Evaluating Expanded Criteria for the Acute Hepatitis C Virus Case Definition to Identify Newly Acquired Infections

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Objectives

• Describe difficulties in surveillance for acute hepatitis C virus (HCV) infection;
• Measure the impact of expanding criteria for acute HCV to include seroconversion;
• Discuss advantages and disadvantages of this approach.
Background

NYSDOH Hepatitis Surveillance System

• Relies on electronic laboratory reporting
• Population-based (11,149,572)
• Follow-up and reporting are the responsibility of 57 local health departments outside of NYC
• Monitored by NYSDOH staff
  – 3 Regional Surveillance Officers for enhanced acute hepatitis surveillance (out of 5 regions)
  – 1 Central Office Surveillance Officer
  – 1 Viral Hepatitis Surveillance Coordinator
• Patient-based electronic case reporting system
HCV Clinical Features

– Incubation period average 6 weeks, range 2-26 weeks

– Acute and chronic state
  • 75-85% develop chronic infection

– Clinical illness ~20% of new infections
  • Common symptoms (acute illness):
    – Jaundice, fever, fatigue, loss of appetite, nausea, vomiting
    – Abdominal pain, dark urine, clay colored bowel movements
    – Joint pain
HCV Diagnostic Tests

• Common laboratory tests:
  – Antibody
    • Average time from infection to detection - 30 days
    • Up to 6 months to detection
    • Does not distinguish acute from chronic infection
  – Nucleic Acid Tests
    • Detect virus
    • As early as 2 weeks post infection
    • Indicates current infection

• No laboratory marker for acute infection
CSTE Acute HCV Case Definition

<table>
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<tr>
<th>Clinical Criteria</th>
<th>Laboratory Criteria</th>
<th>Confirmed</th>
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| • Acute illness (e.g., fatigue, abdominal pain, loss of appetite, intermittent nausea, vomiting), with a discrete onset of symptoms  
• Jaundice or elevated ALT > 400 IU/mL | • Anti-HCV screening-test-positive (EIA, CIA, MEIA) with a high positive signal to cut-off (s/co) ratio **OR**  
• HCV RIBA positive **OR**  
• HCV NAT positive **AND**  
• IgM anti-HAV negative **AND**  
• IgM anti-HBc negative | • A case that meets both the clinical and laboratory criteria |
The Surveillance Dilemma

- Absence of symptoms among newly infected persons
- Lack of serologic marker of new infection
- CSTE case definition requires discrete onset of symptoms

HINDERS

- Identification of clusters/outbreaks
- Inaccurate surveillance data
- Timely public health response
- Prevention planning
- Early patient treatment
Methods

Documented Seroconversion

• Defined as prior negative HCV antibody test result within one year of the first positive test result
• No discrete onset of symptoms
  – Reported as chronic cases due to current acute case definition
• Developed to increase identification of new infections
  – Identified through routine follow-up on positive laboratory results
  – Added to the data collection tool in 2008
  – Treated as an acute case for investigation purposes (e.g., interview patient with acute form)
HCV Case Investigation

• What’s investigated:
  – Positive laboratory reports:
    • Anti-HCV
      – Especially with high positive s/co ratio
    • RIBA
    • HCV NAT
  – Any provider report of a case of HCV
HCV Case Investigation (2)

- Follow-up Methods:
  - Contact the Ordering Provider
    - By phone for suspected acute case
    - By mail or fax ("Dear Doctor Letter") for all others
    - When resources allow, guidelines suggest phone calls to providers for all positive lab results
HCV Case Investigation (3)

- Prioritize cases for follow-up
  - Suspected acute cases (i.e., ALT > 400 IU/mL)
  - Those tested in the public sector (e.g., LHD STD Clinics)
  - Persons at risk of being newly infected, including those under the age of 30 years
Routine follow-up of positive lab results

• Provider Follow-up
  – Verify diagnosis
  – Obtain additional information as needed to complete the chronic hepatitis C supplemental form
    • Attempt to obtain prior negative test results and dates
• Patient Follow-up
  – Interview all acute and documented seroconversions
  – As resources allow for asymptomatic cases
    • Interview newly identified patients to complete the chronic hepatitis C supplemental form
    • Provide education and counseling information, as needed
    • Refer for medical evaluation
Measurement of impact

- Chronic HCV cases reported from 2008-2010 were assessed for documentation of a prior negative antibody result
- Evaluation of effectiveness of collecting prior negative test results among asymptomatic cases to increase identification of new infections
Results

Chronic Case Reports

• 20,401 newly reported chronic HCV cases from 2008-2010
  – 1,962 (9.6%) assessed for prior negative HCV result
     • 189 (9.6%) had a prior negative HCV result
       – 118 did not have date of prior negative test and were excluded
       – 71 had a prior negative test date
         » 39 had negative test > 12 months prior to first positive and were excluded
         » 32 had negative test ≤ 12 months of first positive
Percent increase adding seroconversion

- Expanded case finding resulted in a 23% increase in identification of new infections.

139 acute cases reported (meet current CSTE case definition) + 32 documented seroconversions
171 Total Cases

\[\frac{32}{139} = 23\% \text{ percent}\]
Limitations

• Documented seroconversion concept not introduced to local health department staff until May 2011
  – May have been unaware of importance of collecting this data
### Discussion

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<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<td>Adding prior negative test result question to existing surveillance forms is easy.</td>
<td>Requires more work on part of already limited surveillance resources.</td>
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<td>Infections identified early in the course of infection are more successfully treated than chronic infections.</td>
<td>Same as above.</td>
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<tr>
<td>Infections identified early may lead to timely identification of outbreaks and subsequent public health intervention.</td>
<td>Same as above.</td>
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<td>Increased new infection identification benefits surveillance data which can be applied to prevention planning.</td>
<td>Same as above.</td>
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Conclusions

• Advantages outweigh disadvantages

• Revision of acute case definition is warranted

• Proposed case definition
  – Acute onset of illness with jaundiced or ALT >400 IU/mL and a positive HCV confirmatory test
  OR
  – Documented HCV seroconversion (positive confirmatory test) with a positive confirmatory HCV test within <12 months of the last negative antibody test result
Resources

• 2011 Surveillance Guidelines
  – http://www.health.state.ny.us/diseases/communicable/hepatitis/surveillance.htm
Questions?