Hepatitis C Infection in Baltimore City: A Need for Funding

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BCHD Acute Communicable Diseases Department
Hepatitis C Virus

- Belongs to the Flaviviridae Family along with West Nile, Dengue, classic swine fever (Pestivirus)

- Enveloped, ~10 KB, + sense RNA genome with 6 distinct genotypes, several subtypes

- 70% of US infections involve genotype 1, the least responsive to interferon treatment

- Displays a high rate of replication ($10^{12}$ virions produced each day vs. $10^9$ in HIV) and high mutation rate.

- 70% of infections are asymptomatic

- 75% of transmissions become chronically infected
HCV Risk Factors:

* any use of illegal drugs taken by injection
* received blood, blood products, or solid organs from a HCV positive donor
* were ever on long-term kidney dialysis
* have multiple sex partners
* lived with someone who was infected with HCV and shared items that could contain blood
* were ever a health care worker and had frequent contact with blood on the job
* received unsterilized tattooing or piercing
* were born to HCV-positive mother

<table>
<thead>
<tr>
<th>Transmission Mode</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>injection drug use</td>
<td>60%</td>
</tr>
<tr>
<td>sexual</td>
<td>15%</td>
</tr>
<tr>
<td>transfusions</td>
<td>10%</td>
</tr>
<tr>
<td>perinatal, nosocomial, and occupational</td>
<td>5%</td>
</tr>
<tr>
<td>unknown</td>
<td>10%</td>
</tr>
</tbody>
</table>
A Cause for Concern

- most common blood-borne infection
  - est. 4 million chronic carriers in US
  - roughly 20,000 new cases each year

- leading cause of adult liver transplant surgery
- causes 10,000 deaths per year
- $1 billion per year in medical costs

- In 2007, 103 liver transplants were performed at JHH and UMM. 103 \times 350,000 = over $36 million spent locally (solely for surgery)

- Age complicates disease natural history.
  - The next two decades will display a surge in HCV related liver disease and cancer.
The Unique Situation in Baltimore

- Believed to contain the majority of HCV infections in state of Maryland
- The drug use population is large:
  - Drug arrest is 8 times that of state rate and comprises 64% of state drug arrests
  - From 2004-05 over 17,000 city residents were treated for heroin addictions and another 14,107 for cocaine
- HCV in IDUs:
  - In 1993, 93% of 267 IDUs were antibody positive
  - In 1988, 80% of 771 IDUs screened positive
In the past 7 months, over 17,000 reportable disease reports have been sent to BCHD ACD. 6,133 or 35% were due solely to HCV 10% due to HBV
The Endless Pile

By the end of the year
* 30,000 total reports will be received
* 10,500 will be HCV related
* 2,800 will be HBV related

Funding limits staff
- record entry falls unto one individual
- any investigation inevitably adds precious time
- events like the recent *S. typhimurium* and H1N1 outbreaks
  often require full attention leaving no time for anything else
As if that wasn't enough........

• acute case definition requires multiple tests and symptoms, difficult to gather all information

• critical information such as supplemental tests, liver enzyme values, and signal to cutoff ratios needed for CDC case designation are missing

• patient contact information, address, date of birth, demographics are blank

• individuals can also be screened at more than one location leading to duplication of reports
-link city residents to DHMH Hepatitis C website, www.HepCMaryland.org, and DHMH adult viral Hepatitis coordinator, Patricia Lawson

-education of Hepatitis C health consequences and transmission factors

-encourage screening in HCV high risk populations
Exploring the 1,846 HCV confirmed past or present NEDSS Cases:

Percentage of cases reporting:
47% Anti-HCV antibody
46% RNA Test
35% signal to cutoff ratios
12% ALT values
12% AST values
10% secondary assay listed

### Number of Cases vs. Risk Factor Information

<table>
<thead>
<tr>
<th>Number of Cases</th>
<th>Risk Factor Information</th>
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<tbody>
<tr>
<td>4 (no)</td>
<td>ever injected nonprescription drugs</td>
</tr>
<tr>
<td>4 (no)</td>
<td>blood transfusion before 1992</td>
</tr>
<tr>
<td>4 (no)</td>
<td>clot factor before 1987</td>
</tr>
<tr>
<td>3 (no)</td>
<td>ever incarcerated</td>
</tr>
<tr>
<td>4(no), 1(yes)</td>
<td>medically employed person</td>
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<tr>
<td>4 (yes)</td>
<td>STD treated individual</td>
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<tr>
<td>1 (yes)</td>
<td>HCV sexual partner contact type</td>
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<tr>
<td>12</td>
<td>listed suspected illness onset date</td>
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<tr>
<td>4 (no)</td>
<td>long term hemodialysis</td>
</tr>
<tr>
<td>4 (no)</td>
<td>organ transplant before 1992</td>
</tr>
<tr>
<td>79(no), 6(yes)</td>
<td>jaundice indication</td>
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</table>

6 Most Frequent Zipcodes:
- 21213 Edison (East)
- 21202 Greenmont/ Inner Harbor (Central/East)
- 21218 Waverly (North)
- 21217 Druid Hill/Bolton (Central)
- 21215 Pimlico (Northwest)
- 21223 Carroll/Franklin (West)
Percentages of Cases in Each Age Group by Gender

Female mean = 46.6 years
Median = 45 years

Male mean = 48.1 years
Median = 49 years
The Baltimore Needle Exchange Program: How to Target IDUs
NEP Information Gained

- Clients use public buses, walking, and metro as main forms of transportation
- Majority do not have access/cannot use internet
  - important to establish a toll free 1-800-MyLiver number
- Most are uninsured
  - essential to link IDU and other high risk persons to health care network via adult viral hepatitis coordinator.
  - hopefully increase NEP and STD clinic participation through campaign referral
The key to risk reduction is public awareness and education

> BNEP has reduced HIV, another blood-borne pathogen, by 74% since inception

Goals of the 2002 MD HCV Control and Prevention Plan:
"to develop and make available through multiple modalities, informational material about Primary prevention targeted to infected and at-risk persons."
HEPATITIS C INFECTION CAN CAUSE SERIOUS LIVER DISEASE AND CANCER.

IT CAN TAKE DECADES FOR SIGNS OF ILLNESS TO SHOW.

IF YOU ANSWER YES TO ANY OF THE FOLLOWING YOU SHOULD BE SCREENED:

- Have you ever injected drugs, even once?
- Received a blood transfusion, clotting factors, or organ transplant before July 1992
- Been on long-term kidney dialysis?
- Lived with someone who was infected with HCV and shared items like razors, nail clippers, and toothbrushes?
- If you were born from an HCV infected mother

1-800-MYLIVER | WWW.HEPCMARYLAND.ORG
## Funding and Budget

- **Grant application to the Harry and Jeanette Weinberg Foundation MD small grants program**

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<th>Description</th>
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<th>territory coverage</th>
<th>quantity</th>
<th>cost</th>
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<td>Toll Free Telephone Number</td>
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**Total** $37,900
Special Thanks to

Mary Grace Munoz, ACD Director

Kompan Ngamsgna, Epidemiologist

Patricia Lawson, DHMH Viral Hepatitis Coordinator

David Bell, Graphic Artist
References:


Images: