

### Viral Hepatitis Surveillance Trends, Diagnostic Challenges & Reporting Issues

A recent CDC Press Release (March 15, 2007) reported a dramatic reduction in the rates of the most common forms of acute viral hepatitis in the United States. Implementation of immunization programs for hepatitis A & B have fueled most of the reduction of those two viruses. Education regarding risk factors for hepatitis C and the promotion of risk reduction behavior have prompted the decrease in rates of hepatitis C. Most cases of viral hepatitis are caused by hepatitis A (HAV), hepatitis B (HBV), or hepatitis C (HCV) viruses.

#### Diagnosing Hepatitis

Diagnosis of acute hepatitis remains a challenge for clinicians since many infections produce minimal or nonspecific symptoms and medical care is not always obtained. Appropriate testing is essential for accurate diagnosis and for reporting of cases to public health. Case definitions for all types of acute viral hepatitis include a clinical **and** a laboratory component.

The clinical case definition for acute viral hepatitis is an acute illness with,

- 1) discrete onset of symptoms such as nausea, anorexia, malaise, fever, or abdominal pain and,
- 2) jaundice or elevated serum aminotransferase levels.

#### Laboratory criteria for acute viral hepatitis:

##### Acute hepatitis A

—Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive

##### Acute hepatitis B

—IgM antibody to hepatitis B core antigen (anti-HBc) positive or hepatitis B surface antigen (HBsAg) positive

—IgM anti-HAV negative (if performed)

##### Acute hepatitis C

—Serum alanine aminotransferase levels higher than seven times the upper limit of normal, and

—IgM anti-HAV negative, *and*

—IgM anti-HBc negative, or if not performed, HBsAg negative, *and*

—One of the following:

-Antibody to hepatitis C virus (anti-HCV) screening test positive, verified by an additional, more specific assay (e.g., recombinant immunoblot assay [RIBA] for anti-HCV or nucleic acid testing for HCV RNA)

-Anti-HCV screening test positive with a signal to cut-off ratio predictive of a true positive, as determined for the particular assay.

***Using IgM anti-HBc testing for diagnosis of acute hepatitis B should be limited to persons for whom clinical evidence of acute hepatitis or an epidemiological link to a case has been identified. The positive predictive value of this test is low in asymptomatic persons<sup>1</sup>.*** Hepatitis B surface antigen can be an indicator of acute or chronic illness.

Hepatitis B & C infections can also result in a chronic infection which may be the first diagnosis of hepatitis an individual receives. Screening for chronic illness is indicated in certain populations with known risk factors for hepatitis B or C. Laboratory testing in these individuals may involve ordering specific single hepatitis tests rather than a hepatitis panel or profile. Since false positives with the IgM antibody tests for HAV & HBV have been reported the need for these tests for screening of asymptomatic individuals has not been demonstrated.<sup>2</sup>

<sup>1</sup>MMWR Surveillance Summary, "Surveillance for Acute Viral Hepatitis – United States, 2005."

<sup>2</sup>A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States Part II: Immunization of Adults, MMWR 12/08/06, 55(RR16);1-25.

## Reporting Hepatitis to the Epidemiology Department

As required by Tennessee state law (1200-14-1.02), cases of acute viral hepatitis are required to be reported to local public health authorities although experts believe that reported cases account for approximately one third of actual cases.<sup>1</sup> In addition, positive HbsAg women who are pregnant must also be reported (T.C.A. 68-5-602). This is to assure their entry into the Perinatal Hepatitis B Program which case manages these women and their infants for completion of the vaccination series and post vaccine serology testing to ensure immunity.

Timely reporting of acute viral hepatitis cases by providers offers an opportunity to prevent additional cases. Dependence on laboratories to report cases to the health department results in delay of response to those cases. Chattanooga-Hamilton County Health Department epidemiology staff investigate each case reported and provide education and intervention strategies to prevent further exposure of individuals and incidence of disease.

Positive lab results are received by public health authorities from providers including laboratories. A single positive lab result requires much investigative effort to determine whether the report reflects acute hepatitis. Information including symptoms, hepatic enzymes, and patient history will assist in determining the status of the patient. Much of this information is requested from providers who ordered the test results and epidemiology staff appreciates prompt attention to requests for additional information. HIPAA regulation allows for release of protected health information to the health department for the purpose of disease investigations (OCR HIPAA Privacy, 45 CFR 164.512[b]).

Surveillance and investigation of viral hepatitis continues to be an essential component of efforts to continue to decrease the disease burden of hepatitis in the United States. Ongoing efforts with recent immunization recommendations as well as education of the public will continue to reduce the rates of viral hepatitis and subsequently the incidence of hepatocellular carcinoma and cirrhosis.<sup>2,3</sup>

<sup>3</sup>CDC. Prevention of Hepatitis A Through Active or Passive Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP) MMWR 2006;55(No. RR-07)

Interpretation of Hepatitis B Serologic Tests			
Tests	Results	Interpretation	Vaccinate?
HBsAg anti-HBc anti-HBs	negative negative negative	susceptible (not immune)	vaccinate if indicated
HBsAg anti-HBc anti-HBs	negative negative positive with > 10mIU/ mL*	immune due to vaccination	no vaccination necessary
HBsAg anti-HBc anti-HBs	negative positive positive	immune due to natural infection	no vaccination necessary
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	acutely infected	no vaccination necessary
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	chronically infected	no vaccination necessary (may need treatment)
HBsAg anti-HBc anti-HBs	negative positive negative	four interpretations possible†	use clinical judgment

\*Postvaccination testing, when it is recommended, should be performed 1-2 months after the last dose of vaccine. Infants born to HBsAg-positive mothers should be tested 3-9 months after the last dose of vaccine.

- †
1. May be recovering from acute HBV infection
  2. May be distantly immune, but the test may not be sensitive enough to detect a very low level of anti-HBs in serum.
  3. May be susceptible with a false positive anti-HBc
  4. May be chronically infected and have an undetectable level of HBsAg present in the serum.

### Update on Avian Influenza as of 9/30/07

- According to the WHO, since 2003 the virus is known to have infected 330 people, primarily in Asian countries.
- No sustained human-to-human transmission has occurred.
- No highly pathogenic H5N1 strain has been detected in birds in the United States.
- Personal and workplace readiness checklists are available at: <http://pandemicflu.gov>

### Influenza Vaccine

According to the CDC, this fall promises plenty of flu vaccine to go around - up to 132 million doses, more than the nation has ever produced.

The ample supplies have the government urging vaccinations not just for people at highest risk of dying from influenza, but for anyone who wants to avoid having complications or getting the flu.

## EPIDEMIOLOGY REPORT

January - October 2007

Notifiable Disease	Confirmed Cases
Campylobacteriosis	16
Cryptosporidiosis	1
Dengue Fever	1
Ehrlichiosis	1
Giardiasis	18
Group A Streptococcus, invasive	12
Group B Streptococcus, invasive	18
Guillain-Barre syndrome	6
Haemophilus influenzae, invasive	2
Hepatitis B Perinatal Program	8
Hepatitis B*, acute	6
Hepatitis C*, acute	1
Elevated Lead Reports	8
Legionellosis	2
Lyme disease	3
Malaria	2
MRSA (S.aureus, methicillin resistant), invasive	119
Neisseria meningitidis, invasive	1
Rocky Mountain spotted fever	7
Salmonellosis	34
Shigellosis	2
STEC (Shiga toxin-producing Escherichia coli)	5
Strep pneumoniae, drug resistant, invasive	9
Strep pneumoniae, invasive	40
VRE (Vancomycin-Resistant Enterococcus), invasive	5
Yersiniosis	1
Animal Bite/Exposure Follow-up	27
Restaurant Complaints Investigated	128
2007 Foodborne Outbreaks	14

\*The majority of cases received and investigated are non-acute and not reportable, and therefore are not represented here.

## Flu Vaccinations

The Chattanooga Hamilton County Health Department has vaccine available for those who wish to receive one. To make an appointment at one of our clinics please call the following:

- Ooltewah Health Center - 423-238-4269
- Sequoyah Health Center - 423-842-3031
- Third Street Family Health - 423-209-8050



## **EPIDEMIOLOGY DEPARTMENT**

**Margaret Zylstra, RN, BSN  
Epidemiology Nurse Manager**

**Marie Stoudemire, RN  
Epidemiology Nurse**

**Bev Fulbright, RN  
Epidemiology Nurse**

**Sarah Cox, MPH  
Epidemiologist**

**Vickie Hagan  
EPI Assistant**

**Phone: 423-209-8190**

**Fax: 423-209-8191**

**Web address:  
<http://health.hamiltontn.org/epidemiology>**

### **Inside this issue:**

Viral Hepatitis Surveillance Trends, Diagnostic Challenges & Reporting Issues	<b>Page 1</b>
Reporting Hepatitis to Public Health	<b>Page 2</b>
Interpretation of Hepatitis Serologic Tests	<b>Page 2</b>
Avian Influenza Update	<b>Page 3</b>
Epidemiology Report	<b>Page 3</b>
Flu Vaccinations	<b>Page 3</b>

### **Mission:**

**To monitor and investigate epidemiologic trends and  
diseases to protect the health of the community.**

**Chattanooga-Hamilton County  
Health Department  
Epidemiology  
921 East Third Street  
Chattanooga, TN 37403**

