CRITICAL LINK

John M. Colmers
Secretary

A Publication of the Maryland Department of Health and Mental Hygiene

The Laboratories Administration—Maryland's State Public Health Laboratory

Serodiagnosis of Viral Hepatitis

A broad array of tests applied to diagnose 6 different viruses

The DHMH Laboratories Administration provides serodiagnostic tests for Hepatitis A Virus (HAV), a Hepatitis B Virus (HBV) screening/panel, and Hepatitis C Virus (HCV). These tests are performed by laboratory scientists in the Division of Virology/ Immunology: Gira Thakore, Yvette Washington, and DeLessert Lee. The Hepatitis Laboratory performed 1,888 tests for HAV, approximately 78,000 tests for HBV, and 14,596 tests for HCV during the 2008 calendar year. The turn around time for hepatitis testing is two to five days.

Given the complexity of hepatitis testing, a broad array of analytical tests is needed to assess the status of viral hepatitis infection. Patients may be seen by multiple clinicians who do not have previous test results or are not aware of patient vaccination status. This can lead to needless duplication of testing. When multiple laboratories are involved in the testing of different hepatitis virus markers, no comprehensive summary of test results may be available. Hence, the laboratories may be unable to employ best laboratory practices to support appropriate utilization. Missing clinical information makes it difficult for the laboratory to select the appropriate tests (e.g., acute versus chronic infection). Guidelines published by the Centers for Disease Control (CDC) help streamline the ordering of tests.[1] The appearance of different serological markers during acute HBV infection is illustrated in Figure 1 and interpretation of the HBV tests are shown in Table 1.

Viral hepatitis is a viral induced inflammation of the liver. It is a major public health problem worldwide, that leads to significant morbidity and mortality due to complications of end-stage liver disease. There are six major hepatotropic viruses (A, B, C, D, E and G). Although the clinical picture is similar and the type of virus can only be confirmed by laboratory tests, there are differences in modes of transmission, incubation period, long-term complications, and mortality rates. Infection by Hepatitis A, B, or C virus causes over 90% of the acute viral hepatitis cases in the U.S. Other viruses including Cytomegalovirus, Epstein-Barr virus, and yellow fever virus can also cause

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New Projects Provide Cutting Edge Technology

Laboratories Administration adds MyLIMS and SAN

Technology is a vital part of 21st century public health testing, and laboratories that keep up with high-tech changes are better able to serve their customers - both internal and external. To keep pace with technology, the Laboratories Administration's Office of Information Management Services (OIMS) has recently completed two IT projects aimed to improve customer data access and better maintain data availability and security. With the hope of increasing both internal and external customer

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Serodiagnosis of Viral Hepatitis

viral hepatitis. Hepatitis A and E are transmitted enterically by the consumption of food and drinking water contaminated with infected feces. This type of transmission is called "fecal-oral spread." Hepatitis B, C, and D are spread by contact with blood or other body fluids from an infected person. This mode is known as "bloodborne spread." Chronic infections with HBV and/or HCV are the major risk factors for the development of liver cirrhosis and hepatocellular carcinoma (HCC). Serologic and molecular assays may detect early viral hepatitis infections before clinical signs become apparent, differentiate acute from chronic infections, and verify development of immunity and response to therapy.

HAV Infection

"Infectious hepatitis" is caused by a picornavirus called Enterovirus 72. It is a non-enveloped, 27 nm in diameter virus, containing a single-stranded RNA genome. It has an incubation period of three to five weeks (average 28 days). Asymptomatic infections are very common, especially in children. Adults, especially pregnant women, may develop more severe disease. Although convalescence may be prolonged, there is no chronic form of the disease. A viremia is usually short, lasting up to two weeks, and its fecal shedding is also transient. Therefore, serology in HAV infection is a more reliable diagnostic tool than detection of viral antigens in sera. Serodiagnostic markers used during HAV infection are IgM Anti-HAV and IgG Anti-HAV

IgM Anti-HAV

IgM Anti-HAV antibodies are detectable in the serum at the onset of symptoms. This antibody rises rapidly in titer and persists for three to six months, then falls to undetectable levels. It is specific for diagnosing or conforming recent acute HAV infection usually, within the past three to six months.

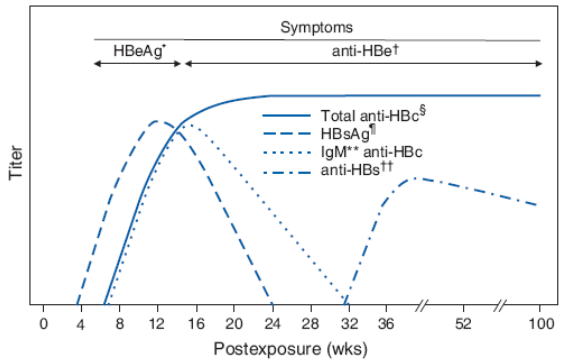
IgG Anti-HAV

IgG or total anti-HAV is indicative of past infection and immunity to HAV, it cannot confirm a recent infection, and is primarily useful in immunity and epidemiological studies. A positive anti-HAV test indicates that the patient had HAV infection in the past, and now is immune to reinfection.

HBV Infection

HBV, once known as the cause of "serum hepatitis," is caused by a hepadnavirus. This is a 42 nm virion, also known as a "Dane particle." HBV infection has an incubation period of two to six months and is spread by percutaneous or permucosal routes. HBV can be transmitted through contaminated blood transfusions or serum products, sharing needles or razors, tattooing, acupuncture, sexual intercourse, renal dialysis, organ donation, and by close personal contact with an infected individual. The virus replicates in the liver and virus particles, along with excess viral surface proteins, are shed in large amounts into the blood during active viral replication. Other

FIGURE 1. Typical serologic course of acute hepatitis B virus infection with recovery



* Hepatitis B e antigen.
† Antibody to HBeAg.
§ Antibody to hepatitis B core antigen.
¶ Hepatitis B surface antigen.
** Immunoglobulin M.
†† Antibody to HBsAg.

Source: http://www.cdc.gov/hepatitis/HBV/HBVfaq.htm#general

body fluids capable of transmitting HBV include saliva, CSF, semen, vaginal secretions, and peritoneal and pleural fluids. About 25-35% of all persons infected with HBV have chronic hepatitis.

HBV occurs as seven distinct genotypes, designated A, B, C, D, E, F, and G. HBV has a double-stranded DNA genome, which encode the envelope, core (precore /core), polymerase and X proteins. The envelope proteins are designated as hepatitis B surface antigen (HBsAg). In virus-infected liver cells, HBsAg is produced in excess and secreted into the blood, where it serves as a marker for active infection and infectivity. Currently, recombinant HBsAg is used for HBV vaccination, and the development of antibody to HBsAg is typically associated with protective immunity. There are six separate markers associated with HBV infection.

(i) Hepatitis B surface antigen (HBsAg) and its antibody, (anti-HBs)

(ii) Hepatitis B core antibodies (IgM anti-HBc and IgG anti-HBc) and

(iii) Hepatitis Be antigen (HBeAg) and its antibody, (anti-HBe)

HBsAg

A positive test for HBsAg indicates a patient is infected with HBV and is contagious. It is the first serological marker to appear following HBV infection (30-60 days after exposure). With clinical improvement, HBsAg may disappear. However, persistence of HBsAg beyond six months is classified as a chronic HBV infection and indicates potential for both on-going liver damage and persistent infectivity. CDC guidelines for interpretation of test results are summarized in Table 1. Negative HBsAg, may rule out HBV infection (with the rare exception of the "window period").

Table 1: Interpretation of HBV Serologic Test Results

Tests	Results	Interpretation
HBsAg anti-HBc anti-HBs	negative negative negative	Susceptible
HBsAg anti-HBc anti-HBs	negative positive positive	Immune due to natural infection
HBsAg anti-HBc anti-HBs	negative negative positive	Immune due to hepatitis B vaccination
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	Acutely infected
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	Chronically infected
HBsAg anti-HBc anti-HBs	negative positive negative	Interpretation unclear; four possibilities: 1. Resolved infection (most common) 2. False-positive anti-HBc, thus susceptible 3. "Low level" chronic infection 4. Resolving acute infection

Hepatitis B surface antigen (HBsAg): A protein on the surface of HBV; it can be detected in high levels in serum during acute or chronic HBV infection. The presence of HBsAg indicates that the person is infectious. The body normally produces antibodies to HBsAg as part of the normal immune response to infection. HBsAg is the antigen used to make hepatitis B vaccine.
Hepatitis B surface antibody (anti-HBs): The presence of anti-HBs is generally interpreted as indicating recovery and immunity from HBV infection. Anti-HBs also develops in a person who has been successfully vaccinated against hepatitis B.
Total hepatitis B core antibody (anti-HBc): Appears at the onset of symptoms in acute hepatitis B and persists for life. The presence of anti-HBc indicates previous or ongoing infection with HBV in an undefined time frame.
IgM antibody to hepatitis B core antigen (IgM anti-HBc): Positivity indicates recent infection with HBV (≤6 months). Its presence indicates acute infection.
Adapted from: A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. Part I: Immunization of Infants, Children, and Adolescents. MMWR 2005;54(No. RR-16).

Source:http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5708a1.htm

Anti-HBs

Anti-HBs appears two to four weeks after the disappearance of HBsAg. It is a major protective antibody and marker of recovery that appears during the convalescent phase. The period when anti-HBs is no longer detectable in the serum, and anti-HBs is yet to appear, is known as the window period. During this period only HBcIgM antibody is present and indicates a recent HBV infection. HBcIgM antibody appears shortly after HBV infection, and persists for six to twelve months. However, in severe acute HBV infections, HBsAb may be present simultaneously with HBsAg. It usually persists for life. Anti-HBs also develops after administration of HBV vaccine, although its levels may wane over time. Negative results (< 10mIU/ml) indicate the patient has no apparent immunity to HBV. Positive results (≥10mIU/ml) indicate immune status to HBV either because of resolved infection or as a result of prior vaccination. Very rarely (<1%) chronic carriers are positive for HBsAg and anti-HBs at the same time. In such cases, the patient is considered contagious.[2]

Total anti-HBc and IgM anti-HBc

Negative anti-HBc results may rule out past infection with HBV. Absence of IgG anti-HBc in the presence of anti-HBs may indicate immunity acquired through vaccination. A positive Total HBc indicates previous or current infection. One to four weeks after the appearance of HBsAg, anti-HBc is detectable in patients infected with HBV. Because it generally remains detectable for the remainder of a patient's life, Anti-HBc is an indicator of current or previous HBV infection, and is helpful in the study of seroepidemiology of HBV. It is not associated with recovery from or immunity to Hepatitis B. Positive IgM specific anti-HBc indicates a recent infection. IgM anti-HBc appears during the first week of acute hepatitis illness. It is usually present for six to twelve months after the onset of symptoms, after which it falls to undetectable levels. HBc IgM antibody is used as the criterion for diagnosing acute HBV infections. In 10-15% of chronic HBV infection, IgM anti-HBc may also be detected, particularly when

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replicating HBV is present. Often this event leads to suspicion that a patient is harboring a precore HBV mutant.

HBeAg and Anti-HBe

HBsAg can be detected in a person with acute or chronic HBV infection, and its presence correlates with viral replication and infectivity. If HBeAg persists for more than 10 weeks, viral replication is continuing and the patient is highly infectious. The disappearance of the HBeAg is followed shortly after about two weeks by the appearance of its antibody, Anti-HBe. Seroconversion, which usually occurs at or around the peak of clinical symptoms, suggests that the infection is being resolved. Anti-HBe, therefore, indicates the patient's reduced infectious state and arrest of HBV replication. However, in patients with a precore mutant, HBV replication continues despite the presence of Anti-HBe.

Hepatitis C Virus (HCV)

HCV is a Flaviviridae RNA virus that has a very high prevalence in the United States. Approximately 1.8% of the population is positive for HCV antibodies with 2.7 million chronic carriers and 25,000 new infections annually.[1] It is the major cause of liver failure and death among infectious diseases. The CDC estimates that 75-85% of persons infected with HCV will develop a chronic form of infection. Over many years, perhaps decades, ongoing liver damage by HCV can cause cirrhosis and, in some cases, lead to primary liver carcinoma.

The test for antibodies to Hepatitis C (anti-HCV) is the only widely-used serological marker to indicate this infection. Antibody is generally detectable within six to twelve weeks of infection.

Negative Anti-HCV results may rule out chronic HCV infection in an immuno-competent patient. However, in immunocompromised patients, the anti-HCV response may be blunted and a qualitative test, polymerase chain reaction (PCR), for HCV RNA may be required to rule out occult infection. The PCR test detects and quantitates the viral genome in the patient's serum and confirms infection. Positive HCV antibody indicates the patient has been infected with HCV. Most infections are chronic (range 50% to 85%). Anti-HCV usually remains positive indefinitely, even in patients who spontaneously recover. Active infection can be confirmed by a PCR test for HCV RNA. Anti-HCV does not confer immunity to HCV. Supplementary testing involving a recombinant immunoblot assay (RIBA) is useful in excluding false positive enzyme-linked immunosorbent assay (ELISA) results.[3] No vaccine is available for HCV.

The Laboratories Administration reports positive anti-HCV result using a signal/cutoff (S/C) ratio. Positive specimens with a high S/C ratio (≥ 3.8) indicates past or present infection. Samples with high S/C ratio usually (95%) confirm positive, but 5% might represent a false positive. Reflex supplemental testing should be performed for positive specimens with a S/C ratio ≤ 3.8.[1]

For specific information on hepatitis testing service, contact the Laboratories Administration's Hepatitis Laboratory at 410-767-6169.

This article was written by
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Division of Virology/Immunology.

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[1] http://www.cdc.gov/hepatitis/HBV/PDFs/SerologicChartv8.pdf.

[2] Dufour DR., Lott JA, Nolte FS, Grech DR, Koff RS, Seeff LB, Diagnosis and monitoring of hepatic injury I. Performance characteristics of laboratory test *Clin. Chem*. 2000; 46; 2027-49.

[3] Nakatsuji Y. Matsumoto A, Tanaka E. *et al.* Detection of chronic hepatitis C virus infection by four diagnostic systems: first generation and second generation ELISA, second generation recombinant immunoblot assay and nested polymerase chain reaction analysis. *Hepatology* 1992; 16: 300-305.

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New Projects Provide Cutting Edge Technology

satisfaction, OIMS has expanded its customer service structure by adding MyLims® to access our data base, and has totally revamped its data center with the addition of a storage area network (SAN) to ensure 24/7 continuous data availability and access. Our OIMS staff will continue to implement strategies to improve and support increasing demand for always-on, highly available data and operations-critical applications.

MyLims® Provides Customer Access

MyLims® is a web-based application used by external customers to access the Laboratories Administration's Star-LIMS® data base. Simply by using an internet browser an external customer can remotely access a number of applications. With the MyLims® system it is possible to view and/or order laboratory tests, view a patient's completed test results, and print a report of the final laboratory test results. Access to MyLims® applications is through a log-in sign-on protocol with an assigned unique User ID and password provided to each clinic by OIMS. To ensure confidentiality, clinics will be limited to viewing laboratory test orders and patient test results that are created solely by that particular clinic's User ID. Each health department will be responsible for controlling the individuals within each of its clinics who use the sign-on information and be required to sign a Laboratories Administration Data User Agreement. Once a particular clinic is assigned and receives its user ID and password, the clinic will be able to control its own password usage for individual MyLims® users within the clinic. Any health department clinic interested in trying the system can e-mail OIMS at: laboratories_administration@dhmh.state.md.us.

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Storage Area Network (SAN) Provides Scalable, Flexible Storage Infrastructure

Part of OIMS's mission is to provide its customers with always-on, highly available data and operation-critical applications, as well as the ability to share data among its customers. In the past, OIMS would improve data availability bottlenecks by adding another server in the data center. However, this typically resulted in only short-term benefits because of the amount of data collected and stored by the various laboratories. Constantly adding additional servers to the data network and trying to manage such a server "farm" was both labor intensive and an inefficient means of data storage and processing. Additionally, this collection of servers made it extremely difficult to maintain back-up efforts and plan for continuity of operations. OIMS has moved away from the server-farm model. Instead, OIMS now using cutting edge technology, typically found in large corporate computing environments, by installing a fibre channel storage area network.

A storage area network or SAN is a high-speed sub-network of shared storage devices used for efficient data storage and optimum data access. While it may sound complicated, physically, a SAN is simply a machine that contains a collection of disks (hard drives) for storing data. Currently the Laboratories Administration's SAN has about 4.0 terabytes (4,000 gigabytes) of data storage space. The SAN functions in a way that makes all storage devices available to all servers on a network. As customer storage needs increase more disks can be added to the SAN, and they too will be accessible from any server in the larger network. In this SAN-model of data storage, the server acts as a pathway between the end user (customer) and the stored data, instead of the server acting as the storage device itself. Because the stored data does not reside directly on any of the network's servers, server power is utilized for business applications, and full network storage capacity is directly available to all the end users, OIMS's internal and external customers.

The Laboratories Administration OIMS Team. Pictured from left to right: Rob Wagner, Steve Fishbein, Mitchell Gordon, Marcus Rottman, and Carlton Jennings. Not pictured: Steve Montgomery.

Data Availability and Operational Reliability

The SAN has also allowed OIMS to begin virtualizing its server infrastructure, which has reduced hardware costs and increased reliability of network resources. By using VMware® OIMS staff have been able to run multiple virtual servers from a single physical server. A virtual server is a server that shares the hardware of a physical server, but runs its own operating system and applications as if it were a physical server. System resources can be easily allocated on an as-needed basis for all the virtual machines. As can be seen in the snapshot of the laboratories' virtual center, it is possible to run 12 virtual servers on two physical servers. This has allowed the Laboratories Administration to reduce costs for servers. VMware® also allows the OIMS staff to create servers and rebuild servers that have failed, in a matter of hours rather than days or sometimes weeks, as in the past for a physical server. Because of this, server downtime is reduced and applications are kept available to customers using the system's databases.

Disaster Recovery and Continuity of Operations

The Laboratories Administration is also in the final stages of creating a disaster recovery (DR) site. The DR site is located at a remote location so that, in any event that compromises DHMH's main data center, we would be able to switch to the site with very little loss of application availability. The DR site is comprised of a SAN, an email server, a backup server with associated tape backup, and an ESX server (for VMware®). Using software, the main data center is asynchronously (once an hour) mirrored (backed up) at the DR site. Due to the large amount of data that is being transferred, the Laboratories Administration has had to establish its own connection to the remote site through NetworkMD. We hope to have the site up and running by the end of June 2009.

These projects have materialized with the effort of the Laboratories Administration's OIMS staff: Stephen Fishbien, Carlton Jennings, Mitchell Gordon, Robert Wagner and Marcus Rottman.

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New Projects Provide Cutting Edge Technology

OIMS will continue to streamline and improve its services to ensure high data availability and integrity for our customers. Any questions may be sent to laboratories_administration@dhmh.state.md.us.

This article was written by
Steve Montgomery, Chief, OIMS and
Michael Wajda, MS, JD, Deputy Director
for Administrative and Regulatory Programs

Laboratory Statistics

Reported from the Laboratories Administration during the month of

December 2008

ENTERIC BACTERIOLOGY

SEX	AGE	#	JURISDICTION
GENUS SEROVAR			
CAMPYLOBACTER JEJUNI			
M	0	1	ALLEGANY
F	52	1	ANNE ARUNDEL
U	0	1	BALTIMORE
F	0	1	BALTIMORE
M	0	1	BALTIMORE
M	63	1	BALTIMORE
M	53	1	BALTIMORE
F	60	1	CALVERT
M	46	1	OUT OF STATE
F	26	1	OUT OF STATE
U	20	1	OUT OF STATE
PARATYPHI B VAR L(+) TARTRATE +			
F	33	1	CHARLES
U	44	1	WASHINGTON
SALMONELLA			
F	55	1	BALTIMORE
M	0	1	MONTGOMERY
F	22	1	OUT OF STATE
F	2	1	OUT OF STATE
F	68	1	PRINCE GEORGE'S
M	63	1	TALBOT
SALMONELLA BERTA			
M	0	1	BALTIMORE
SALMONELLA ENTERITIDIS			
U	2	1	ANNE ARUNDEL
U	0	1	BALTIMORE
M	0	1	BALTIMORE
M	74	1	BALTIMORE
F	60	1	BALTIMORE CITY
F	25	1	BALTIMORE CITY
F	25	1	BALTIMORE CITY
M	0	1	BALTIMORE CITY
U	0	1	BALTIMORE CITY
F	41	1	MONTGOMERY
U	70	1	OUT OF STATE
U	2	1	OUT OF STATE
U	70	1	OUT OF STATE
M	21	1	OUT OF STATE
M	2	1	OUT OF STATE
M	64	1	TALBOT
M	0	1	UNKNOWN
SALMONELLA HEIDELBERG			
F	9	2	WASHINGTON
SALMONELLA JAVIANA			
F	0	1	BALTIMORE
U	1	1	OUT OF STATE
U	0	1	OUT OF STATE
SALMONELLA NEWPORT			
F	37	1	BALTIMORE
U	0	1	BALTIMORE CITY
U	46	1	OUT OF STATE
F	29	1	OUT OF STATE
M	60	1	OUT OF STATE
F	94	1	WICOMICO
SALMONELLA ORANIENBURG			
F	0	1	BALTIMORE
SALMONELLA PANAMA			
M	0	1	PRINCE GEORGE'S
SALMONELLA PARATYPHI B			
F	0	1	ALLEGANY
M	0	1	ALLEGANY
M	26	1	ALLEGANY
SALMONELLA SER TYPHI			
M	28	1	BALTIMORE
F	24	1	BALTIMORE CITY
SALMONELLA SER TYPHIMURIUM			
M	0	2	ALLEGANY
F	0	1	BALTIMORE CITY
M	16	1	CECIL
M	63	1	HARFORD
U	22	1	OUT OF STATE
U	13	1	OUT OF STATE
U	8	1	OUT OF STATE
U	6	1	OUT OF STATE
U	6	1	OUT OF STATE
M	56	1	OUT OF STATE
M	3	1	OUT OF STATE
SALMONELLA TYPHIMURIUM VAR COPENHAGEN			
M	8	1	ANNE ARUNDEL
F	0	1	BALTIMORE
U	0	1	BALTIMORE CITY
F	0	1	BALTIMORE CITY
M	79	1	BALTIMORE CITY
U	73	1	FREDERICK
U	19	1	OUT OF STATE
U	2	1	OUT OF STATE
M	38	1	OUT OF STATE
F	37	2	PRINCE GEORGE'S
M	61	2	WICOMICO
SHIGELLA SONNEI			
F	42	1	BALTIMORE
U	45	1	BALTIMORE CITY
F	21	1	BALTIMORE CITY
F	17	2	BALTIMORE CITY
F	6	1	BALTIMORE CITY
F	2	1	BALTIMORE CITY
M	3	1	BALTIMORE CITY
M	2	1	BALTIMORE CITY
F	14	1	OUT OF STATE
F	0	1	UNKNOWN
VIBRIO ALGINOLYTICUS			
F	2	1	WICOMICO
TOTAL		**92**	

ISOLATES -THROAT CULTURES

COUNTY	GROUP A[1]	NON-GROUP A
ALLEGANY	3	6
BALTIMORE CITY	2	0
FREDERICK	1	0
MONTGOMERY	1	0
SOMERSET	0	2
WICOMICO	0	6
TOTAL	**7**	**14**

[1] *Streptococcus pyogenes*

ISOLATES - REFERENCE

SOURCE	#	JURISDICTION
GENUS SPECIES		
ACINETOBACTER CALCOACETICUS		
UNKNOWN	2	WICOMICO
URINE	1	WICOMICO
AUREOBACTERIUM SPECIES		
UNKNOWN	1	BALTIMORE CITY
CORYNEBACTERIUM STRIATUM		
BRONCH	1	MONTGOMERY
ENTEROCOCCUS FAECIUM		
UNKNOWN	1	WICOMICO
URINE	4	WICOMICO
WOUND	1	WICOMICO
ESCHERICHIA COLI		
UNKNOWN	1	WICOMICO
KLEBSIELLA PNEUMONIAE		
URINE	2	CARROLL
URINE	1	CHARLES
BLOOD	1	WICOMICO
WOUND	1	WICOMICO
PSEUDOMONAS AERUGINOSA		
UNKNOWN	1	WICOMICO
STAPHYLOCOCCUS AUREUS		
BLOOD	3	WICOMICO
URINE	1	WICOMICO
TOTAL	**22**	

ISOLATES - MISCELLANEOUS

GENUS SPECIES SOURCE	#	JURISDICTION
ACINETOBACTER CALCOACETICUS		
OTHER	1	FREDERICK
ACINETOBACTER CALCOACETICUS-ACINETOBACTER BAUMANNI COMPLEX		
CSF	1	BALTIMORE CITY
CORYNEBACTERIUM SPECIES		
WOUND	1	FREDERICK
DIPHTHEROIDS		
WOUND	1	PRINCE GEORGE'S
ENTEROBACTER CLOACAE		
WOUND	1	FREDERICK
ESCHERICHIA COLI		
WOUND	2	FREDERICK
GARDNERELLA VAGINALIS		
VAGINAL	4	SOMERSET
VAGINAL	1	SOMERSET
KLEBSIELLA PNEUMONIAE		
BLOOD	1	BALTIMORE CITY
PROTEUS MIRABILIS		
WOUND	1	BALTIMORE CITY
STAPHYLOCOCCUS AUREUS		
BLOOD	2	BALTIMORE CITY
BUTTOCK	1	BALTIMORE CITY
OTHER	1	BALTIMORE CITY
SKIN	2	BALTIMORE CITY
SKIN-MRSA	1	BALTIMORE CITY
WOUND	2	BALTIMORE CITY
WOUND	1	CARROLL
WOUND	2	FREDERICK
LIP	1	MONTGOMERY
VAGINAL	1	PRINCE GEORGE'S
STAPHYLOCOCCUS, COAGULASE NEGATIVE		
BLOOD	1	BALTIMORE CITY
OTHER	1	FREDERICK
WOUND	1	PRINCE GEORGE'S
STREPTOCOCCUS BETA HEMOLYTIC GROUP B		
VAGINAL	2	ANNE ARUNDEL
CSF	1	BALTIMORE CITY
VAGINAL	1	CHARLES
VAGINAL	8	HOWARD
VAGINAL	2	PRINCE GEORGE'S
VAGINAL	13	PRINCE GEORGE'S
VAGINAL	1	SOMERSET
STREPTOCOCCUS MITIS		
BLOOD	1	BALTIMORE CITY
STREPTOCOCCUS SALIVARIUS SS SALIVARIUS		
CSF	1	BALTIMORE CITY
STREPTOCOCCUS SALIVARUS		
BLOOD	1	BALTIMORE CITY
STREPTOCOCCUS SANGUINIS		
SKIN	1	MONTGOMERY
TOTAL	**63**	

The services and facilities of the Maryland Department of Health and Mental Hygiene (DHMH) are operated on a non-discriminatory basis. This policy prohibits discrimination on the basis of age; ancestry; color; creed; marital status; mental or physical disability; national origin; race; religious affiliation, belief, or opinion; sex; or sexual orientation and plies to the provisions of employment and granting of advantages, privileges and accommodations. The Department, in compliance with the Americans with Disabilities Act, ensures that qualified individuals with disabilities are given an opportunity to participate in and benefit from DHMH services, programs, benefits, and employment opportunities.

SEXUALLY TRANSMITTED DISEASES

GENUS SPECIES SEX	#	JURISDICTION
SYPHILIS SEROLOGY		
F	4	ALLEGANY
M	3	ALLEGANY
U	1	ALLEGANY
F	2	ANNE ARUNDEL
M	2	ANNE ARUNDEL
F	3	BALTIMORE
M	6	BALTIMORE
F	17	BALTIMORE CITY
M	31	BALTIMORE CITY
U	1	BALTIMORE CITY
M	1	DORCHESTER
F	1	FREDERICK
M	1	FREDERICK
F	1	HARFORD
F	7	MONTGOMERY
M	10	MONTGOMERY
F	9	PRINCE GEORGE'S
M	36	PRINCE GEORGE'S
U	1	PRINCE GEORGE'S
M	1	QUEEN ANNE'S
M	1	TALBOT
F	5	WICOMICO
M	2	WICOMICO
TOTAL	**146**	

CHLAMYDIA TRACHOMATIS		
F	1	ALLEGANY
M	9	ALLEGANY
F	9	ANNE ARUNDEL
M	12	ANNE ARUNDEL
F	2	BALTIMORE
M	6	BALTIMORE
U	2	BALTIMORE
F	3	BALTIMORE CITY
M	34	BALTIMORE CITY
M	2	CECIL
M	9	HARFORD
F	1	HOWARD
M	1	HOWARD
M	1	KENT
F	24	MONTGOMERY
M	43	MONTGOMERY
F	21	PRINCE GEORGE'S
M	37	PRINCE GEORGE'S
U	4	PRINCE GEORGE'S
M	4	SOMERSET
M	1	WASHINGTON
F	1	WICOMICO
M	2	WICOMICO
TOTAL	**229**	

NEISSERIA GONORRHOEAE		
F	1	BALTIMORE
M	2	BALTIMORE
M	1	BALTIMORE CITY
M	2	CAROLINE
F	1	CARROLL
M	1	CARROLL
F	4	CHARLES
M	3	CHARLES
M	1	FREDERICK
M	2	HOWARD
M	1	MONTGOMERY
F	17	PRINCE GEORGE'S
M	22	PRINCE GEORGE'S
F	1	SAINT MARY'S
M	1	SAINT MARY'S
F	2	SOMERSET
F	8	WICOMICO
M	7	WICOMICO
TOTAL	**77**	

PENICILLIN RESISTANT GONORRHEA

REPORTED QUARTERLY
FOR OCT 2008 THROUGH DEC 2008

M	1	CHARLES
M	2	PRINCE GEORGE'S
TOTAL	**3**	

MYCOBACTERIOLOGY

ISOLATE SEX	AGE	#	JURISDICTION
MYCOBACTERIUM ABSCESSUS			
F	81	1	BALTIMORE CITY
F	76	1	MONTGOMERY
M	92	1	MONTGOMERY
F	58	1	PRINCE GEORGE'S

MYCOBACTERIUM AVIUM COMPLEX

F	66	1	ANNE ARUNDEL
F	41	1	BALTIMORE
F	5	1	BALTIMORE
F	68	1	BALTIMORE
F	75	1	BALTIMORE
M	44	1	BALTIMORE
M	71	1	BALTIMORE
M	72	1	BALTIMORE
M	73	1	BALTIMORE
M	80	1	BALTIMORE
F	26	1	BALTIMORE CITY
F	66	3	BALTIMORE CITY
F	81	1	BALTIMORE CITY
M	50	1	BALTIMORE CITY
M	92	1	BALTIMORE CITY
F	65	1	CALVERT
F	66	1	CARROLL
F	79	1	FREDERICK
M	89	1	FREDERICK
F	57	1	HARFORD
F	62	1	MONTGOMERY
M	26	1	MONTGOMERY
M	36	1	MONTGOMERY
M	66	1	MONTGOMERY
M	50	1	PRINCE GEORGE'S
M	55	1	TALBOT
M	80	1	WASHINGTON
M	52	1	WICOMICO
M	68	1	WICOMICO

MYCOBACTERIUM BOVIS

M	3	2	MONTGOMERY

MYCOBACTERIUM CHELONAE

F	66	1	FREDERICK
M	56	1	FREDERICK
F	73	1	PRINCE GEORGE'S

MYCOBACTERIUM FORTUITUM

M	57	1	FREDERICK
U	58	1	MONTGOMERY
F	72	1	MONTGOMERY
M	45	3	MONTGOMERY
F	41	1	PRINCE GEORGE'S
F	58	1	PRINCE GEORGE'S
F	51	1	WICOMICO

MYCOBACTERIUM GASTRI

F	76	1	ANNE ARUNDEL

MYCOBACTERIUM GORDONAE

F	44	1	BALTIMORE CITY
F	45	1	BALTIMORE CITY
M	73	1	BALTIMORE CITY
F	42	1	FREDERICK
F	64	1	FREDERICK
M	43	1	FREDERICK
M	46	2	MONTGOMERY
M	68	1	MONTGOMERY
M	57	1	OUT OF GEORGES
F	73	1	PRINCE GEORGE'S
F	64	1	WICOMICO
M	73	1	WICOMICO

MYCOBACTERIUM KANSASII

M	77	1	BALTIMORE
F	0	1	BALTIMORE CITY
M	42	3	CARROLL

MYCOBACTERIUM TUBERCULOSIS

M	51	1	BALTIMORE
M	64	1	BALTIMORE
F	21	1	BALTIMORE CITY
F	40	1	BALTIMORE CITY
F	8	1	BALTIMORE CITY
U	32	1	MONTGOMERY
F	58	1	PRINCE GEORGE'S
M	34	1	MONTGOMERY
M	81	1	MONTGOMERY
F	23	1	OUT OF STATE
M	23	1	OUT OF STATE
M	39	1	OUT OF STATE

MYCOBACTERIUM TUBERCULOSIS COMPLEX

F	26	1	BALTIMORE
M	23	1	BALTIMORE
M	51	3	BALTIMORE
M	54	8	BALTIMORE
F	21	3	BALTIMORE CITY
M	54	2	BALTIMORE CITY
M	78	2	HARFORD
F	19	6	MONTGOMERY
F	40	2	MONTGOMERY
F	45	3	MONTGOMERY
M	46	1	MONTGOMERY
M	41	1	OUT OF STATE
M	54	2	OUT OF STATE
M	34	1	PRINCE GEORGE'S
M	36	2	PRINCE GEORGE'S
M	50	1	PRINCE GEORGE'S
M	36	7	WICOMICO
M	24	1	WORCESTER

MYCOBACTERIUM XENOPI

F	40	1	FREDERICK

NON-PHOTOCHROMOGENIC MYCOBACTERIA

M	52	1	BALTIMORE CITY

RAPIDLY GROWING MYCOBACTERIA

M	28	1	OUT OF STATE
F	20	1	PRINCE GEORGE'S
F	58	1	PRINCE GEORGE'S

SCOTOCHROMOGENIC MYCOBACTERIA

M	57	1	WICOMICO

TOTAL 133

MYCOBACTERIUM SUSCEPTIBILITY RESULTS

19 ISOLATES IDENTIFIED

6 DRUG RESISTANT STRAINS FOUND

#	JURISDICTION	DRUG(S)
1	BALTIMORE	ISONIAZID, STREPTOMYCIN
1	PRINCE GEORGE'S	STREPTOMYCIN
2[A,C]	PRINCE GEORGE'S	ISONIAZID, RIFAMPIN, RIFABUTIN
1	WASHINGTON DC	RIFAMPIN
1	WORCESTER	ISONIAZID

[A] TWO ISOLATES FROM THE SAME PATIENT
[B] PROBABLE FOR M. BOVIS
[C] MEETS CASE DEFINITION OF MULTI-DRUG TUBERCULOSIS (MDRTB)

Mycobacterium tuberculosis complex consists of:
M. tuberculosis
M. bovis
M. bovis, BCG
M. africanum
M. microti
M. canettii

MYCOLOGY

ISOLATE

SEX	AGE	#	JURISDICTION
ACID FAST BACILLI			
F	41	1	ANNE ARUNDEL
ASPERGILLUS FLAVUS			
F	56	2	TALBOT
ASPERGILLUS FUMIGATUS			
F	55	1	ALLEGANY
F	64	1	ALLEGANY
	0	2	ANNE ARUNDEL
F	86	1	ANNE ARUNDEL
M	0	1	ANNE ARUNDEL
F	81	1	BALTIMORE CITY
F	57	1	MONTGOMERY
M	66	1	MONTGOMERY
M	0	1	PRINCE GEORGE'S
F	70	1	TALBOT
M	80	1	TALBOT
ASPERGILLUS NIGER			
F	59	1	ANNE ARUNDEL
F	71	1	ANNE ARUNDEL
M	49	1	ANNE ARUNDEL
F	81	1	CHARLES
ASPERGILLUS VERSICOLOR			
M	84	1	BALTIMORE
BIPOLARIS SPECIES			
M	70	1	PRINCE GEORGE'S
F	84	1	TALBOT
CANDIDA ALBICANS			
F	26	1	BALTIMORE
F	74	1	BALTIMORE
F	30	1	BALTIMORE CITY
F	42	2	BALTIMORE CITY
F	51	1	BALTIMORE CITY
F	81	1	BALTIMORE CITY
M	60	1	BALTIMORE CITY
M	64	1	BALTIMORE CITY
M	66	1	BALTIMORE CITY
M	67	1	BALTIMORE CITY
M	76	2	BALTIMORE CITY
F	47	1	CALVERT
F	80	1	CALVERT
M	44	1	CALVERT
M	82	1	CALVERT
M	84	1	CALVERT
F	25	1	FREDERICK
	55	1	MONTGOMERY
F	27	1	MONTGOMERY
F	76	1	MONTGOMERY
M	66	1	MONTGOMERY
M	73	1	MONTGOMERY
	44	1	PRINCE GEORGE'S
F	16	1	PRINCE GEORGE'S
F	18	1	PRINCE GEORGE'S
F	19	2	PRINCE GEORGE'S
F	21	1	PRINCE GEORGE'S
F	22	1	PRINCE GEORGE'S
F	23	1	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
F	29	1	PRINCE GEORGE'S
F	40	1	PRINCE GEORGE'S
F	47	1	PRINCE GEORGE'S
F	54	1	PRINCE GEORGE'S

F	60	1	PRINCE GEORGE'S
F	70	1	PRINCE GEORGE'S
F	72	1	PRINCE GEORGE'S
F	79	3	PRINCE GEORGE'S
M	49	1	PRINCE GEORGE'S
M	63	1	PRINCE GEORGE'S
M	67	1	PRINCE GEORGE'S
M	70	1	PRINCE GEORGE'S
M	88	1	PRINCE GEORGE'S
F	0	1	SOMERSET
F	18	2	SOMERSET
F	19	5	SOMERSET
F	20	1	SOMERSET
F	21	2	SOMERSET
F	22	1	SOMERSET
F	24	1	SOMERSET
CANDIDA GLABRATA			
F	82	1	ANNE ARUNDEL
F	42	2	BALTIMORE CITY
F	85	2	BALTIMORE CITY
M	66	1	BALTIMORE CITY
M	67	1	BALTIMORE CITY
	56	1	PRINCE GEORGE'S
F	43	1	PRINCE GEORGE'S
F	69	1	PRINCE GEORGE'S
F	72	1	PRINCE GEORGE'S
F	79	1	PRINCE GEORGE'S
M	24	1	PRINCE GEORGE'S
CANDIDA PARAPSILOSIS			
M	68	1	BALTIMORE CITY
U	59	1	PRINCE GEORGE'S
U	70	1	PRINCE GEORGE'S
F	0	1	PRINCE GEORGE'S
F	30	1	PRINCE GEORGE'S
F	58	1	PRINCE GEORGE'S
F	59	1	PRINCE GEORGE'S
M	38	1	PRINCE GEORGE'S
M	78	1	WICOMICO
CANDIDA TROPICALIS			
M	82	1	CALVERT
CHRYSOSPORIUM SPECIES			
F	51	1	BALTIMORE CITY
CLADOSPORIUM SPECIES			
M	62	1	ALLEGANY
EPICOCCUM SPECIES			
M	3	1	ALLEGANY
F	3	1	TALBOT
EPIDERMOPHYTON FLOCCOSUM			
M	69	1	ALLEGANY
FUSARIUM SPECIES			
F	71	1	CECIL
M	58	1	WICOMICO
MICROSPORUM CANIS			
F	9	1	ALLEGANY
MUCOR SPECIES			
M	65	2	ALLEGANY
MYCELIA STERILIA			
	0	1	ANNE ARUNDEL
F	82	1	ANNE ARUNDEL
F	45	1	BALTIMORE CITY
F	87	1	BALTIMORE CITY
M	41	1	TALBOT
NOCARDIA BRASILIENSIS			
F	63	1	ANNE ARUNDEL
NOCARDIA NOVA			
M	71	1	BALTIMORE CITY
M	65	1	FREDERICK
PAECILOMYCES SPECIES			
F	60	1	MONTGOMERY
PENICILLIUM SPECIES			
F	64	1	ALLEGANY
F	79	1	ANNE ARUNDEL
M	60	1	BALTIMORE CITY
F	51	1	CALVERT
F	61	1	MONTGOMERY
M	29	1	MONTGOMERY
M	45	1	MONTGOMERY
M	63	1	TALBOT
PHOMA SPECIES			
M	84	1	CECIL
PITHOMYCES SPECIES			
F	49	1	ALLEGANY
RHIZOPUS ORYZAE			
M	1	2	BALTIMORE CITY
SYNCEPHALASTRUM RACEMOSUM			
M	77	1	TALBOT
TRICHOPHYTON MENTAGROPHYTES			
M	63	1	TALBOT
TRICHOPHYTON RUBRUM			
M	69	1	ALLEGANY
F	47	1	CARROLL
M	24	1	TALBOT
TRICHOPHYTON TONSURANS			
M	6	1	BALTIMORE CITY
U	2	1	CALVERT
F	2	1	TALBOT
M	7	1	TALBOT
TOTAL	**146**		

PARASITOLOGY

GENUS/SPECIES	#	JURISDICTION
BLASTOCYSTIS HOMINIS		
	5	MONTGOMERY
	7	HOWARD
	5	MONTGOMERY
	2	PRINCE GEORGE'S
	1	MONTGOMERY
	5	FREDERICK
DIENTAMOEBA FRAGILIS		
	2	MONTGOMERY
	1	FREDERICK
ENDOLIMAX NANA		
	2	MONTGOMERY
	2	HOWARD
	2	MONTGOMERY
	2	PRINCE GEORGE'S
	1	MONTGOMERY
	1	PRINCE GEORGE'S
	1	MONTGOMERY
	2	PRINCE GEORGE'S
	1	MONTGOMERY
	1	BALTIMORE CITY
ENTAMOEBA COLI		
	1	MONTGOMERY
	8	PRINCE GEORGE'S
	1	MONTGOMERY
ENTAMOEBA HARTMANNI		
	1	BALTIMORE CITY
ENTEROBIUS VERMICULARIS		
	1	BALTIMORE
	1	WASHINGTON
	3	CARROLL
	1	BALTIMORE
	1	CARROLL
	1	PRINCE GEORGE'S
GIARDIA LAMBLIA		
	2	BALTIMORE CITY
HOOKWORM		
	1	HOWARD
IODAMOEBA BÜTSCHLII		
	1	HOWARD
TOTAL	**66**	

WATER MICROBIOLOGY

	# TESTED	# NON-COMPLIANT
COMMUNITY	5	0
NON-COMMUNITY	240	43
TOTAL	**245**	**43**

FOOD SAFETY & SECURITY

FOOD
45 SAMPLES
9 NOTABLE PATHOGENS:
8 SALMONELLA SP.
1 CAMPYLOBACTER SP.

CRABMEAT
0 SAMPLES
0 EXCEEDING STANDARDS[1]
NOTABLE PATHOGENS:
NONE

SHELLFISH
0 SAMPLES
0 EXCEEDING STANDARDS[2]
NOTABLE PATHOGENS:
NONE

SHELLFISH GROWING WATERS
123 SAMPLES

168 TOTAL SAMPLES
9 TOTAL STANDARDS EXCEEDED

STANDARDS

[1]CRABMEAT FRESH
ESCHERICHIA COLI AT < 36 MPN/100 GRAMS
STANDARD PLATE COUNT AT < 100,000 PER GRAM

[2]SHELLFISH
FECAL COLIFORMS AT < 230 MPN/100 GRAMS
STANDARD PLATE COUNT AT < 500,000 PER GRAM

VIRUS ISOLATION

ISOLATE	SEX	AGE	#	JURISDICTION
ADENOVIRUS				
	F	21	1	PRINCE GEORGE'S
	M	18	1	PRINCE GEORGE'S
SUBTOTAL			**2**	
HERPES SIMPLEX VIRUS TYPE 1				
	M	19	1	PRINCE GEORGE'S
	F	18	1	WICOMICO
	M	34	1	BALTIMORE CITY
	M	25	1	BALTIMORE CITY
	M	18	1	BALTIMORE CITY
	M	19	1	BALTIMORE CITY
SUBTOTAL			**6**	
HERPES SIMPLEX VIRUS TYPE 2				
	M	25	1	BALTIMORE CITY
SUBTOTAL			**1**	
INFLUENZA A VIRUS				
	F	1	1	BALTIMORE CITY
SUBTOTAL			**1**	
INFLUENZA B VIRUS				
	F	3	1	BALTIMORE CITY
	M	4	1	BALTIMORE CITY
SUBTOTAL			**2**	
TOTAL			**12**	

VIRAL POLYMERASE CHAIN REACTION (PCR)

ISOLATE	SEX	AGE	#	JURISDICTION
HERPES SIMPLEX VIRUS TYPE 1				
	F	16	1	ANNE ARUNDEL
	F	19	1	BALTIMORE
	F	21	1	BALTIMORE
	M	22	1	BALTIMORE
	F	19	3	BALTIMORE CITY
	F	22	1	BALTIMORE CITY
	F	26	1	BALTIMORE CITY
	M	0	1	BALTIMORE CITY
	M	23	1	CALVERT
	F	17	1	CHARLES
	F	18	1	CHARLES
	F	17	1	FREDERICK
	F	19	1	PRINCE GEORGE'S
	F	20	1	PRINCE GEORGE'S
	M	28	1	PRINCE GEORGE'S
	F	23	1	TALBOT
	F	18	1	WICOMICO
HERPES SIMPLEX VIRUS TYPE 2				
	M	21	1	ALLEGANY
	F	33	1	ANNE ARUNDEL
	M	29	1	ANNE ARUNDEL
	F	22	2	BALTIMORE
	F	25	1	BALTIMORE
	U	20	1	BALTIMORE CITY
	U	31	1	BALTIMORE CITY
	U	35	1	BALTIMORE CITY
	U	40	1	BALTIMORE CITY
	U	49	2	BALTIMORE CITY
	U	52	1	BALTIMORE CITY
	U	57	1	BALTIMORE CITY
	F	16	1	BALTIMORE CITY
	F	17	1	BALTIMORE CITY
	F	18	1	BALTIMORE CITY
	F	20	1	BALTIMORE CITY
	F	21	2	BALTIMORE CITY
	F	22	1	BALTIMORE CITY
	F	23	2	BALTIMORE CITY
	F	25	1	BALTIMORE CITY
	F	27	2	BALTIMORE CITY
	F	30	1	BALTIMORE CITY
	F	31	1	BALTIMORE CITY
	F	33	1	BALTIMORE CITY
	F	45	1	BALTIMORE CITY
	F	50	1	BALTIMORE CITY
	F	54	1	BALTIMORE CITY
	M	0	2	BALTIMORE CITY
	M	19	2	BALTIMORE CITY
	M	21	1	BALTIMORE CITY
	M	22	2	BALTIMORE CITY
	M	23	1	BALTIMORE CITY
	M	25	2	BALTIMORE CITY
	M	28	2	BALTIMORE CITY
	M	31	3	BALTIMORE CITY
	M	35	1	BALTIMORE CITY
	M	42	1	BALTIMORE CITY
	M	44	1	BALTIMORE CITY
	M	45	1	BALTIMORE CITY
	M	65	1	BALTIMORE CITY
	U	19	1	BALTIMORE CITY
	F	21	1	CHARLES
	F	23	1	CHARLES
	F	24	1	CHARLES
	F	29	1	CHARLES
	F	34	1	CHARLES
	M	23	1	CHARLES
	F	22	1	HARFORD
	F	24	1	HARFORD
	F	31	1	HARFORD
	M	43	1	HOWARD
	M	39	1	MONTGOMERY
	F	0	1	PRINCE GEORGE'S
	F	21	1	PRINCE GEORGE'S
	F	22	2	PRINCE GEORGE'S
	F	27	1	PRINCE GEORGE'S
	F	44	1	PRINCE GEORGE'S
	F	19	1	SAINT MARY'S
	F	32	1	SAINT MARY'S
	F	33	1	WASHINGTON
	M	27	1	WICOMICO
INFLUENZA A VIRUS				
	F	0	1	BALTIMORE CITY
	F	1	1	BALTIMORE CITY
	M	5	1	BALTIMORE CITY
	F	5	1	BALTIMORE CITY
	M	4	1	BALTIMORE CITY
TOTAL			**98**	

VIRAL HEPATITIS

ORGANISM	# SPECIMENS	# POSITIVES	JURISDICTION
HEPATITIS A			
	1	0	BALTIMORE
	2	0	PRINCE GEORGE'S
SUBTOTAL	**3**	**0**	
HEPATITIS B			
	55	0	ALLEGANY
	155	2	ANNE ARUNDEL
	84	1	BALTIMORE
	639	4	BALTIMORE CITY
	6	0	CALVERT
	18	1	CARROLL
	160	1	CECIL
	5	0	CHARLES
	77	1	FREDERICK
	9	0	GARRETT
	66	0	HARFORD
	35	0	HOWARD
	369	5	MONTGOMERY
	8	0	PRINCE GEORGE'S
	326	3	PRINCE GEORGE'S
	1	0	QUEEN ANNE'S
	1	0	SAINT MARY'S
	9	0	TALBOT
	1	0	UNKNOWN
	31	0	WASHINGTON
	114	2	WICOMICO
SUBTOTAL	**2,169**	**20**	
HEPATITIS C			
	47	10	ALLEGANY
	184	61	ANNE ARUNDEL
	84	2	BALTIMORE
	349	65	BALTIMORE CITY
	7	0	CALVERT
	18	3	CARROLL
	70	7	CECIL
	11	0	CHARLES
	87	3	FREDERICK
	9	0	GARRETT
	91	2	HARFORD
	6	0	HOWARD
	1	0	KENT
	36	2	MONTGOMERY
	8	4	PRINCE GEORGE'S
	184	0	PRINCE GEORGE'S
	2	1	SAINT MARY'S
	8	1	TALBOT
	1	0	UNKNOWN
	9	3	WASHINGTON
	23	2	WICOMICO
SUBTOTAL	**1,235**	**166**	
TOTALS	**3,407**	**186**	

RABIES

SOURCE	#	JURISDICTION
BAT	2	PRINCE GEORGE'S
FOX	1	CARROLL
RACCOON	1	CECIL
	1	CHARLES
	2	FREDERICK
	1	HOWARD
	1	MONTGOMERY
	2	TALBOT
	1	WORCESTER
	1	BALTIMORE CITY
SKUNK	1	WASHINGTON
TOTAL POSITIVES	**14**	
TOTAL SPECIMENS	**285**	

CHLAMYDIOPHILIA PSITTACI
(CHLAMYDIA)

REPORTED QUARTERLY
NONE REPORTED THIS QUARTER

CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY

COMPARING CURRENT QUARTER TO SAME QUARTER LAST YEAR

DATES	Level 1 <14%	Level 2 14%-28%	Level 3 ≥29%	TOTAL
10/01/08 THROUGH 12/31/08	174	414	301	**889**
10/01/07 THROUGH 12/31/07	267	535	308	**1,110**

BLOOD LEAD

MARYLAND			
	I	<10	95
	IIA	10-14	3
	IIB	15-19	6
	III	20-44	9
	IV	45-69	0
	V	>69	0
TOTAL			**113**

WASHINGTON DC			
	I	<10	0
	IIA	10-14	0
	IIB	15-19	0
	III	20-44	0
	IV	45-69	0
	V	>69	0
TOTAL			**0**

NEWBORN & CHILDHOOD SCREENING

STATISTICS FOR DECEMBER 2008

PRESUMPTIVE POSITIVES	
DISORDERS	**#**
PHENYLKETONURIA	5
MAPLE SYRUP URINE DISEASE	0
HOMOCYSTINURIA	11
TYROSINEMIA	5
ARGININEMIA	0
CITRULLINEMIA	0
GALACTOSEMIA	2
BIOTINIDASE DEFICIENCY	0
HYPOTHYROIDISM	46
HEMOGLOBIN -DISEASE	8
HEMOGLOBIN -BENIGN	395
CONGENITAL ADRENAL HYPERPLASIA (CAH)	45
CYSTIC FIBROSIS	3
FATTY ACID OXIDATIONS	0
ORGANIC ACIDEMIAS	16
ACYLCARNITINE - BORDERLINE	5
ACYLCARNITINE - OTHERS	0

MONTHLY TOTALS	
# OF SPECIMENS SCREENED	9,898
NUMBER OF TESTS	700,920
% UNSATISFACTORY SPECIMENS	3.7

YEAR-TO-DATE CONFIRMED CASES	
CONDITIONS	**# CONFIRMED**
MCAD	3
3MCC	2
SCAD	3
VLCAD	1
GA-I	1
IVA	1
PA	1
MAPLE SYRUP URINE DISEASE	1
PKU- CLINICALLY SIGNIFICANT VARIANT	1
CLINICALLY SIGNIFICANT VARIANT HYPERPHENYLALANINEMIA (NOT CLASSICAL PKU)	3
VARIANT HYPERPHENYLALANINEMIA (NOT CLINICALLY SIGNIFICANT)	1
CITRULINEMIA I (CIT-I)	1
GALACTOSEMIA- CLASSICAL GALT DEFICIENCY	4
GALACTOSEMIA - VARIANT	1
BIOTINIDASE DEFICIENCY	0
GALACTOSE EPIMERASE DEFICIENCY	0
PARTIAL BIOTINIDASE DEFICIENCY	0
CAH- CLASSICAL SALT WASTING	2
CAH-NON-CLASSICAL	0
HYPOTHYROIDISM - PRIMARY	25
OTHER HYPOTHYROIDISM	16
SECONFARY HYPOTHYROIDISM	3
SICKLE CELL DISEASE -SS	15
SICKLE CELL DISEASE -SC	9
SICKLE CELL DISEASE -SE	1
SICKLE CELL DISEASE -S BETA THALASSEMIA	9
CYSTIC FIBROSIS	8

ENVIRONMENTAL CHEMISTRY

SAMPLES	# NON-COMPLIANT	# TESTED
ASBESTOS		
AIR	0	0
BULK	14	15
AIR QUALITY		
$PM_{2.5}$	0	580
PM_{10}	0	0
RADIATION		
AIR/CHARCOAL FILTERS	0	74
MILK	0	4
WIPES	0	48
RAW WATER	0	7
VEGETATION	0	0
OTHER	0	0
DRINKING WATER		
METALS		
COMMUNITY	15	21
NON-COMMUNITY	8	14
PRIVATE WELLS	48	174
PESTICIDES & PCBs		
COMMUNITY	0	106
NON-COMMUNITY	0	45
PRIVATE WELLS	0	1
VOLATILE ORGANIC COMPOUNDS		
COMMUNITY	0	111
NON-COMMUNITY	0	125
PRIVATE WELLS	0	91
RADIATION		
COMMUNITY	13	64
NON-COMMUNITY	0	0
PRIVATE WELLS	1	11
INORGANICS		
COMMUNITY	0	31
NON-COMMUNITY	1	20
PRIVATE WELLS	4	219
FOOD CHEMISTRY		
SUSPECTED TAMPERING	0	0
MICROSCOPIC FILTH	0	0
LABELING	0	0
SURVEILLANCE	0	0
CHEMICAL CONTAMINATION	0	2
TOTAL	**104**	**1,763**

VIRAL LOAD SPECIMENS

HIV-1 RNA COPIES/ML	$<10^3$	10^3—10^4	10^4—10^5	$>10^5$	TOTALS
ALLEGANY	12	0	0	0	12
MONTGOMERY	68	13	12	6	99
PRINCE GEORGE'S	76	15	13	4	108
SOMERSET	1	0	1	0	2
WASHINGTON	4	4	0	1	9
WICOMICO	2	0	2	0	4
SUBTOTALS	163	32	28	11	234
DEPT. OF CORRECTIONS	20	3	4	1	28
TOTALS	**183**	**35**	**32**	**12**	**262**

HIV ANTIBODY SCREENING

	TOTAL SPECIMENS	# EIA POSITIVE	% EIA POSITIVE	# WB POSITIVE	% WB POSITIVE
HEALTH DEPARTMENTS AND CLINICS	2,817	146	5.18%	143	97.95%
HOSPITALS	133	17	12.78%	16	94.12%
DETENTION CENTERS	259	2	0.77%	2	100.00%
PRIVATE PHYSICIANS	13	0	0.00%	0	0.00%
STUDENT HEALTH CLINICS	228	0	0.00%	0	0.00%
EMPLOYEE HEALTH CLINICS	9	0	0.00%	0	0.00%
AUTOPSY (MEDICAL EXAMINER/ HOSPITAL CASES)	345	8	2.32%	5	62.50%
ORGAN/TISSUE DONORS (ANATOMY BOARD/EYE BANK)	107	0	0.00%	0	0.00%
TOTALS	**3,911**	**173**	**4.42%**	**166**	**95.95%**

MAILING LABEL

Critical Link
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