economic impact
 - Cost to identify contacts
 - Cost to provide prophylaxis

Hepatitis A Epidemiology

- Average incubation period, 28 days
(range 15–50)
- Long infectious period
 - 1 week before jaundice onset – 2 weeks after
* or *
 - 2 weeks before – 1 week after onset of other symptoms (if no jaundice)

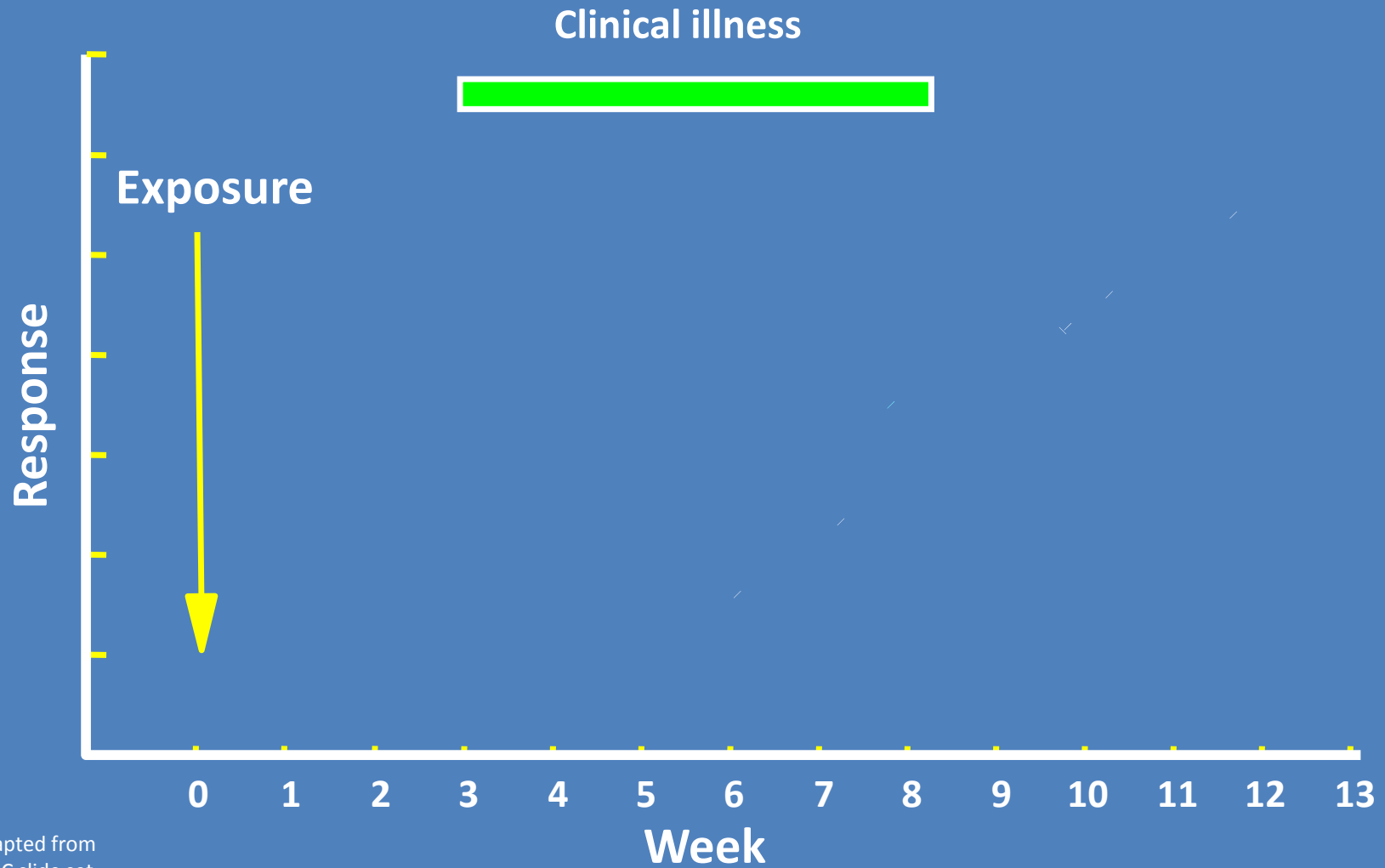
Hepatitis A Transmission

- Fecal-oral
 - Person-to-person
 - Common-source (~10%)
- Reported risk factors
 - Travel to highly endemic countries
 - Mexico, Central and South America
 - Contact to case
 - MSM
 - IVDU
 - No risk factor identified (most cases)

Hepatitis A Clinical Features

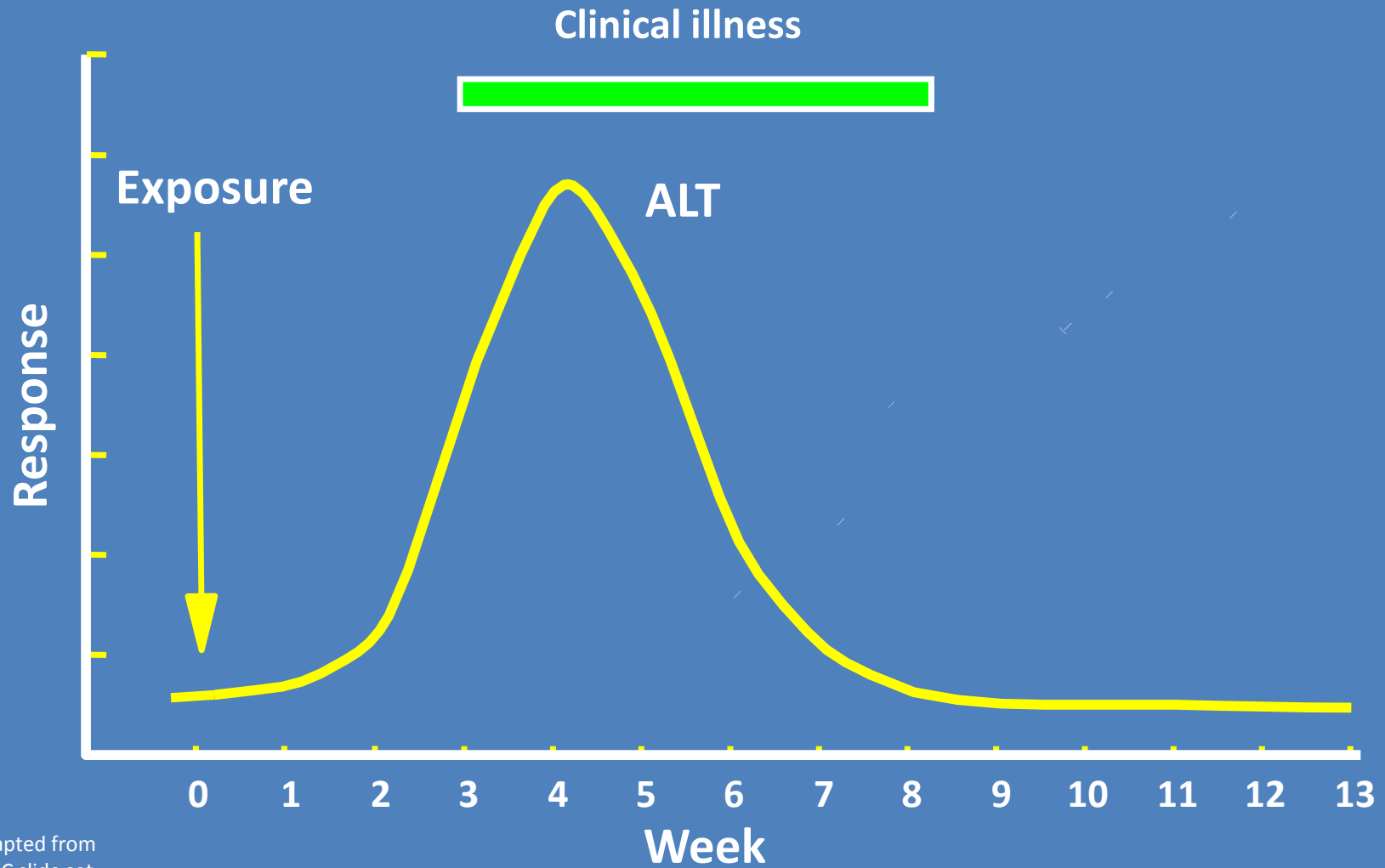
- Usually asymptomatic in children
 - Important reservoir of infection
- >75% of adults develop jaundice
- >30% of patients require hospitalization
- <1% of cases result in death

Events in Hepatitis A Virus Infection



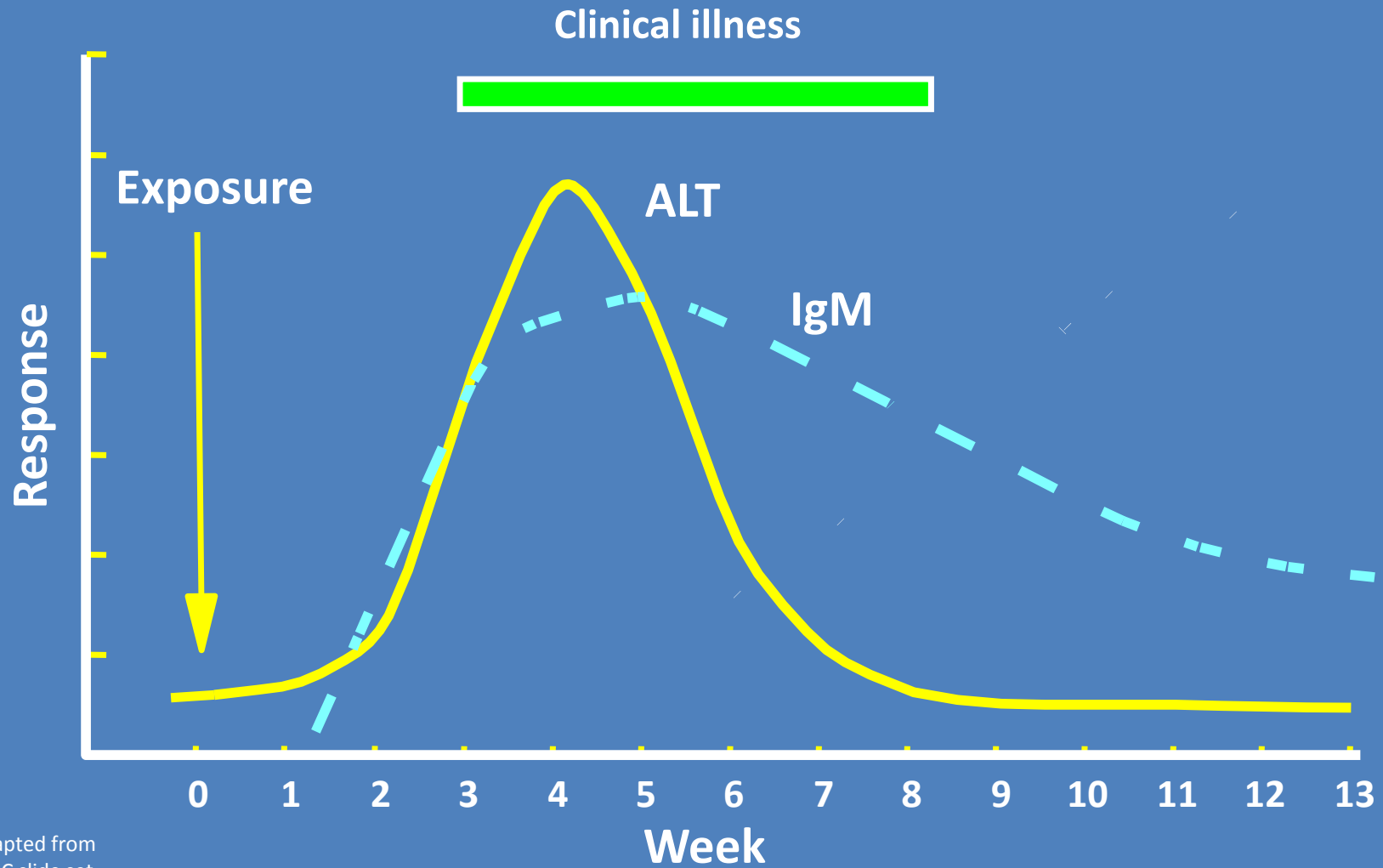
Adapted from
CDC slide set

Events in Hepatitis A Virus Infection



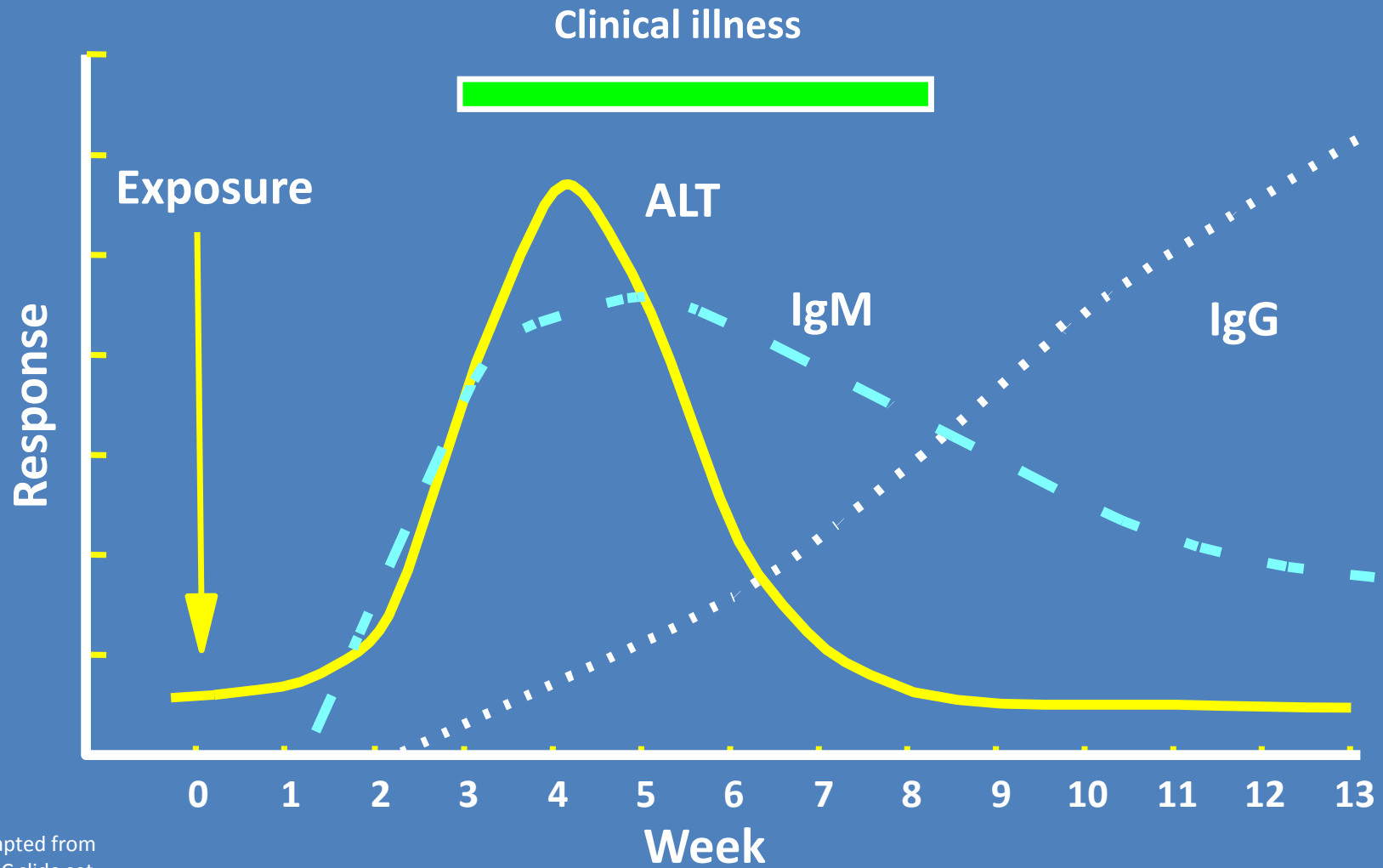
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Events in Hepatitis A Virus Infection



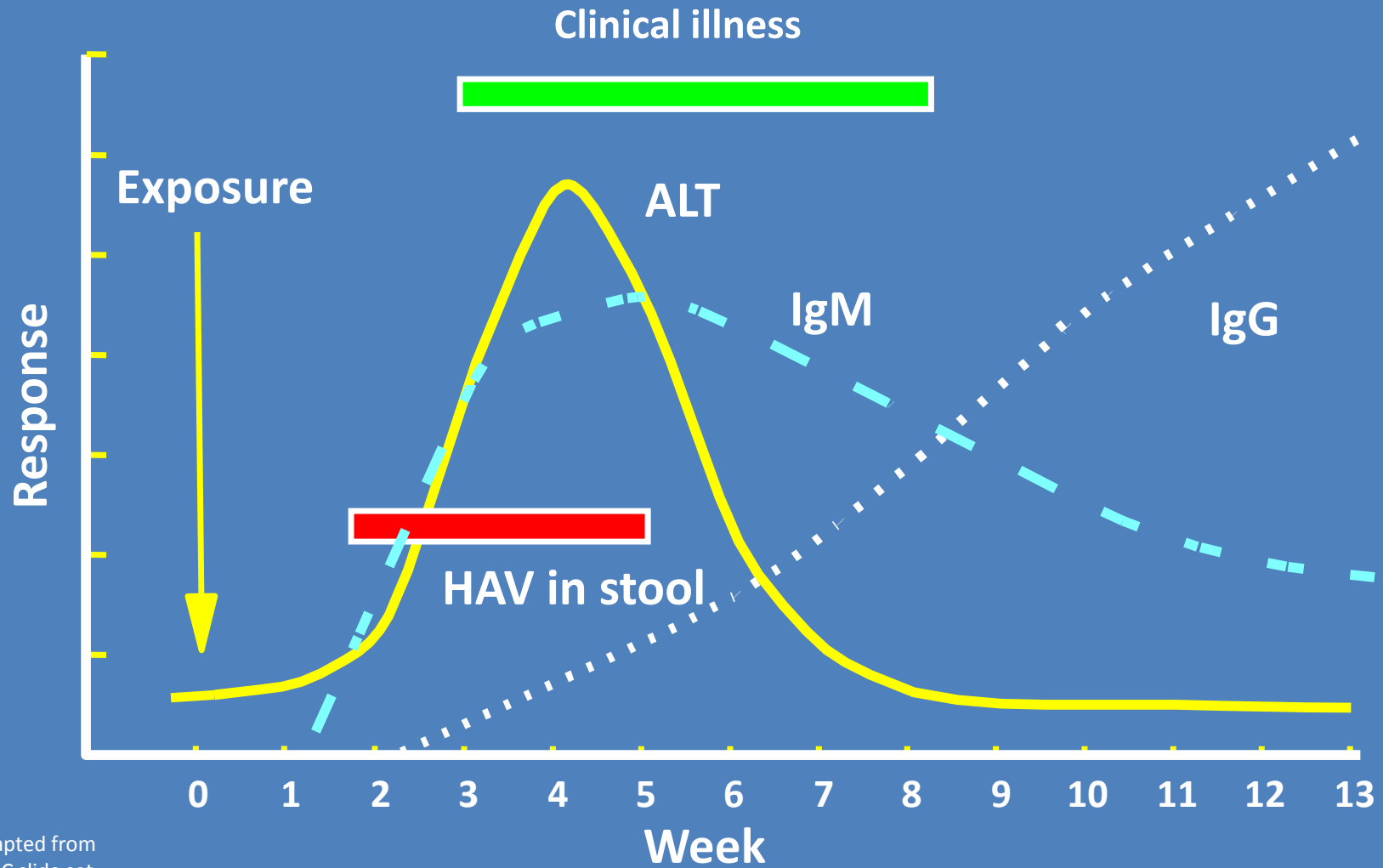
Adapted from
CDC slide set

Events in Hepatitis A Virus Infection



Adapted from
CDC slide set

Events in Hepatitis A Virus Infection



Adapted from
CDC slide set

2012 Case Definition

Clinical Description

- Discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain), AND
- Either a) jaundice, or b) elevated liver transaminases

Laboratory Criteria for Diagnosis

- Positive IgM antibody to hepatitis A virus

Case Classification

Confirmed

- A case that meets the clinical case definition and is laboratory confirmed, OR
- A case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a laboratory-confirmed hepatitis case

Case Investigation

1. Clinical features

- DISCRETE ONSET of symptoms
- Jaundice or elevated AST/ALT

2. Serology results

- Can confirm at State Lab if needed

3. Risk factors

- Include travel, food history

4. Contacts

Post-Exposure Prophylaxis

- Consider for:
 - Household and sexual contacts
 - Child care center staff and attendees if
 - ≥ 1 cases in staff or attendees, or
 - ≥ 2 cases in households of attendees
 - If case identified in a food handler: Other food handlers and patrons – selected circumstances
- Vaccine for ages 1–40; immune globulin for others
- Not effective >2 weeks after exposure

Post-Exposure Prophylaxis

- Contact Regional CD Nurse Consultant or CDB Epidemiologist on Call
 - CDB will coordinate with Immunization Branch
- Contacts to the case should call if they develop symptoms

Infectious Period: Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Infectious Period: Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The number 16 is circled in red, with a red arrow pointing to it from the text "Jaundice onset".

Infectious Period: Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The table displays a 7-day week from Sunday to Saturday. The days are numbered 1 through 31. Red handwritten annotations are present: a bracket under days 2, 3, 4, and 5; a wavy line under days 6, 7, 8, 9, 10, 11, and 12; a line under days 13, 14, and 15; and a circle around day 16.

Infectious Period: Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The table illustrates the infectious period for jaundice over a 31-day period. The days are arranged in a grid by day of the week (Sun to Sat) and day number (1 to 31). Red arrows indicate the infectious period, which begins on day 2 and ends on day 23. Day 16 is circled in red.

Infectious Period: Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Handwritten annotations on the calendar:

- Red lines with arrows indicate a period from Wednesday, the 2nd, to Saturday, the 5th.
- Red lines with arrows indicate a period from Sunday, the 6th, to Saturday, the 12th.
- Red lines with arrows indicate a period from Sunday, the 13th, to Saturday, the 19th.
- Red lines with arrows indicate a period from Sunday, the 20th, to Wednesday, the 23rd.
- Red lines with arrows indicate a period from Sunday, the 27th, to Saturday, the 31st.
- The date 16 (Wednesday) is circled in red.
- The date 28 (Monday) is crossed out with a green 'X'.
- A green arrow points from the crossed-out 28 to the date 29 (Tuesday), with the word "Notification" written in green below it.

Infectious Period: Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The table illustrates the infectious period for jaundice. Red arrows indicate the infectious period, which starts on Wednesday (day 2) and ends on Saturday (day 5) of the first week, and continues from Sunday (day 6) to Saturday (day 12) of the second week. Green markings highlight the incubation period, which includes days 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23. Day 28 is marked with a green 'X', indicating the end of the infectious period.


Infectious Period: No Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Infectious Period: No Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
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Symptom onset



Infectious Period: No Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The table displays a calendar grid for 31 days. The days are arranged in a 6x7 grid. The first row contains days 1-5 (Tue-Sat), the second row 6-12 (Sun-Sat), the third row 13-19 (Sun-Sat), the fourth row 20-26 (Sun-Sat), and the fifth row 27-31 (Sun-Thu). The day '15' is circled in red. A red line connects '8' to '12', and another red line connects '13' to '14'. A red arrow points from '15' to '13'.

Infectious Period: No Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The table displays a calendar grid for 31 days. The days of the week are labeled in the header: Sun, Mon, Tue, Wed, Thu, Fri, Sat. The days are numbered 1 through 31. The date 15 is circled in red. Red arrows indicate a period from day 8 to day 29, with a small vertical tick on day 8 and a small vertical tick on day 29.

Infectious Period: No Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Handwritten annotations on the calendar:

- Red arrows indicating a period from day 8 to day 19.
- Red arrows indicating a period from day 13 to day 19.
- Red arrows indicating a period from day 20 to day 26.
- Red arrows indicating a period from day 27 to day 29.
- Day 15 is circled in red.
- Day 31 has a green 'X' over it, with a green arrow pointing to the word "Notification".

Infectious Period: No Jaundice

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

The table displays a calendar grid for a 31-day period. The days of the week are labeled in the header. The dates are numbered 1 through 31. Hand-drawn annotations include: a red line underlining dates 8 through 12; a red circle around date 15; a green circle around date 15; a green box around dates 17 through 19; a green oval around dates 20 through 26; a green oval around dates 27 through 29; a red arrow pointing left from date 13; a red arrow pointing right from date 19; a red arrow pointing right from date 26; and a green 'X' over date 31.

Take Home Points

- Hepatitis A decreased dramatically due to vaccine; still a major public health problem
- International travel is the most commonly identified risk factor
- Decisions about post-exposure prophylaxis should be based on type of exposure, infectious period, and time since exposure

References

- CDC Division of Viral Hepatitis website, www.cdc.gov/hepatitis
- Prevention of Hepatitis A through Active or Passive Immunization: Recommendations of the ACIP. 2006;55(RR07);1-23. Available from: <http://www.cdc.gov/mmwr/preview/mmwr.html/rr5507a1.htm>
- Surveillance for Acute Viral Hepatitis — United States, 2011. Available from: <http://www.cdc.gov/hepatitis/Statistics/2011Surveillance/index.htm>