Epidemiology and Prevention Strategies for Adults at Increased Risk for Hepatitis A

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Changes in Anti-HAV Prevalence in Two Countries Over One Decade

Saudi Arabia
Children

Bangkok, Thailand
Adolescents

Source: Al-Faleh et al., 1999
Source: Poovorawan et al., 1997
Transition From High to Intermediate HAV Infection Endemicity

- Prevalence of HAV infection among children decreases
- Average age of infection increases
  - Cohorts of susceptible older children, adolescents, and adults who are more likely to have clinical disease
  - Results in increased morbidity
- Outbreak potential
  - Variability within regions, countries and cities, and/or urban/rural or socioeconomic status
Hepatitis A Vaccination for High Risk Populations in the United States

• U.S. vaccine first licensed in 1996
• Recommended for high risk populations including
  • Men who have sex with men (MSM)
  • Illicit drug users including drug injectors
  • Travelers to high/intermediate endemic countries
  • Persons with chronic liver disease
    • Other
      • Occupational risks
      • Clotting disorders
• Similar recommendations in Europe, Canada, Australia
Hepatitis A Outbreaks Among MSM and Drug Users

- Numerous reports from N. Amer., Europe, Australia

- Characteristics
  - Cyclical
  - Often of sustained duration (months to years)
  - Contribute to large community outbreaks*
    - 53-90% of cases
    - >200% increase in annual case reporting

Modes of Transmission Among A Outbreaks Among MSM and Drug Users

- **MSM**
  - Household or other non-sexual contact
  - Sexual contact
    - Anal sexual contact
    - No./ type of partner
  - Food
  - Transmission modes may vary across outbreaks

- **Drug users**
  - Household or sexual contact
  - Drug preparation and use
  - Contaminated drug
  - Drug injection
    - Parenteral exposure
    - Shared needles and works
  - Transmission mode may vary across outbreaks
Vaccination Strategies

✧ Outbreak Response
  – Goal: Limit spread in risk population and general community
  – Outcome: variable and difficult to quantify
  – Success factors
    • Early initiation of vaccination
    • Size of target population
    • Sites such as jails to target IDUs

✧ Routine vaccination
  – Goal: Prevent outbreaks among high risk adults
  – Vaccination coverage is low in most settings (10%-23%) *

Potential Vaccination Settings Visited by Persons with Hepatitis A Prior to Infection*

*Sentinel County Study, 2001-2004
Barriers to Hepatitis A Vaccination in Adults

- Patient acceptance
  - Knowledge of vaccine
  - Perception of risk
  - Convenience
- Provider practices
  - Awareness/priority
  - Clinical procedures
  - Time constraints
- Environmental
  - Cost of vaccine
  - Reimbursement for supply and delivery
  - Vaccination registries
Integration of Hepatitis A Vaccination Programs in Settings Serving Adults at Risk Can Improve Vaccination Coverage

CDC demonstration projects supported vaccine purchase and staff

- Results
  - Increased number of sites offering vaccination
  - Yielded 60%-85% acceptance rate
  - Increased number of persons vaccinated

- Compiled in *Public Health Reports* 2007; 122 (Suppl 2).
Travel related Hepatitis A

- Risk population
  - Susceptible travelers from low endemic areas to intermediate or highly endemic regions
  - Large and: ~ 50% of 63M travelers from US visit intermed./high endemic regions per year
  - Includes children and visitors to friends and relatives
- Represent an increasing proportion of reported cases in US

Proportion of acute hepatitis A cases reported with international travel risk, 1995-2005
## Pre-travel Health Visit and Hepatitis A Vaccination for Travelers to Intermid./Highly Endemic Areas for Hep A

<table>
<thead>
<tr>
<th></th>
<th>Sweden* N=957</th>
<th>Western Europe + N=5,465</th>
<th>United States+ N=404</th>
<th>Asia Pacific+ N=2101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sought health advice, (from travel clinic)</td>
<td>60% (30%)</td>
<td>52% (35%)</td>
<td>36% (10%)</td>
<td>32% (12%)</td>
</tr>
<tr>
<td>Considered travel high risk for hepatitis A</td>
<td>42%</td>
<td>29%</td>
<td>17%</td>
<td>31%</td>
</tr>
<tr>
<td>Hepatitis A vaccinated/ immune</td>
<td>40%</td>
<td>25%</td>
<td>24%</td>
<td>22%</td>
</tr>
</tbody>
</table>

* Scand J Infect Dis 2006; 38:1074-1080;  † J Travel Med 2004;11:3-7; 9-13; 23-6;
Hepatitis A Vaccination and/or Immunoglobulin to Prevent Travel-Related Hepatitis A

- All susceptible persons should receive Hep A vaccination or immunoglobulin before departure
- Pre-exposure prophylaxis
  - Hepatitis A vaccine at any time before departure for persons 1-40 years of age
  - Vaccine plus IG for selected populations departing ≤ 2 weeks
    - Older persons
    - Immunocompromised
    - Chronic liver disease
  - IG alone for others (i.e. <1 yr old, allergic)
Hepatitis A Linked to International Adoptees and their Contacts

- **Case report**
  
  - In June 2007, 51 year-old woman presented with fever, jaundice, encephalopathy and ALT of 4119 IU/L
  
  - IgM anti-HAV-positive
  
  - Had 6 days of contact with 1 year-old twin adoptee grandchildren one month prior to symptom onset, soon after they arrived from Ethiopia
  
  - Twins were asymptomatic
    
    - IgM anti-HAV-positive
    
    - Spent 2 months in centralized foster care before adoption
Hepatitis A Linked to International Adoptees and their Contacts--2007

Date of onset of hepatitis A

Number of cases

- Adoptee
- Traveled, contact with adoptee
- No travel, contact with adoptee
- No travel, no contact with adoptee, contact with secondary case
Adults with Chronic Liver Disease and Hepatitis A

- Persons with hepatitis A and chronic liver disease have more severe disease and higher mortality
- Reported coverage is low
  - Of 1,193 patients diagnosed with chronic HCV*
    - 27% of susceptible patients vaccinated
    - 3 cases of acute hepatitis A among susceptibles; one death
- Since 1999, 45% of hepatitis A deaths were associated with CLD**

*Hepatology 2005;42: 688-95 **CDC, unpublished data
Conclusions

- In low endemic countries, certain adults are at increased risk for hepatitis A infection or severe disease
- Hepatitis A vaccination is an effective but often under utilized intervention
- Implementation of immunization programs and evidence-based strategies can improve vaccination coverage
- Adults risk populations might emerge as HAV seropositivity falls
- Countries can conduct public health surveillance to detect risk populations and guide vaccine policy development
Table 4. Changes in Seroprevalence Rates of Hepatitis A Virus Infection in Children and Adolescents During Two Decades in Different Regions in Korea†

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>1 − 19</td>
<td>63.8% (141/221)*</td>
<td>42.3% (169/400)</td>
<td>50.3% (85/169)</td>
<td>11.7% (42/359)</td>
<td>8.5% (22/256)</td>
<td>9.5% (36/398)</td>
<td>4.6% (15/323)</td>
</tr>
<tr>
<td>Ref.</td>
<td>8</td>
<td>11</td>
<td>9</td>
<td>3</td>
<td>4</td>
<td>11</td>
<td>Authors</td>
</tr>
</tbody>
</table>

* No. positive/No. tested.
† Tap water supply rate was 42% in 1974 and increased to 82.9% nationwide in 1996. However, the urban area of seoul was 99.9%.

GNP was $1,647 in 1979 and increased to $10,543 in 1996.
Reported risk factors for acute hepatitis A, 1995-2005
### Global Patterns of Hepatitis A Virus Transmission

<table>
<thead>
<tr>
<th>Endemicity</th>
<th>Disease Rate</th>
<th>Age at Infection</th>
<th>Transmission patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Low to high</td>
<td>Early childhood</td>
<td>Person to person; outbreaks uncommon</td>
</tr>
<tr>
<td>Intermediate</td>
<td>High</td>
<td>Late childhood/young adults</td>
<td>Person to person; food and waterborne outbreaks</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Late childhood/young adults</td>
<td>Person to person; food and waterborne outbreaks</td>
</tr>
<tr>
<td>Very low</td>
<td>Very low</td>
<td>Adults</td>
<td>Travelers; outbreaks uncommon</td>
</tr>
</tbody>
</table>
Outbound U.S. Travelers – Selected Destinations

Change in Number of Departures Since 1990

Source: U.S. Dept. of Commerce, International Trade Administration
Hepatitis A Incidence, United States, 1980-2006

1995 vaccine licensure
1996 ACIP recommendations
1999 ACIP recommendations
2006 rate = 1.2