National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Hepatitis A Outbreaks—National and Historical Perspective

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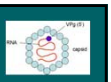
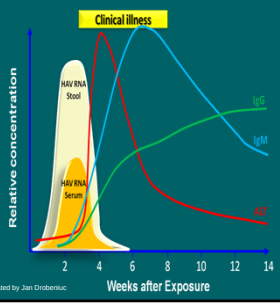
Hepatitis A Virus





Graph created by Jan Drobeniuc

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

Global Patterns of Hepatitis A Virus Transmission

Endemicity	Age at Infection	Transmission Pattern
High	Early childhood	Person-to-Person, outbreaks uncommon
Intermediate	Late childhood/Young adults	Person-to-person, food and waterborne outbreaks
Low	Late Childhood/Young Adults	Person-to-person, food and waterborne outbreaks
Very Low	Adults	Travelers, outbreaks uncommon

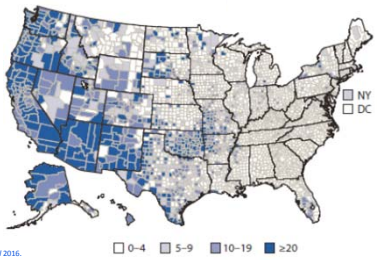
Jacobsen KH, Wiersma ST. *Vaccine* 2010.

Hepatitis A Virus Endemicity in the United States

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

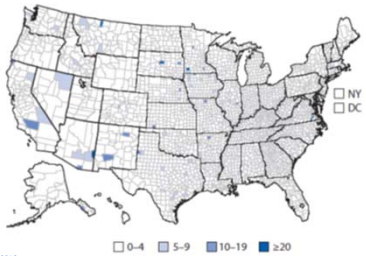
Fiore AE, et al. Advisory Committee on Immunization Practices (ACIP). 2006.; CDC. Surveillance for Viral Hepatitis – United States, 2015.; Murphy TV, et al. *MMWR Suppl* 2016.

Incidence of reported hepatitis A cases, by county – National Notifiable Diseases Surveillance System (NNDSS), United States, 1987–1997



Murphy TV, et al. *MMWR Suppl* 2016.

Incidence of reported hepatitis A cases, by county – NNDSS, United States, 2007



Murphy TV, et al. *MMWR Suppl* 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

Collier M, et al. *Hepatology* 2015., Ly KN, Klevens RM. *J Infect Dis* 2015., Epson E, et al. *Public Health*, 2015., Murphy TV, et al. *MMWR Suppl* 2016.

Hepatitis A Virus Outbreaks – United States, 2016–2018

- **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)
- **>3,000 outbreak associated cases reported since July 1, 2016**

Increased Morbidity and Mortality during 2016-2017

- Hepatitis A related hospitalizations were increasing prior to 2016
  - 7% in 1999 to 46% in 2015
- Hospitalizations for outbreaks during 2016-2017 range from 25-82%
- Case mortality in California (3%) and Michigan (4%)
- Coinfections with hepatitis B and hepatitis C

Ly et al. *J Infect Dis*. 2015; https://www.cdc.gov/hepatitis/statistics/2015surveillance/pdfs/2015HepSurveillanceRpt.pdf; CDC unpublished

Hepatitis A among homeless populations

- Little is known about hepatitis A immunity among homeless populations in the US
- Homelessness is not considered an independent risk factor for HAV infection
- Older age, duration of homelessness, and injection drug use may indicate hepatitis A immunity

Hennessey KA, et al. *Public Health Reports*. 2009.

Hepatitis A infections among persons who use drugs

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

Villano et al. *Clinical Infectious Diseases*. 1997

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 are the best way to control disease spread
- Primary prevention with adequate vaccination of at-risk groups is preferable

McMahon et. al. *Arch Pediatr Adolesc Med* 1996; Craig et al. *Clinical Infectious Diseases*. 1998.

Vaccination of Persons At-Risk

- Homeless Shelters and Substance Abuse Treatment Centers
  - Important for engaging individuals at-risk
  - Providing prevention efforts early
  - Vaccination on site increases initiation and completion
- Jails
  - Many report drug use
  - Can vaccinate a large number of individuals
  - Vaccinations can be tracked

Perlman et al. *J Addict Dis.* 2014.

Vaccination of Persons At-Risk

- Emergency Departments
  - Provide care to difficult to reach populations
  - Provide opportunities for rapidly responding
- Peer Mentors
  - Helps overcome mistrust
  - Successful in approaching peers
  - Usually recognized as leaders
  - Effective communicators/educators

Hutin et al. *Am J Public Health.* 1999; James et al. *J of Emerge Med.* 2009; Slobodkin et al. *Vaccine* 1998; Lindegren et al. *JAMA.* 1993; Weeks et al. J Drug Issues. 2006.

Summary

- 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 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 outbreak control

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Thank You!

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