Hepatitis A Outbreaks
2016 - 2018

January 23, 2019
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Lunch and Learns

The HIV/STD/TB/Hepatitis Program and the Dakotas AIDS Education and Training Center (DAETC) conduct monthly Lunch and Learn Webinars for health care professionals in North and South Dakota.

Each month a new topic will be held from 12:00 p.m. to 1:00 p.m. CST on the fourth Wednesday of the month.
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Hepatitis A Outbreaks— 2016–2018

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Hepatitis A Virus (HAV)

- Replicates in the liver, excreted in bile
- Acute illness
- Clinical manifestations: fever, jaundice, myalgia, anorexia, malaise, diarrhea
- Average incubation period: 28 days
  - Peak infectious period 10-14 days prior to symptoms, 7-10 days after symptom onset
Hepatitis A Virus Endemicity in the United States

- The United States is now considered a very low endemic HAV country

- Cyclic increases occurred every 10-15 years

- The number of reported cases in the pre-vaccine era was ≥ 21,000 annually

ACIP Hepatitis A Vaccine Recommendations

- **Targeted vaccination, 1996-1999**
  - **1996**
    - Children at age 2 years in communities with high rates of disease
    - Children through teen years in outbreaks
  - **1999**
    - Recommended in 11 states with rates 2x the national average
    - Considered in 6 states with rates above the national average
  - **2006**
    - Universal childhood vaccination
    - Recommended for use at age 12-23 months in all states
    - Continue existing vaccination programs for ages 2-18 years
    - Consider catch-up vaccination in outbreaks and areas with increasing disease rates
    - Any person wishing to obtain immunity

MMWR 1996;45(RR-15); MMWR 1999;48(RR-12); MMWR 2006;55(RR-7)
Rates of Reported Acute Hepatitis A United States, 2007-2016

Healthy People 2020 Target:
0.3 cases per 100,000 population

National Notifiable Diseases Surveillance System (NNDSS);
Prevalence of anti-HAV by age group, NHANES, United States 2009–2010

NHANES, National Health and Nutrition Examination Survey
ACIP Hepatitis A Vaccine Recommendations
Groups at increased risk of HAV or severe HAV disease

- Travelers
- Men who have sex with men
- Users of injection and non-injection drugs
- Persons with clotting-factor disorders
- Persons who work with nonhuman primates
- Persons who anticipate close personal contact with an international adoptee
- Persons with chronic liver disease
- Persons experiencing homelessness

MMWR 1996;45(RR-15); MMWR 1999;48(RR-12); MMWR 2006;55(RR-7)
Immunogenicity – Long-term Protection

- Protection following natural infection is lifelong

- Anti-HAV has been shown to persist in vaccine recipients for at least 20 years in adults administered inactivated vaccine as children with a three dose schedule.<sup>1</sup>

- At least 20 year anti-HAV persistence was demonstrated among adults vaccinated with a two-dose schedule as adults.<sup>2</sup>

- Detectable antibodies are estimated to persist for 40 years or longer based on mathematical modeling and anti-HAV kinetic studies.<sup>2,3</sup>

- Anti-HAV after a single dose of HepA vaccine can persist for almost 11 years<sup>4</sup>
  - A single dose of HepA vaccine was shown to promote HAV-specific cellular immunity similar to that induced by natural infection<sup>5</sup>

Hepatitis A Vaccine Coverage, United States, 2016

- **Children**
  - 60.6% for children age 19-35 months, ≥2 doses (59.7%, 2017)
  - 86.1% for children age 19-35 months, ≥1 dose (86%, 2017)

- **Adolescents**
  - 64.4% for adolescents age 13-17 years, ≥2 doses
  - 73.9% for adolescents age 13-17 years, 1 dose

- **Adults**
  - 9.5% for adults ≥19 years, ≥2 doses
  - 13.4% for adults 19-49 years, ≥2 doses; Travelers, 19.3%; CLD, 23.7%
  - 5.4% for adults ≥50 years, ≥2 doses

   https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/NHIS-2016.html#hepA
Hepatitis A Vaccine for Post-Exposure Prophylaxis

- **Recommendations for post-exposure prophylaxis (PEP) for hepatitis A**
  - Hepatitis A (HepA) vaccines should be administered for post-exposure prophylaxis for all persons age ≥12 months
  - In addition to hepatitis A vaccine, IG may be administered to persons age >40 years depending on the providers’ risk assessment
    - Factors to consider in the decision to use IG in addition to vaccine
      - Age
      - Immune status and underlying conditions
      - Exposure type (risk of transmission)

- **Availability of IG**

Nelson NP, et al. MMWR 2018 Nov 2;67(43):1216-1220. https://www.cdc.gov/mmwr/volumes/67/wr/mm6743a5.htm?s_cid=mm6743a5_w
Supplementary Text 1, https://staging-stacks.cdc.gov/view/cdc/59777
CDC has assisted in multiple HAV outbreaks since July 1, 2016

- Foodborne Transmission
  - Hawaii-Frozen Scallops
  - Multistate- Frozen Strawberries

- Person-to-Person Transmission
  - Homeless individuals and injection/non-injection drug users
  - Men who have sex with men (MSM)

- >11,000 outbreak associated cases reported since July 1, 2016
Shifting Hepatitis A Virus Epidemiology

- Past outbreaks were associated with asymptomatic children
- A large population of adults are not immune to hepatitis A virus
- Older individuals are more likely to experience severe disease and adverse outcomes
- Vaccination uptake among at-risk adults is low

Hepatitis A among Homeless Populations

- Little is known about hepatitis A immunity among homeless populations in the United States
- Homelessness is now considered an independent risk factor for HAV infection
- Older age, duration of homelessness, and injection drug use may indicate hepatitis A immunity

Hepatitis A among Persons Who Use Drugs

- High incidence of hepatitis A infections among this population
- Mixed evidence that injection drug use contributes substantially to risk
- Transmission is predominantly by direct person-to-person contact, related to crowding and poor hygiene

Increased Morbidity and Mortality during 2016–2018

- Hepatitis A related hospitalizations were increasing prior to 2016
  - 7% in 1999 to 46% in 2015

- Hospitalizations for cases during 2016–2018 outbreaks range from 25-82%

- Case mortality in California and Michigan outbreaks around 3%

- Coinfections with hepatitis B and hepatitis C

Hepatitis A Vaccination for Outbreak Control

- Vaccination is the cornerstone for control of community outbreaks
- Post-exposure prophylaxis alone may not effectively control outbreaks
- Targeted vaccination to the groups at highest risk is the best way to control disease spread
- Primary prevention with adequate vaccination of at-risk groups is preferable

Recommendations for Clinicians

- Consider hepatitis A as a diagnosis in anyone with jaundice and clinically compatible symptoms.

- Encourage persons who have been exposed recently to HAV and who have not been vaccinated to be administered one dose of single-antigen hepatitis A vaccine or immune globulin (IG) as soon as possible, within 2 weeks after exposure.

- Consider saving serum samples for additional testing to assist public health officials in the investigation of transmission.

[https://emergency.cdc.gov/han/han00412.asp](https://emergency.cdc.gov/han/han00412.asp)
Recommendations for Clinicians

- Contact the public health department for assistance with submitting specimens for molecular testing to CDC.

- Ensure all persons diagnosed with hepatitis A are reported to the health department in a timely manner.

- Encourage hepatitis A vaccination for persons who report drug use or other risk factors for hepatitis A

https://emergency.cdc.gov/han/han00412.asp
Many adults have no immunity to hepatitis A virus, increases in morbidity and mortality are expected.

Community outbreaks of hepatitis A virus are often prolonged and challenging to control.

Vaccination is the cornerstone of outbreak control of community outbreaks.

Outreach and vaccination of persons at-risk in targeted venues is effective for outbreak control.
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Thank You!
Hepatitis A Virus Endemnicity in the United States

- The United States is a low endemicity country
- The number of reported cases in the pre-vaccine era was ≥ 21,000 infections annually
- In the pre-vaccine era, cyclical increases occurred every 10–15 years

Questions

► Thank You to Our Speakers from the Centers for Disease Control and Prevention:
  ► Monique A. Foster, MD, MPH
  ► Mark Weng, MD
  ► Centers for Disease Control and Prevention
► CEU: www.ndhealth.gov/HIV/Provider
► Next Lunch and Learn: February 27th, 2019 at 12pm CT