Hepatitis C in the CEE and NIS Countries: A Prevention Perspective

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Global Epidemiology of HCV Infection

- HCV infection is endemic in most parts of the world.
- Substantial geographic differences exist in the endemicity of HCV infection
- Injection drug use, unscreened transfusions, and unsafe medical practices and injections account for most HCV infections worldwide
### What Surveillance Data are Needed to Monitor Hepatitis C Prevention?

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Acute Disease</th>
<th>Serologic</th>
<th>Chronic Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease incidence</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk factors for infection</td>
<td>X</td>
<td></td>
<td>Special populations</td>
</tr>
<tr>
<td>Prevalence of infection/disease</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prevention effectiveness</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Prevalence (Burden) of Infection
Global Prevalence of HCV Infection

- Approximately 2.2% worldwide
- Regional estimates contain much uncertainty
  - 33% = blood donor data
  - 25% = community surveys

Source: J Clin Pharmacol 2004; 44:20-29
Prevalence of HCV Infection

HCV Prevalence

- Red: ≥ 10%
- Green: 2.5 - 9.9%
- Yellow: 1.0 - 2.4%
- Light Yellow: < 0.9%

Source: WHO, International Travel and Health
http://www.who.int/ith/index.html
Prevalence of HCV Infection

HCV Prevalence

- **≥ 10%**
- **2.5 - 9.9%**
- **1.0 - 2.4%**
- **≤ 0.9%**

Source: WHO, International Travel and Health
http://www.who.int/ith/index.html
Need for Better Data

• Need to be representative of general population
  – male : female ratios
  – racial/ethnic groups
  – persons in risk groups
  – children and young adults

• Blood donor data generally not representative of population
## Anti-HCV Prevalence, Kazakhstan, 2003

<table>
<thead>
<tr>
<th>Group</th>
<th>Karaganda</th>
<th>Pavlodar</th>
<th>Shimkent</th>
<th>Uralsk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection Drug Users</td>
<td>59%</td>
<td>68%</td>
<td>39%</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td>(160/270)</td>
<td>(170/250)</td>
<td>(105/270)</td>
<td>(155/250)</td>
</tr>
<tr>
<td>Sex Workers</td>
<td>30%</td>
<td>23%</td>
<td>8%</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>(45/150)</td>
<td>(23/100)</td>
<td>(17/221)</td>
<td>(11/64)</td>
</tr>
<tr>
<td>Prisoners</td>
<td>37%</td>
<td>40%</td>
<td>29%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>(185/500)</td>
<td>(175/440)</td>
<td>(116/400)</td>
<td>(60/200)</td>
</tr>
<tr>
<td>Pregnant Women</td>
<td>0.6%</td>
<td>1.5%</td>
<td>0.2%</td>
<td>0.8%</td>
</tr>
<tr>
<td></td>
<td>(3/470)</td>
<td>(9/600)</td>
<td>(1/600)</td>
<td>(4/500)</td>
</tr>
<tr>
<td>STD Clinics</td>
<td>1%</td>
<td>4.8%</td>
<td>0.3%</td>
<td>3.8%</td>
</tr>
<tr>
<td></td>
<td>(1/100)</td>
<td>(22/460)</td>
<td>(1/339)</td>
<td>(19/500)</td>
</tr>
</tbody>
</table>

Source: CDC-USAID Central Asia Program, M.O. Favarov, unpublished
Geographic Patterns of Age-Specific Prevalence of HCV Infection

- Egypt
- Japan, Italy
- U.S., Australia
Incidence of Infection
Risk Factors for Infection
Lack of Global Incidence Data

- Diagnostic testing to differentiate types of hepatitis (jaundice) generally not available
- No specific test for acute hepatitis C
- Most anti-HCV positive persons with jaundice represent chronic disease
- Population-based sentinel surveillance sites in some countries (e.g., U.S., Romania, Central Asian republics, Canada)
Incidence of Reported Acute Hepatitis C
United States, 1982-2001

Rate per 100,000 persons

Year:
- 1982
- 1984
- 1986
- 1988
- 1990
- 1992
- 1994
- 1996
- 1998
- 2000

Sentinel Counties Study of Acute Hepatitis
National Notifiable Disease Surveillance System
Sources of Infection for Persons with Hepatitis C

- Injecting drug use: 60%
- Sexual: 15%
- Transfusion (before screening): 10%
- Other*: 5%
- Unknown: 10%

* Nosocomial; Health-care work; Perinatal

HCV-Positive Partner: 67%
>2 Partners: 33%

Source: Sentinel Counties Study of Viral Hepatitis, CDC
Risk Factors for Acute Hepatitis C
United States, 1983-1998*

* 1983-1990 based on non-A, non-B hepatitis

Source: CDC Sentinel Counties Study
### Geographic Differences in Risk Factors for HCV Transmission

#### Importance of Exposures by HCV Endemicity

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injecting drug use</td>
<td>++++</td>
<td>++</td>
<td>+/-</td>
</tr>
<tr>
<td>Transfusions</td>
<td>+</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>(past)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-care related</td>
<td>+/-</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Unsafe injections</td>
<td>+/-</td>
<td>+++</td>
<td>++++</td>
</tr>
<tr>
<td>Folk medicine</td>
<td>?</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>
Injecting Drug Use and HCV Infection

- Rapidly acquired after initiation
- Four times more common than HIV
- Prevalence 50-90% after 5 years
- Predominant risk factor in low prevalence countries
- Emerging risk factor in moderate/high endemic countries
  - sentinel event for emergence of injecting drug use
  - 50% of persons with acute hepatitis C (Italy, Russia)
  - 40% of HCV-positive persons <40 yrs old vs. 0% >40 (Italy)
  - 2/3 of HCV-positive commercial blood donors (Egypt)
Risk of Bloodborne Virus Infections
Injection Drug Users
*Baltimore 1983–1988*

Risk of HCV Infection Among Injection Drug Users

Prevalence (%)

Duration of Injection (months)


NY - Harlem: 1997-99

NY – LES: 1997-99

Chicago: 1997-99

Injecting Drug Use and HCV Infection

• Acquisition of HCV infection (not HIV) among injection drug users should become the ‘Indicator’ of effective prevention programs

• Prevention of HCV infection (and viral hepatitis A and B) should be integrated into all drug use prevention programs
Reasons to Combine Viral Hepatitis and HIV/AIDS Prevention

- Major public health problems
- Routes of transmission overlap
- Effective prevention tools
  - Immunization, treatment, risk reduction
- Programs for HIV/AIDS and drug abuse prevention
- Lack of integrated prevention activities leads to transmission of viral hepatitis

*Hepatitis C: the tipping point for a new direction in prevention*
Prevention Activities

• **Primary = prevent new HCV infections**
  - Identify high risk persons, test, counsel about harm and risk reduction, substance abuse treatment

• **Secondary = reduce risk of transmission**
  - Identify HCV positives, counsel about harm and risk reduction, substance abuse treatment

• **Tertiary = reduce risk of chronic liver disease**
  - Identify HCV positives, medical evaluation, antiviral therapy, counseling (harm and risk reduction), substance abuse treatment
Transmission of Viral Hepatitis by Unsafe Injections and Medical Practices
Post-transfusion Hepatitis in Developing Countries

- Often transfused units not tested for HBV or HCV
- Related donors often used – perception that less likely to be infected
- Inappropriate use of blood and blood products – single unit transfusions common
- Lack of organized transfusion services
- Paid donors continue to be used in many countries
Health-Care Related HCV Transmission

- **Unsafe injection practices**
  - inadequate sterilization of reuseable needles and syringes
  - sharing of disposable needles and syringes
  - high frequency of injections

- **Contaminated equipment**
  - lack of ‘universal precautions’
  - inadequate cleaning and disinfection
    - in health care settings
    - alternative medicine practices, rituals
Unsafe Injections and HCV Infection
Moderate Endemic Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>History Reused Needles/Syringes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HCV Pos</td>
</tr>
<tr>
<td>Italy</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>89%</td>
</tr>
<tr>
<td></td>
<td>76%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>26%</td>
</tr>
<tr>
<td>Pakistan (&gt;5/yr)</td>
<td>36%</td>
</tr>
</tbody>
</table>
HCV Prevention and Control
A Global Agenda

• Define global burden of disease
  – population-based surveillance for acute and chronic infection
• Reduce incidence of viral hepatitis in at-risk persons
  – Integrate viral hepatitis prevention into prevention programs for HIV/AIDS, STD, and drug abuse
  – implement harm-reduction activities (e.g., syringe and needle exchange) in all prevention programs that serves injection drug users
  – determine the effectiveness of various harm reduction strategies to prevent HCV infection
HCV Prevention and Control
A Global Agenda

• Screen all transfused blood to reduce incidence of transfusion-transmitted hepatitis

• Significantly reduce incidence of HCV infection associated with medical procedures
  – Reduce frequency of injections and unsafe injections
  – Establish standard precautions in all health care settings