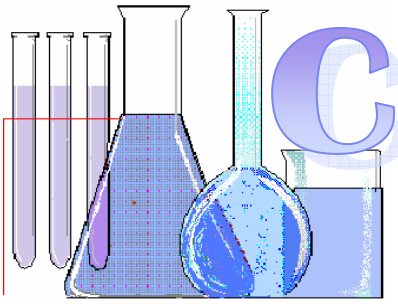

Maryland Department of
Health & Mental Hygiene
John M. Colmers, Secretary


A Publication of Maryland's State Public Health Laboratory



# CRITICAL LINK

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Maryland Department of Health & Mental Hygiene

January 2008 Volume 12, Number 1


# Narrowing the Diagnostic Window: Identifying Acute HIV Infections

## Acute Infections and HIV transmission

The initial phase of HIV disease is referred to as the acute phase. After HIV enters the body it replicates to high levels until host immune defenses are activated and reduce the initially high viral burdens (viral loads) to lower chronic baseline levels that persist for years. The duration of the acute phase is estimated to range from 54 to 62 days [1,2] with viral loads spiking during the first two to five weeks after acquisition of the infection.[1,3,4,5] The acute phase is not only characterized by high HIV viral loads in the plasma (blood) but also by viral shedding from the genital tract. Viral shedding in the genital tract has been associated with higher rates of transmission per exposure than later phases of infection.[1,3] It has been estimated that nearly half of all HIV transmissions can be attributed to acutely infected individuals who are highly infectious and unaware of their disease status.[3,6,7]

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***Inside this issue:***



# Gonococcus (GC) Media Report

Over the past 20 months, the Laboratories Administration's Public Health Microbiology Division conducted investigations to determine why there has been a significant increase in the number of *Neisseria gonorrhoeae* cultures that are being reported out as "unsatisfactory" (unsat) due to overgrowth by normal flora. During this period, the local health departments (LHDs) have been involved and worked with the State Laboratory in studying this problem.

Beginning in April 2005, the Public Health Microbiology Division reviewed and studied a number of possible causes and solutions. These include comparing media from different manufacturers, requesting and comparing reformulated media, and looking into such variables as specimen collection errors, transport temperature, delivery times, individual plating and incubating procedures, and incubation times. While these variables accounted for specific problems at certain times in particular clinics, all were ruled out as the cause of the overgrowth problem that was occurring across the State.

Various LHD clinics were asked in the past year to use a particular type of culture system (i.e., Transgrow™ bottles, Jembec™ plates, and modified Thayer-Martin agar [MTM II] plates). Between January 2005 and July 2007 Transgrow™ and Jembec™ plates were found in any given month to have overgrowth rates as high as 18% and 7%, respectively. However, using these media did not resolve the overgrowth problem. After 20 months of investigating this problem, and finding no smoking gun, it appears that the normal flora from the throat, vagina, rectum, and urethra of many clinic patients may simply be expressing a naturally increased resistance to the antibiotics in GC culture media.

Nevertheless, the studies have proved useful. They have allowed the Public Health Microbiology Division to compile a list of important tips for LHD clinics collecting and plating GC speci-

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## Identifying Acute HIV Infections

For more than two decades HIV diagnostic testing primarily has relied on the detection of HIV specific antibodies that are produced as part of the host immune response to the infection. However, using existing HIV screening tests, detectable levels of HIV specific antibodies cannot be demonstrated in blood for at least one to two weeks after HIV genetic material (RNA) can be detected in the blood by nucleic acid amplification testing (NAAT).[2,10] Therefore HIV-1 NAAT has become the method of choice to identify acute HIV-1 infections. The early stage of an acute HIV infection is known as the "window phase." The window phase is characterized by high levels of HIV in the blood (viremia) that can be detected by HIV-1 NAAT prior to the production of HIV specific antibodies (seroconversion) by the acutely infected individual. The duration of the window phase is determined by the relative sensitivity of HIV antibody screening (Enzyme Immuno-Assay: EIA or rapid point-of-care tests). Newer, third-generation EIA's based on recombinant or synthetic peptide antigens generally can detect HIV specific antibodies days or weeks earlier than EIA's based on whole viral lysate antigens that were originally developed in the 1980's or early 1990's.[9] Additionally, newer, third-generation EIA's are more sensitive than the traditional HIV-1 western blot confirmatory assay and most of the rapid point-of-care screening tests. Many third-generation EIA reactive specimens from acutely HIV-1 infected individuals can be initially non-reactive in rapid screening tests or, if reactive in newer generation screening immunoassays, cannot be confirmed as HIV-1 antibody-positive by less sensitive traditional western blot (WB) testing. This effectively prolongs the time of the window phase until HIV-1 seroconversion can be confirmed.

## HIV-1 NAAT of Blood Donors

Recognizing the importance of identifying acute HIV infections to prevent transmission via HIV infected blood products, the blood banking centers in the United States began using HIV-1 NAAT to screen pools of 16-24 HIV antibody negative specimens in March 1999.[11] If a pool is found to contain HIV RNA, it is deconstructed and each specimen making up the pool is tested individually to identify the specimen(s) from the acutely infected donor(s). Pooling protocols allow fewer tests to be performed per specimen and thus reduce the high cost of performing HIV-1 NAAT when screening large numbers of specimens. Due to the low prevalence of HIV infections in blood donors, the identification of acute HIV infections by HIV-1 NAAT rarely occurs in this population. On average, one acutely HIV-1 infected donor is identified by HIV-1 NAAT for every 3.1 million donated units tested.[11]

## HIV-1 NAAT in Public Health Settings

Starting in North Carolina in 2002, state and local public health laboratories began to utilize NAAT to identify acute HIV-1 infections within their testing populations. Testing programs in public health settings designed to detect acute infections by HIV-1 NAAT currently exist in San Francisco, King County in Washington State, Los Angeles, Maryland, and other sites.[8] During the first year of HIV-1 NAAT in North Carolina, 23 acute HIV-1 infections were identified by testing 109,250 persons.[12] The increased rate of detecting acute HIV-1 infections in public health testing populations compared to blood donors, reflects larger numbers of individuals within public health testing populations engaging in high risk behaviors (i.e., unprotected sex with multiple partners, and IV drug abuse) and the use of less sensitive, first generation viral lysate-based screening EIA's. HIV-1 NAAT screening in support of public health HIV prevention programs has demonstrated potential utility in several ways by: 1) Increasing the diagnostic yield of testing programs above traditional HIV antibody testing; 2) Identifying and describing nascent outbreaks of HIV transmission; and 3) Providing opportunities to rapidly intervene to reduce potential HIV transmissions from acutely infected individuals. The initial study in North Carolina projected that HIV-1 NAAT protected 48 sexual partners from high-risk exposures to individuals who were identified as acutely HIV-1 infected.[12]

## HIV-1 NAAT at the MD DHMH Laboratory

Since October 2004, the DHMH Retrovirology Laboratory has utilized HIV-1 NAAT to identify individuals who are acutely infected with HIV-1 as part of a comprehensive HIV testing algorithm. The Retrovirology Laboratory validated cost-effective, real-time HIV-1 PCR assays that target the LTR and gag genes of HIV-1. These assays demonstrated a reproducible lower limit of detection at approximately 2,000 HIV-1 RNA copies/ml per single member of a 20-specimen, serum/plasma pool. The DHMH Retrovirology Laboratory uses HIV-1 NAAT in two different testing strategies to quickly identify potentially acute HIV-1 infections in our testing populations. One testing strategy involves testing pools of 20 serum/plasma specimens that have been screened negative for HIV antibodies by two screening EIA's. The other strategy is to test individual diagnostic specimens that were reactive in screening HIV EIA's but cannot be confirmed as HIV-1 antibody-positive by HIV-1 WB testing. When potential acute HIV-1 infections are detected by NAAT, the health care provider is immediately contacted by the laboratory and urged to quickly obtain follow-up specimens for additional testing to resolve the patient's HIV infection status.

## Results of Testing HIV Serology Specimens with Inconclusive Results

From October 2004 through August 2007, 133,601 serum/plasma specimens (excluding cadaveric specimens) were submitted to the DHMH Retrovirology Laboratory for routine HIV antibody testing**.** A total of 398 HIV EIA reactive specimens that could not be confirmed as HIV-1 antibody positive by WB testing were individually tested by real-time PCR (NAAT). Thirty-four (34) specimens (8.54% of total tested) were found to contain HIV-1 RNA by HIV-1 NAAT. The 34 RNA positive specimens were identified from 29 individuals (27 suspected HIV-1 seroconversion and two end-stage AIDS patients). HIV-1 viral loads were determined by branched DNA (bDNA) from 12 of 27 suspected HIV-1 seroconversion patients that had specimens with sufficient volumes to permit testing. The HIV-1 viral loads in these specimens ranged from 287 to >500,000 copies/ml (mean: 197,658 copies/ml). Nineteen of the 27 suspected seroconversion cases were subsequently confirmed as HIV-1 antibody positive by serological testing of follow-up specimens. The remaining eight individuals remain lost to follow-up. Five of 19 confirmed HIV-1 seroconversion cases initially were HIV-1/HIV-2

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EIA reactive and HIV-1WB negative. In recognition of the increased sensitivity of newer generations of HIV screening EIA's relative to conventional HIV-1 WB confirmatory testing, our data demonstrated the utility of individual HIV-1 NAAT to identify acute HIV-1 infections in patients with inconclusive serology results. The high HIV-1 viral loads present during most of the acute phase of HIV infections allow available diagnostic sera to be quickly used for HIV-1 NAAT in lieu of ideal plasma specimens that would have to be collected later. The logistical difficulties that can be encountered when collecting and testing a follow-up plasma specimen could delay by days or weeks the recognition of acute HIV infections.

## Results of Testing HIV EIA Negative Specimens

Since October 2004 over 125,000 HIV EIA antibody-negative specimens have been tested by HIV-1 NAAT in pools of 20 specimens by the DHMH Retrovirology Laboratory. To date only two EIA HIV-1 NAAT positive specimens have been identified. One of these patients was later confirmed as HIV-1 infected by follow-up serological testing, and the other remains lost to follow-up. The lower yield of acute HIV-1 infections using this testing strategy can be attributed to several factors. The DHMH laboratory uses a newer third generation HIV-1/HIV-2 screening EIA that is more sensitive in detecting early antibody responses that are mounted during early stages of acute HIV infections in comparison to older viral-lysate-based screening EIAs that have been used by other public health laboratories when performing HIV-1 NAAT testing. Five additional HIV-1 NAAT positive confirmed cases and two HIV-1 NAAT positive suspected cases of HIV-1 seroconversion were identified by the DHMH during this time period. They were exclusively reactive in the third generation (synthetic peptide based) EIA but were antibody negative when tested in parallel in the less sensitive viral lysate EIA. Secondly, the DHMH Laboratory tests all specimens submitted for HIV antibody testing and does not selectively target clinics with more at-risk clients where the yield of acutely infected individuals is higher. Finally, many high-risk populations are now tested for HIV antibodies using point-of-care rapid tests, and blood specimens from these individuals that could be used to perform HIV-1 NAAT are not routinely submitted to the DHMH Laboratory to identify possible HIV antibody-negative acute infections.

## Concluding Remarks

In conclusion, HIV-1 NAAT has improved the ability of laboratories to quickly identify potentially acute HIV infections effectively narrowing the diagnostic "window phase" before HIV-1 antibodies can be conclusively identified by conventional serological testing. HIV-1 NAAT is strongly recommended when testing at-risk individuals in testing populations with high HIV prevalence where the incidences of acute HIV infections are projected to occur more frequently. The early identification of acute HIV-1 infections not only benefits the individual patient by quickly implementing anti-viral therapies but also can target HIV prevention strategies through behavior modification programs and immediate partner identification and notification.

This article written by Dr. Robert A. Myers

MARYLAND

# CRITICAL LINK

is published monthly by the staff of the

**Laboratories Administration**

Department of Health & Mental Hygiene

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***Critical Link***: Production Manager
Georgia Corso



Questions concerning technical content of this newsletter may be referred to
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## References:

[1] *J. Infect. Dis.* 2004;189(10):1785-1792.
[2] *AIDS*. 2003;17: 1871-1879.
[3] *J. Infect. Dis.* 2005; 191:1403-1409.
[4] *J. Acquir. Immune Defic. Syndr. Hum. Retrovirol* . 14:249-258. 1997
[5] *AIDS.* 2005;19:1372-1319.
[6] *Am. J. Public Health.* 1997;87:1928-1930.
[7] *JAIDS.* 2005:38(5):531-537.
[8] ASTHO Issue Brief: Acute HIV Infections An Opportunity to Enhance Primary Prevention 2006:1-18 available at www.astho.org/pubs/AcuteHIVInf.pdf.
[9] *J. Clin. Micro.* 2006:44(5):1856-1858.
[10] *JAMA* 2003;289:959-962.
[11] *N. Engl. J. Med.* 2004;351(8):760-768.
[12] *N. Engl. J. Med.* 2005;352(18):1873-1883.

*(Continued from page 1)*

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mens (see Table 1). Also, based on input from the LHDs (e.g., preference and ease of use), several technical considerations (e.g., area of plate), and use by public health laboratories in other states, the Laboratories Administration has decided to provide all LHDs with the MTM II culture system (media plate, Dacron™ swab, $CO_2$-generating tablet, and resealable polyethylene bag) as soon as procurement and delivery arrangements can be worked out with the manufacturer.

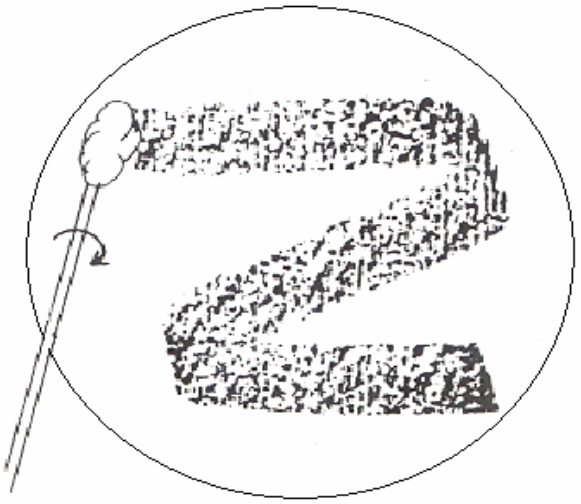
The scientists in the Public Health Microbiology Division will provide instructions (see Tables 1, 2, and 3) with initial shipments of MTM II media to all clinic sites. Laboratory staff will also be available to answer any questions from LHD staff by phone (410-767-6132). We will also continue a monthly review of the numbers of specimens that are reported unsatisfactory due to overgrowth.

This article written by Dr. Jack DeBoy and Shenia Young.

# Processing Specimens to Culture for *Neisseria gonorrhoeae* Using MTM II Agar

| **Table 1. Procedure for using the Modified Thayer-Martin (MTM II) agar plate system when culturing specimens from the throat, vagina, rectum or urethra for *Neisseria gonorrhoeae*.[a]** |
|---|
| 1. Process the specimen as soon as it is collected. |
| 2. Roll swab directly on the medium in a large "Z" (to provide adequate exposure of the swab to the medium for transfer of organisms.) |
| 3. Label plates legibly with patient's name (don't use China markers—their marking smudges and rubs off when wet.) |
| 4. Place inoculated plates in the resealable polyethylene bag (one specimen per patient with accompanying lab slip.) |
| 5. Cut off the corner of one foil-wrapped $CO_2$ tablet to expose the tablet and place it in the bag. DO NOT REMOVE THE TABLET FROM THE FOIL POUCH. |
| 6. Expel excess air from the bag and completely seal the bag. |
| 7a. If an incubator is available, incubate the plates in an inverted (medium facing down) position at 35° C until picked up by courier. |
| 7b. If an incubator is not available, invert the plates and hold them at room temperature until picked up by courier. Do not refrigerate after inoculating. |
| 8. When packing plates for transport, keep them inverted and place in a suitable container that will protect them from extreme heat or cold. |
| [a]Adapted from: "Quality Control/Product Information". May, 1997. Modified Thayer-Martin (MTM II) Agar, Product Info. No. P21567 Rev. 05, *BBL® Quality Control and Product Information Manual for Plated Media*, Becton Dickinson Microbiology Systems, Cockeysville, MD, pp. 1-5 (0597 193 –0597 197). |

**Supplies:**
1. **MTM II plate**
2. **Dacron™ swab**
3. **Whirl-Pak resealable bag**
4. **$CO_2$ tablet in foil pouch**



"Z" Pattern Primary Inoculation

| **Table 2. Important tips (requirements) when plating and processing Modified Thayer-Martin (MTM II) agar plates to culture *Neisseria gonorrhoeae*.** |
|---|
| 1. Store plates under refrigeration upside down (media facing down.) |
| 2. Discard any plate(s) with an expired expiration date or that exhibit growth prior to use (never use contaminated plates.) |
| 3. Always allow plates to warm to room temperature before using (cold kills *N. gonorrhoeae*). |
| 4. Use Dacron™-tipped swabs with plastic shafts (do not use cotton-tipped swabs, they may contain fatty acids that can interfere with the survival of some organisms. Also do not use calcium alginate-tipped swabs. They can be toxic for some strains of *N. gonorrhoeae.*)[a] |
| 5. Always allow surface of plates to dry before using (a wet surface hampers isolated colony formation.) |
| 6. DO NOT CRUSH OR ADD WATER TO THE $CO_2$-GENERATING TABLET (CAUSES LOSS OF $CO_2$ AND POSSIBLE CONTAMINATION BY WATER.) MOISTURE FROM THE MEDIUM WILL ACTIVATE THE $CO_2$ TABLET. |
| 7. Stack plates no more than four high in an incubator and at least one inch from the incubator wall and other stacks (uneven temperatures cause uneven growth.) |
| 8. Don't incubate inoculated plates in the clinic longer than 24 hours (over-incubation leads to more growth of contaminating normal flora.) |
| [a]*Manual of Clin. Micro.* 2007 (9th ed.). Am. Soc. for Micro., p. 44. |

| **Table 3. Tips for filling out laboratory request for gonococcus culture.** |
|---|
| 1. Fill in patient's name, DOB, case # if applicable, and last four digits of SSN. |
| 2. Fill in date the specimen was collected. |
| 3. Give specimen collection site (use specimen code.) |
| 4. If incubated, indicate number of hours. |
| 5. Make sure all lab slips contain submitter's information and patient information. |

# Laboratory Statistics

NS – Not Speciated
NT – Non-Typeable
VRE – Vancomycin Resistant
SP – Species
NG – No Growth

* This genus has recently been given a new genus name. The genus name in parenthesis is the old name.
** Formerly a part of the *Trichosporon beigelii* complex.
***Alpha streptococci other than *S. pneumoniae* and *Enterococcus*

## REPORTED 10/01/07 - 10/31/07

## ENTERIC BACTERIOLOGY

| GENUS SEROVAR | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| **CAMPYLOBACTER** JEJUNI | | | | |
| | F | 1 | 1 | ALLEGANY |
| | F | 17 | 1 | ANNE ARUNDEL |
| | F | 61 | 1 | ANNE ARUNDEL |
| | F | 39 | 1 | HARFORD |
| | M | 34 | 1 | HARFORD |
| | M | 32 | 1 | WORCESTER |
| | M | 59 | 1 | BALTIMORE CITY |
| | U | 41 | 1 | BALTIMORE CITY |
| | M | 32 | 1 | OUT OF STATE |
| | M | 35 | 1 | OUT OF STATE |
| | M | | 1 | UNKNOWN |
| **CAMPYLOBACTER** PRESENT | | | | |
| | M | 41 | 1 | HARFORD |
| | M | 32 | 1 | WORCESTER |
| **ESCHERICHIA** COLI O157:H7 | | | | |
| | M | 65 | 1 | BALTIMORE |
| | F | 80 | 1 | CALVERT |
| | M | 10 | 1 | TALBOT |
| | M | 57 | 1 | WASHINGTON |
| | M | | 1 | BALTIMORE CITY |
| **SALMONELLA** AGONA | | | | |
| | U | 1 | 1 | BALTIMORE |
| | M | 1 | 1 | CALVERT |
| | M | 40 | 1 | OUT OF STATE |
| **SALMONELLA** BAREILLY | | | | |
| | U | 5 | 1 | PRINCE GEORGE'S |
| **SALMONELLA** BERTA | | | | |
| | F | 40 | 1 | ALLEGANY |
| **SALMONELLA** BOVISMORBIFICANS | | | | |
| | U | 2 | 1 | OUT OF STATE |
| **SALMONELLA** BRAENDERUP | | | | |
| | M | 10 | 1 | ANNE ARUNDEL |
| | F | 7 | 1 | BALTIMORE |
| **SALMONELLA** DERBY | | | | |
| | U | | 1 | OUT OF STATE |
| **SALMONELLA** ENTERITIDIS | | | | |
| | F | 47 | 2 | ANNE ARUNDEL |
| | F | 54 | 1 | ANNE ARUNDEL |
| | M | | 1 | ANNE ARUNDEL |
| | F | 17 | 1 | BALTIMORE |
| | M | | 1 | BALTIMORE |
| | M | 2 | 1 | BALTIMORE |
| | M | 14 | 1 | BALTIMORE |
| | M | 18 | 1 | BALTIMORE |
| | F | 51 | 1 | CALVERT |
| | F | 52 | 2 | CALVERT |
| | F | 21 | 1 | CHARLES |
| | F | 25 | 1 | MONTGOMERY |
| | F | 59 | 1 | MONTGOMERY |
| | M | 9 | 1 | PRINCE GEORGE'S |
| | F | | 1 | BALTIMORE CITY |
| | F | 1 | 1 | BALTIMORE CITY |
| | F | 2 | 1 | BALTIMORE CITY |
| | F | 3 | 1 | BALTIMORE CITY |
| | F | 10 | 1 | BALTIMORE CITY |
| | F | 14 | 1 | BALTIMORE CITY |
| | F | 20 | 1 | BALTIMORE CITY |
| | F | 82 | 1 | BALTIMORE CITY |
| | M | | 2 | BALTIMORE CITY |
| | M | 1 | 1 | BALTIMORE CITY |
| | M | 6 | 1 | BALTIMORE CITY |
| | M | 25 | 1 | BALTIMORE CITY |
| | M | 41 | 1 | BALTIMORE CITY |
| | M | 42 | 1 | BALTIMORE CITY |
| | U | | 1 | BALTIMORE CITY |
| | F | 74 | 1 | OUT OF STATE |
| | M | 9 | 1 | OUT OF STATE |
| | M | 30 | 1 | OUT OF STATE |
| | M | 39 | 1 | OUT OF STATE |
| | M | 48 | 1 | OUT OF STATE |
| **SALMONELLA** HEIDELBERG | | | | |
| | M | 9 | 1 | ST. MARY'S |
| **SALMONELLA** HVITTINGFOSS | | | | |
| | F | 1 | 1 | BALTIMORE |
| **SALMONELLA** I 13,23:b:- | | | | |
| | F | 85 | 1 | CARROLL |
| | F | 86 | 1 | CARROLL |
| **SALMONELLA** I 6,7:k:- | | | | |
| | F | 42 | 1 | OUT OF STATE |
| **SALMONELLA** I 6,8:e,h:- | | | | |
| | F | 32 | 1 | FREDERICK |
| | F | 35 | 1 | MONTGOMERY |
| **SALMONELLA** INFANTIS | | | | |
| | F | 19 | 1 | ANNE ARUNDEL |
| | M | 10 | 1 | HARFORD |
| | M | | 1 | HOWARD |
| **SALMONELLA** ISRAEL | | | | |
| | F | 24 | 1 | MONTGOMERY |
| **SALMONELLA** IV 44:z4,z23:- | | | | |
| | M | 5 | 1 | ANNE ARUNDEL |
| | U | 46 | 1 | OUT OF STATE |
| **SALMONELLA** JAVA | | | | |
| | U | 6 | 1 | ANNE ARUNDEL |
| | F | 3 | 1 | BALTIMORE |
| | M | 63 | 1 | PRINCE GEORGE'S |
| | U | 36 | 1 | TALBOT |
| | F | 53 | 1 | WASHINGTON |
| | M | 56 | 1 | OUT OF STATE |
| **SALMONELLA** JAVIANA | | | | |
| | F | 9 | 1 | ANNE ARUNDEL |
| | M | | 1 | ANNE ARUNDEL |
| | M | 1 | 1 | ANNE ARUNDEL |
| | F | 53 | 1 | CAROLINE |
| | F | 3 | 2 | WICOMICO |
| | M | 4 | 1 | WICOMICO |
| | F | 48 | 1 | WORCESTER |
| | F | 87 | 1 | WORCESTER |
| | F | 35 | 1 | BALTIMORE CITY |
| **SALMONELLA** LITCHFIELD | | | | |
| | U | 5 | 1 | ANNE ARUNDEL |
| **SALMONELLA** LOCKLEAZE | | | | |
| | U | 62 | 1 | OUT OF STATE |
| **SALMONELLA** MONTEVIDEO | | | | |
| | U | 6 | 1 | PRINCE GEORGE'S |
| | F | 16 | 1 | OUT OF STATE |

| | | | |
|---|---|---|---|
| **SALMONELLA** MUENCHEN | | | |
| F | 36 | 1 | CECIL |
| **SALMONELLA** NEWPORT | | | |
| F | 1 | 1 | ANNE ARUNDEL |
| U | 28 | 1 | ANNE ARUNDEL |
| F | 8 | 1 | CAROLINE |
| M | 49 | 1 | CARROLL |
| M | 17 | 1 | DORCHESTER |
| F | 46 | 1 | FREDERICK |
| M | 1 | 1 | HOWARD |
| M | 18 | 1 | PRINCE GEORGE'S |
| M | 61 | 1 | TALBOT |
| F | 24 | 1 | WICOMICO |
| U | | 1 | WICOMICO |
| F | 2 | 1 | WORCESTER |
| U | 1 | 1 | WORCESTER |
| U | 4 | 1 | OUT OF STATE |
| **SALMONELLA** NORWICH | | | |
| M | 1 | 2 | WICOMICO |
| **SALMONELLA** OHIO | | | |
| U | 13 | 1 | MONTGOMERY |
| **SALMONELLA** ORANIENBURG | | | |
| M | 35 | 1 | FREDERICK |
| F | 8 | 1 | MONTGOMERY |
| M | 1 | 1 | BALTIMORE CITY |
| U | | 1 | BALTIMORE CITY |
| **SALMONELLA** POMONA | | | |
| F | | 1 | BALTIMORE CITY |
| **SALMONELLA** SAINTPAUL | | | |
| U | 8 | 1 | BALTIMORE |
| F | 24 | 1 | MONTGOMERY |
| U | | 1 | OUT OF STATE |
| **SALMONELLA** SANDIEGO | | | |
| M | 9 | 1 | WASHINGTON |
| M | 50 | 1 | OUT OF STATE |
| U | 23 | 1 | OUT OF STATE |
| **SALMONELLA** STANLEY | | | |
| F | 44 | 1 | CARROLL |
| **SALMONELLA** TENNESSEE | | | |
| F | 70 | 1 | CARROLL |
| **SALMONELLA** TYPHI | | | |
| F | 10 | 1 | HOWARD |
| M | 33 | 1 | BALTIMORE CITY |
| U | | 1 | BALTIMORE CITY |
| **SALMONELLA** TYPHIMURIUM | | | |
| M | 8 | 1 | BALTIMORE |
| M | 42 | 1 | CARROLL |
| M | 24 | 1 | FREDERICK |
| M | 4 | 1 | MONTGOMERY |
| M | 3 | 1 | PRINCE GEORGE'S |
| U | 1 | 1 | PRINCE GEORGE'S |
| F | 1 | 1 | ST. MARY'S |
| F | 20 | 1 | WASHINGTON |
| M | 4 | 1 | WASHINGTON |
| M | 73 | 1 | WASHINGTON |
| F | | 1 | WICOMICO |
| F | 53 | 1 | WICOMICO |
| F | | 1 | BALTIMORE CITY |
| M | 6 | 1 | BALTIMORE CITY |
| **SALMONELLA** TYPHIMURIUM VAR COPENHAGEN | | | |
| M | | 1 | CAROLINE |
| M | | 2 | MONTGOMERY |
| U | 1 | 1 | MONTGOMERY |
| F | 2 | 1 | TALBOT |
| F | 51 | 1 | BALTIMORE CITY |
| **SALMONELLA** UNTYPABLE | | | |
| F | 38 | 1 | BALTIMORE |
| F | 64 | 1 | BALTIMORE |
| M | 33 | 1 | HARFORD |
| M | | 1 | BALTIMORE CITY |
| M | 65 | 1 | BALTIMORE CITY |
| F | 1 | 1 | OUT OF STATE |
| U | 1 | 1 | OUT OF STATE |
| U | 11 | 1 | OUT OF STATE |
| **SALMONELLA** 4,5,12:i:- | | | |
| M | 29 | 1 | ALLEGANY |
| M | | 1 | ANNE ARUNDEL |
| F | 3 | 1 | CARROLL |
| F | 6 | 1 | CHARLES |
| M | 12 | 1 | TALBOT |
| F | | 1 | BALTIMORE CITY |
| M | | 1 | BALTIMORE CITY |
| F | 2 | 1 | OUT OF STATE |
| **SHIGELLA** FLEXNERI II:3,4 | | | |
| M | 37 | 1 | BALTIMORE CITY |
| **SHIGELLA** SONNEI | | | |
| M | 52 | 1 | ANNE ARUNDEL |
| F | 2 | 1 | PRINCE GEORGE'S |
| U | 3 | 1 | PRINCE GEORGE'S |
| F | 2 | 1 | OUT OF STATE |
| F | 3 | 1 | OUT OF STATE |
| M | 68 | 1 | OUT OF STATE |
| **VIBRIO** FLUVIALIS | | | |
| F | 79 | 1 | CALVERT |
| **VIBRIO** PARAHAEMOLYTICUS | | | |
| M | 60 | 1 | BALTIMORE |
| M | 66 | 1 | CHARLES |
| **TOTAL** | | **177** | |

## ISOLATES – THROAT CULTURES

| COUNTY | GROUP A[1] | NON-GROUP A |
|---|---|---|
| ALLEGANY | 1 | 17 |
| SOMERSET | 1 | 9 |
| WICOMICO | 4 | 6 |
| **TOTAL** | **6** | **32** |

[1] *Streptococcus pyogenes*

## BACTERIOLOGY IDENTIFICATIONS
### Referrals

| **GENUS** SPECIES | | | |
|---|---|---|---|
| SOURCE | # | JURISDICTION | |
| **BACILLUS** SPECIES | | | |
| PLEURAL FLUID | 1 | CARROLL | |
| **HAEMOPHILUS** INFLUENZAE NON-TYPEABLE | | | |
| BLOOD | 3 | BALTIMORE CITY | |
| BLOOD | 1 | TALBOT | |
| **HAEMOPHILUS** INFLUENZAE SEROTYPE F | | | |
| BLOOD | 1 | BALTIMORE CITY | |
| **STAPHYLOCOCCUS** AUREUS | | | |
| GI TRACT | 3 | SOMERSET | |
| THIGH | 2 | WICOMICO | |
| WOUND | 1 | WICOMICO | |
| **TOTAL** | **12** | | |

## ISOLATES – MISCELLANEOUS

| **GENUS** SPECIES | | |
|---|---|---|
| SOURCE | # | JURISDICTION |
| **ACINETOBACTER** LWOFFII | | |
| PUSTULE | 1 | SOMERSET |
| **BACILLUS** CEREUS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **BACILLUS** SPECIES | | |
| ABSCESS | 1 | BALTIMORE |
| BLOOD | 1 | BALTIMORE CITY |

| | | |
|---|---|---|
| **CLOSTRIDIUM** DIFFICILE | | |
| BLOOD | 1 | BALTIMORE CITY |
| **CORYNEBACTERIUM** SPECIES | | |
| WOUND | 1 | BALTIMORE |
| BLOOD | 1 | BALTIMORE CITY |
| FOOT | 1 | CARROLL |
| LESION | 1 | CECIL |
| **ENTEROBACTER** CLOACAE | | |
| BLOOD | 2 | BALTIMORE CITY |
| **ENTEROCOCCUS** FAECALIS | | |
| BLOOD | 1 | BALTIMORE CITY |
| TOE | 1 | FREDERICK |
| **ENTEROCOCCUS** GALLINARUM | | |
| BLOOD | 1 | BALTIMORE CITY |
| **ESCHERICHIA** COLI | | |
| BLOOD | 2 | BALTIMORE CITY |
| GROIN | 1 | FREDERICK |
| TOE | 1 | FREDERICK |
| GENITAL | 1 | PRINCE GEORGE'S |
| **EUBACTERIUM** LENTUM | | |
| BLOOD | 1 | BALTIMORE CITY |
| **GARDNERELLA** VAGINALIS | | |
| CERVICAL | 1 | PRINCE GEORGE'S |
| VAGINAL | 4 | SOMERSET |
| **KLEBSIELLA** PNEUMONIEA | | |
| BLOOD | 2 | BALTIMORE CITY |
| GROIN | 1 | FREDERICK |
| **MICROCOCCUS** SPECIES | | |
| PUSTULE | 1 | SOMERSET |
| **PROTEUS** MIRABILIS | | |
| EAR | 1 | BALTIMORE |
| SKIN | 1 | MONTGOMERY |
| **PSEUDOMONAS** AERUGINOSA | | |
| EAR | 1 | BALTIMORE |
| BLOOD | 2 | BALTIMORE CITY |
| FOOT | 1 | FREDERICK |
| INCISION | 1 | FREDERICK |
| TOE | 2 | FREDERICK |
| **PSEUDOMONAS** LUTEOLA | | |
| SKIN | 1 | MONTGOMERY |
| **PSEUDOMONAS** PUTIDA | | |
| FOOT | 1 | FREDERICK |
| TOE | 1 | FREDERICK |
| **SERRATIA** MARCESCENS | | |
| LIVER | 1 | BALTIMORE CITY |
| **STAPHYLOCOCCUS** AUREUS | | |
| WOUND | 1 | ALLEGANY |
| BOIL | 1 | ANNE ARUNDEL |
| WOUND | 1 | ANNE ARUNDEL |
| ABSCESS | 2 | BALTIMORE |
| BOIL | 2 | BALTIMORE |
| MIDDLE EAR | 1 | BALTIMORE |
| WOUND | 1 | BALTIMORE |
| KNEE | 1 | BALTIMORE CITY |
| ABSCESS | 3 | BALTIMORE CITY |
| BLOOD | 5 | BALTIMORE CITY |
| CSF | 1 | BALTIMORE CITY |
| BREAST | 1 | CARROLL |
| FINGER | 1 | CARROLL |
| FOOT | 1 | CARROLL |
| LESION | 1 | CECIL |
| TOE | 2 | FREDERICK |
| FOOT | 2 | FREDERICK |
| SKIN | 2 | MONTGOMERY |
| WOUND | 1 | PRINCE GEORGE'S |
| **STAPHYLOCOCCUS** EPIDERMIDIS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STAPHYLOCOCCUS** SPECIES | | |
| BOIL | 1 | BALTIMORE |
| WOUND | 1 | BALTIMORE |
| BLOOD | 2 | BALTIMORE CITY |
| ABSCESS | 1 | CARROLL |
| ARM | 1 | CARROLL |
| TOE | 7 | FREDERICK |
| **STENOTROPHOMONAS** MALTOPHILIA | | |
| AXILLARY | 1 | BALTIMORE |
| **STREPTOCOCCUS** ALPHA-HEMOLYTIC | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STREPTOCOCCUS** BETA-HEMOLYTIC GROUP A | | |
| VAGINAL | 5 | ANNE ARUNDEL |
| BLOOD | 1 | BALTIMORE CITY |
| CSF | 1 | BALTIMORE CITY |
| **STREPTOCOCCUS** BETA-HEMOLYTIC GROUP B | | |
| BLOOD | 1 | BALTIMORE CITY |
| VAGINAL | 1 | CECIL |
| VAGINAL | 1 | FREDERICK |
| VAGINAL | 1 | HOWARD |
| VAGINAL | 4 | MONTGOMERY |
| CERVICAL | 7 | PRINCE GEORGE'S |
| VAGINAL | 15 | PRINCE GEORGE'S |
| VAGINAL | 6 | SOMERSET |
| **STREPTOCOCCUS** NON-HEMOLYTIC | | |
| FOOT | 1 | FREDERICK |
| **STREPTOCOCCUS** NON-HEMOLYTIC INTERMEDIUS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STREPTOCOCCUS** NON-HEMOLYTIC SANGUIS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **TOTAL** | **134** | |

## SEXUALLY TRANSMITTED DISEASES

| **GENUS** SPECIES | | | |
|---|---|---|---|
| | SEX | # | JURISDICTION |
| **NEISSERIA** GONORRHEAE | | | |
| | F | 1 | ALLEGANY |
| | M | 1 | ALLEGANY |
| | F | 1 | ANNE ARUNDEL |
| | M | 3 | ANNE ARUNDEL |
| | F | 3 | BALTIMORE |
| | M | 3 | BALTIMORE |
| | F | 0 | CAROLINE |
| | M | 1 | CAROLINE |
| | F | 2 | CARROLL |
| | M | 1 | CARROLL |
| | M | 1 | CECIL |
| | F | 3 | CHARLES |
| | M | 1 | CHARLES |
| | F | 2 | DORCHESTER |
| | M | 1 | DORCHESTER |
| | F | 2 | FREDERICK |
| | M | 2 | FREDERICK |
| | F | 1 | HARFORD |
| | F | 2 | HOWARD |
| | M | 1 | HOWARD |
| | F | 1 | KENT |
| | F | 4 | MONTGOMERY |
| | M | 3 | MONTGOMERY |
| | F | 20 | PRINCE GEORGE'S |
| | M | 31 | PRINCE GEORGE'S |
| | F | 2 | QUEEN ANNE'S |
| | M | 0 | QUEEN ANNE'S |
| | F | 0 | SOMERSET |
| | M | 1 | SOMERSET |
| | F | 2 | TALBOT |
| | M | 0 | TALBOT |
| | F | 2 | WASHINGTON CO |
| | M | 1 | WASHINGTON CO |
| | F | 4 | WICOMICO |
| | M | 8 | WICOMICO |
| | F | 1 | BALTIMORE CITY |
| | M | 8 | BALTIMORE CITY |
| | F | 1 | OUT OF STATE |
| | M | 1 | OUT OF STATE |
| **TOTAL** | **122** | | |

**CHLAMYDIA** TRACHOMATIS

| | | |
|---|---|---|
| F | 10 | ALLEGANY |
| M | 6 | ALLEGANY |
| F | 25 | ANNE ARUNDEL |
| M | 15 | ANNE ARUNDEL |
| F | 19 | BALTIMORE |
| M | 20 | BALTIMORE |
| F | 3 | CALVERT |
| M | 2 | CALVERT |
| F | 2 | CAROLINE |
| F | 7 | CARROLL |
| M | 2 | CARROLL |
| F | 2 | CECIL |
| M | 5 | CECIL |
| F | 11 | CHARLES |
| M | 7 | CHARLES |
| F | 3 | DORCHESTER |
| M | 3 | DORCHESTER |
| F | 12 | FREDERICK |
| M | 7 | FREDERICK |
| F | 10 | HARFORD |
| M | 10 | HARFORD |
| U | 1 | HARFORD |
| F | 6 | HOWARD |
| M | 2 | HOWARD |
| F | 4 | KENT |
| M | 2 | KENT |
| F | 29 | MONTGOMERY |
| M | 30 | MONTGOMERY |
| F | 63 | PRINCE GEORGE'S |
| M | 42 | PRINCE GEORGE'S |
| F | 2 | QUEEN ANNE'S |
| M | 4 | QUEEN ANNE'S |
| M | 1 | ST. MARY'S |
| F | 11 | SOMERSET |
| M | 2 | SOMERSET |
| F | 1 | TALBOT |
| F | 6 | WASHINGTON |
| M | 2 | WASHINGTON |
| F | 28 | WICOMICO |
| M | 20 | WICOMICO |
| U | 1 | WICOMICO |
| F | 1 | WORCESTER |
| M | 2 | WORCESTER |
| F | 11 | BALTIMORE CITY |
| M | 36 | BALTIMORE CITY |
| F | 4 | OUT OF STATE |
| M | 2 | OUT OF STATE |
| **TOTAL** | **494** | |

SYPHILIS SEROLOGY

| | | |
|---|---|---|
| M | 1 | ALLEGANY |
| M | 6 | ANNE ARUNDEL |
| U | 1 | ANNE ARUNDEL |
| F | 4 | BALTIMORE |
| M | 6 | BALTIMORE |
| F | 16 | BALTIMORE CITY |
| M | 19 | BALTIMORE CITY |
| U | 2 | BALTIMORE CITY |
| F | 1 | CARROLL |
| M | 1 | DORCHESTER |
| F | 1 | FREDERICK |
| M | 2 | FREDERICK |
| F | 2 | HARFORD |
| M | 1 | HARFORD |
| F | 1 | HOWARD |
| F | 5 | MONTGOMERY |
| M | 4 | MONTGOMERY |
| U | 1 | MONTGOMERY |
| F | 9 | PRINCE GEORGES |
| M | 21 | PRINCE GEORGES |
| F | 2 | WASHINGTON |
| M | 1 | WASHINGTON |
| F | 4 | WICOMICO |
| M | 3 | WICOMICO |
| **TOTAL** | **114** | |

## PENICILLIN RESISTANT GONORRHEA STATISTICS

REPORTED QUARTERLY
NO REPORT THIS MONTH

## MYCOBACTERIOLOGY

| **GENUS** SPECIES | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| **MYCOBACTERIUM** TUBERCULOSIS | | | | |
| | M | 27 | 1 | ANNE ARUNDEL |
| | M | 37 | 1 | CHARLES |
| | F | 28 | 1 | HOWARD |
| | F | 81 | 1 | MONTGOMERY |
| | M | 22 | 1 | MONTGOMERY |
| | M | 77 | 1 | PRINCE GEORGE'S |
| | M | 50 | 1 | BALTIMORE CITY |
| **MYCOBACTERIUM** TUBERCULOSIS COMPLEX | | | | |
| | F | 35 | 1 | BALTIMORE |
| | F | 41 | 1 | BALTIMORE |
| | F | 76 | 1 | BALTIMORE |
| | M | 32 | 1 | CARROLL |
| | M | 37 | 1 | CHARLES |
| | M | 49 | 1 | CHARLES |
| | F | 75 | 1 | FREDERICK |
| | F | 28 | 1 | HOWARD |
| | M | 29 | 1 | HOWARD |
| | F | 66 | 1 | MONTGOMERY |
| | M | 22 | 2 | MONTGOMERY |
| | M | 26 | 1 | MONTGOMERY |
| | F | 23 | 1 | PRINCE GEORGE'S |
| | M | 25 | 1 | PRINCE GEORGE'S |
| | M | 47 | 1 | PRINCE GEORGE'S |
| | M | 64 | 1 | PRINCE GEORGE'S |
| | M | 17 | 1 | SOMERSET |
| | F | 42 | 1 | WASHINGTON |
| | M | 50 | 1 | BALTIMORE CITY |
| | M | 58 | 2 | BALTIMORE CITY |
| | F | 22 | 1 | OUT OF STATE |
| | F | 72 | 1 | OUT OF STATE |
| **MYCOBACTERIUM** ABSCESSUS | | | | |
| | F | 49 | 1 | BALTIMORE CITY |
| **MYCOBACTERIUM** AFRICANUM | | | | |
| | M | 42 | 1 | PRINCE GEORGE'S |
| **MYCOBACTERIUM** AVIUM COMPLEX | | | | |
| | M | 35 | 1 | ALLEGANY |
| | M | 78 | 1 | BALTIMORE |
| | F | 35 | 1 | CALVERT |
| | F | 69 | 1 | CARROLL |
| | F | 46 | 1 | CECIL |
| | M | 42 | 1 | DORCHESTER |
| | F | 60 | 1 | FREDERICK |
| | M | 77 | 1 | FREDERICK |
| | M | 78 | 1 | FREDERICK |
| | F | 61 | 1 | HOWARD |
| | F | 83 | 1 | HOWARD |
| | M | 29 | 1 | HOWARD |
| | M | 77 | 1 | OUT OF STATE |
| **MYCOBACTERIUM** FORTUITUM | | | | |
| | F | 23 | 1 | PRINCE GEORGE'S |
| | M | 49 | 1 | OUT OF STATE |
| **MYCOBACTERIUM** GORDONAE | | | | |
| | M | 31 | 1 | MONTGOMERY |
| | F | 23 | 1 | PRINCE GEORGE'S |
| | F | 65 | 1 | PRINCE GEORGE'S |
| | M | 28 | 1 | PRINCE GEORGE'S |
| | M | 54 | 1 | PRINCE GEORGE'S |
| | M | 48 | 1 | QUEEN ANNE'S |
| | M | 60 | 1 | OUT OF STATE |
| **MYCOBACTERIUM** MARINUM | | | | |
| | M | 60 | 1 | ANNE ARUNDEL |
| **TOTAL** | | | **56** | |

## MYCOLOGY

| GENUS SPECIES | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| **ALTERNARIA** SP | | | | |
| | F | 56 | 1 | FREDERICK |
| | M | 84 | 1 | BALTIMORE CITY |
| **ASPERGILLUS** FUMIGATUS | | | | |
| | F | 79 | 1 | TALBOT |
| **BIPOLARIS** SP | | | | |
| | F | 48 | 1 | CAROLINE |
| **BLASTOMYCES** DERMATITIDIS | | | | |
| | M | 67 | 1 | BALTIMORE CITY |
| **CANDIDA** ALBICANS | | | | |
| | F | 28 | 1 | ANNE ARUNDEL |
| | F | 17 | 1 | MONTGOMERY |
| | M | 49 | 1 | MONTGOMERY |
| | F | 20 | 1 | PRINCE GEORGE'S |
| | F | 21 | 1 | PRINCE GEORGE'S |
| | F | 60 | 1 | PRINCE GEORGE'S |
| | M | 62 | 1 | PRINCE GEORGE'S |
| | F | 18 | 1 | SOMERSET |
| | F | 20 | 1 | SOMERSET |
| **CANDIDA** GLABRATA | | | | |
| | F | 75 | 1 | PRINCE GEORGE'S |
| | M | 67 | 1 | BALTIMORE CITY |
| **CANDIDA** GUILLIERMONDII | | | | |
| | F | 55 | 1 | BALTIMORE |
| **CANDIDA** PARAPSILOSIS | | | | |
| | F | 21 | 1 | SOMERSET |
| **CHRYSOSPORIUM** SP | | | | |
| | M | 58 | 1 | BALTIMORE CITY |
| | F | 43 | 1 | OUT OF STATE |
| **CRYPTOCOCCUS** NEOFORMANS | | | | |
| | M | 54 | 1 | BALTIMORE CITY |
| **CURVULARIA** SP | | | | |
| | F | 48 | 1 | CAROLINE |
| **ENGYODONTIUM** ALBUM | | | | |
| | F | 64 | 1 | TALBOT |
| **FUSARIUM** SP | | | | |
| | F | | 1 | WICOMICO |
| **GEOTRICHUM** SP | | | | |
| | M | 71 | 1 | MONTGOMERY |
| **GLIOCLADIUM** SP | | | | |
| | M | 4 | 1 | TALBOT |
| **MUCOR** SP | | | | |
| | M | 69 | 1 | ALLEGANY |
| **NOCARDIA** ASTEROIDES COMPLEX | | | | |
| | F | 41 | 1 | BALTIMORE CITY |
| | M | 58 | 1 | BALTIMORE CITY |
| **PENICILLIUM** SP | | | | |
| | M | 75 | 1 | PRINCE GEORGE'S |
| **PITHOMYCES** SP | | | | |
| | M | 45 | 1 | BALTIMORE CITY |
| **RHIZOPUS** ORYZAE | | | | |
| | F | 37 | 1 | CALVERT |
| **SCEDOSPORIUM** APIOSPERMUM | | | | |
| | F | 89 | 1 | ANNE ARUNDEL |
| **TRICHOPHYTON** RUBRUM | | | | |
| | M | 50 | 1 | BALTIMORE CITY |
| | M | 62 | 1 | BALTIMORE CITY |
| **TRICHOPHYTON** SP | | | | |
| | M | | 1 | BALTIMORE CITY |
| **TRICHOPHYTON** TONSURANS | | | | |
| | F | 2 | 1 | CALVERT |
| | F | 3 | 1 | CALVERT |
| | M | 5 | 1 | BALTIMORE CITY |
| **TRICHOSPORON** ASAHII | | | | |
| | M | 74 | 1 | BALTIMORE CITY |
| **TOTAL** | | | **40** | |

## MYCOBACTERIUM SUSCEPTIBILITY RESULTS

DURING OCTOBER, 2007, SUSCEPTIBILITY RESULTS ON 29 ISOLATES OF *M. TUBERCULOSIS* COMPLEX * WERE IDENTIFIED.

**TOTAL: 11 DRUG RESISTANT STRAINS FOUND**

| # | COUNTY | DRUG |
|---|---|---|
| 1 | ANNE ARUNDEL | ® to STREPTOMYCIN |
| 1[B] | BALTIMORE | ® to PYRAZINAMIDE |
| 1 | CHARLES | ® to ISONIAZID and STREPTOMYCIN |
| 2[A] | CHARLES | ® to STREPTOMYCIN |
| 2[A] | HOWARD | ® to RIFAMPIN and RIFABUTIN |
| 2[A] | HOWARD | ® to STREPTOMYCIN |
| 2[A] | MONTGOMERY | ® to STREPTOMYCIN |

[A] Two isolates from the same patient
[B] Probable *M. bovis*

® RESISTANT

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

## PARASITOLOGY

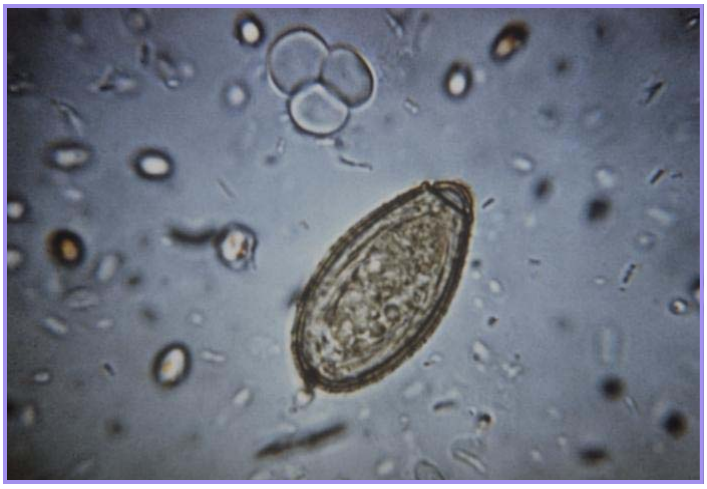
| GENUS SPECIES | # | JURISDICTION |
|---|---|---|
| PROTOZOA | | |
| **BLASTOCYSTIS** HOMINIS | 1 | BALTIMORE |
| | 1 | FREDERICK |
| | 3 | MONTGOMERY |
| | 1 | PRINCE GEORGE'S |
| **ENDOLIMAX** NANA | 1 | FREDERICK |
| | 7 | MONTGOMERY |
| | 5 | PRINCE GEORGE'S |
| **ENTAMOEBA** COLI | 2 | FREDERICK |
| | 7 | MONTGOMERY |
| | 8 | PRINCE GEORGE'S |
| **ENTAMOEBA** HARTMANNI | 1 | PRINCE GEORGE'S |
| **GIARDIA** LAMBLIA | 3 | MONTGOMERY |
| | 5 | PRINCE GEORGE'S |
| | 2 | ST. MARY'S |
| **IODAMOEBA** BUTSCHLII | 1 | MONTGOMERY |
| | 1 | PRINCE GEORGE'S |
| **TOTAL** | **49** | |
| NEMATODES | | |
| **ENTEROBIUS** VERMICULARIS | 2 | CARROLL |
| | 1 | KENT |
| HOOKWORM | 1 | FREDERICK |
| | 1 | PRINCE GEORGE'S |
| | 3 | WASHINGTON |
| **TOTAL** | **8** | |
| TREMATODES | | |
| **CLONORCHIS** SINENSIS | 1 | PRINCE GEORGE'S |
| **TOTAL** | **1** | |

## ARTHROPOD IDENTIFICATION

**NONE**

## TICK IDENTIFICATION

**NONE**



**This micrograph depicts an egg of the parasitic trematode, or flatworm, *Clonorchis sinensis*. In Prince George's County, a patient tested positive for this parasite in October. These eggs range in size from 27-35µm x 11-20µm. The operculum, at the smaller end of the egg, is convex, and rests on a visible "shoulder". At the opposite, larger abopercular end, a small knob or hook-like protrusion is often observed. (Source: CDC Public Health Image Library)**

## WATER MICROBIOLOGY

| | # TESTED | # NON-COMPLIANT |
|---|---|---|
| COMMUNITY | 2 | 0 |
| NON-COMMUNITY | 452 | 116 |
| **TOTAL** | **454** | **116** |

## FOOD SAFETY

### FOOD AND SHELLFISH MICROBIOLOGY

| | # OF SAMPLES | NOTABLE PATHOGENS |
|---|---|---|
| FOOD | 7 | 0 |
| | | # STANDARDS EXCEEDED * |
| CRABMEAT | 0 | 0 |
| | | # STANDARDS EXCEEDED ** |
| SHELLFISH | 0 | 0 |
| SHELLFISH GROWING WATERS | 404 | |
| **TOTAL** | **411** | **0** |

### STANDARDS

* CRABMEAT-FRESH
*ESCHERICHIA COLI* = LESS THAN 36 MPN/100 GRAM
STANDARD PLATE COUNT = LESS THAN 100,000 PER GRAM

** SHELLFISH
FECAL COLIFORMS = LESS THAN 230 MPN/100 GRAM
STANDARD PLATE COUNT = LESS THAN 500,000 PER GRAM

## VIRUS ISOLATION

| ISOLATE | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| ECHOVIRUS | M | 2 | 1 | PRINCE GEORGE'S |
| **SUBTOTAL** | | | **1** | |
| HERPES SIMPLEX I | F | 20 | 1 | ALLEGANY |
| | F | 21 | 1 | ALLEGANY |
| | M | 22 | 1 | ALLEGANY |
| | F | 18 | 1 | BALTIMORE |
| | F | 19 | 1 | BALTIMORE |
| | F | 20 | 1 | BALTIMORE |
| | F | 39 | 1 | CARROLL |
| | M | 46 | 1 | CARROLL |
| | F | 18 | 1 | CECIL |
| | M | 47 | 1 | CECIL |
| | F | 24 | 1 | CHARLES |
| | F | 30 | 1 | CHARLES |
| | F | 17 | 1 | DORCHESTER |
| | F | 20 | 1 | FREDERICK |
| | F | 25 | 1 | FREDERICK |
| | F | 25 | 1 | HARFORD |
| | F | 19 | 1 | HOWARD |
| | F | 17 | 1 | KENT |
| | F | 20 | 3 | PRINCE GEORGE'S |
| | F | 23 | 1 | PRINCE GEORGE'S |
| | M | 20 | 1 | PRINCE GEORGE'S |
| | F | 20 | 1 | BALTIMORE CITY |
| | F | 28 | 1 | BALTIMORE CITY |
| | M | 29 | 1 | BALTIMORE CITY |
| | U | 15 | 1 | BALTIMORE CITY |
| **SUBTOTAL** | | | **27** | |
| HERPES SIMPLEX II | F | 27 | 1 | ANNE ARUNDEL |
| | F | 29 | 1 | ANNE ARUNDEL |
| | F | 40 | 1 | ANNE ARUNDEL |
| | M | 49 | 1 | ANNE ARUNDEL |
| | F | 19 | 2 | BALTIMORE |
| | F | 22 | 2 | BALTIMORE |
| | F | 25 | 1 | BALTIMORE |
| | F | 33 | 1 | BALTIMORE |
| | F | 43 | 1 | BALTIMORE |
| | M | 20 | 1 | BALTIMORE |
| | F | 16 | 1 | CALVERT |
| | M | 20 | 1 | CARROLL |
| | M | 24 | 1 | CARROLL |
| | M | 46 | 1 | CARROLL |
| | F | 47 | 1 | CECIL |
| | F | 24 | 1 | CHARLES |
| | M | 24 | 1 | CHARLES |
| | M | 31 | 1 | CHARLES |
| | F | 22 | 1 | FREDERICK |
| | F | 38 | 1 | FREDERICK |
| | M | 20 | 1 | FREDERICK |
| | F | 21 | 2 | MONTGOMERY |
| | F | 45 | 1 | MONTGOMERY |
| | F | 46 | 1 | MONTGOMERY |
| | M | 21 | 1 | MONTGOMERY |
| | F | 19 | 1 | PRINCE GEORGE'S |
| | F | 20 | 2 | PRINCE GEORGE'S |
| | F | 22 | 3 | PRINCE GEORGE'S |
| | F | 23 | 1 | PRINCE GEORGE'S |
| | F | 24 | 1 | PRINCE GEORGE'S |
| | F | 25 | 1 | PRINCE GEORGE'S |
| | F | 30 | 1 | PRINCE GEORGE'S |
| | F | 31 | 1 | PRINCE GEORGE'S |
| | F | 32 | 1 | PRINCE GEORGE'S |
| | F | 35 | 1 | PRINCE GEORGE'S |
| | M | 20 | 1 | PRINCE GEORGE'S |
| | M | 24 | 1 | PRINCE GEORGE'S |
| | M | 26 | 1 | PRINCE GEORGE'S |
| | M | 27 | 2 | PRINCE GEORGE'S |
| | M | 28 | 1 | PRINCE GEORGE'S |
| | M | 30 | 1 | PRINCE GEORGE'S |
| | M | 35 | 1 | PRINCE GEORGE'S |
| | M | 36 | 1 | PRINCE GEORGE'S |
| | M | 46 | 1 | PRINCE GEORGE'S |

| | | | |
|---|---|---|---|
| F | 18 | 1 | WICOMICO |
| F | 20 | 1 | WICOMICO |
| F | 31 | 1 | WICOMICO |
| M | 21 | 1 | WICOMICO |
| M | 27 | 1 | WICOMICO |
| M | 37 | 1 | WICOMICO |
| F | | 1 | BALTIMORE CITY |
| F | 19 | 1 | BALTIMORE CITY |
| F | 20 | 2 | BALTIMORE CITY |
| F | 22 | 1 | BALTIMORE CITY |
| F | 28 | 1 | BALTIMORE CITY |
| F | 35 | 1 | BALTIMORE CITY |
| F | 36 | 1 | BALTIMORE CITY |
| F | 40 | 1 | BALTIMORE CITY |
| F | 42 | 1 | BALTIMORE CITY |
| F | 46 | 1 | BALTIMORE CITY |
| F | 48 | 1 | BALTIMORE CITY |
| M | 17 | 1 | BALTIMORE CITY |
| M | 19 | 1 | BALTIMORE CITY |
| M | 20 | 2 | BALTIMORE CITY |
| M | 21 | 1 | BALTIMORE CITY |
| M | 22 | 1 | BALTIMORE CITY |
| M | 23 | 3 | BALTIMORE CITY |
| M | 25 | 3 | BALTIMORE CITY |
| M | 28 | 1 | BALTIMORE CITY |
| M | 31 | 1 | BALTIMORE CITY |
| M | 35 | 1 | BALTIMORE CITY |
| M | 60 | 1 | BALTIMORE CITY |
| M | 69 | 1 | BALTIMORE CITY |
| U | 22 | 1 | BALTIMORE CITY |
| U | 31 | 1 | BALTIMORE CITY |
| U | 37 | 1 | BALTIMORE CITY |
| **SUBTOTAL** | | **89** | |
| **TOTAL** | | **117** | |


## VIRAL HEPATITIS

| ORGANISM | # OF SPECIMENS | POSITIVES | JURISDICTION |
|---|---|---|---|
| HEPATITIS A | | | |
| | 2 | 0 | ALLEGANY |
| | 2 | 0 | ANNE ARUNDEL |
| | 18 | 0 | BALTIMORE |
| | 3 | 0 | BALTIMORE CITY |
| | 1 | 0 | CALVERT |
| | 1 | 0 | CARROLL |
| | 1 | 0 | CECIL |
| | 4 | 0 | HARFORD |
| | 1 | 0 | HOWARD |
| | 2 | 0 | MONTGOMERY |
| | 3 | 0 | PRINCE GEORGE'S |
| | 1 | 0 | SAINT MARY'S |
| **SUBTOTAL** | **39** | **0** | |
| HEPATITIS B | | | |
| | 125 | 0 | ALLEGANY |
| | 92 | 2 | ANNE ARUNDEL |
| | 92 | 10 | BALTIMORE |
| | 929 | 10 | BALTIMORE CITY |
| | 5 | 0 | CALVERT |
| | 58 | 0 | CARROLL |
| | 151 | 3 | CECIL |
| | 2 | 0 | CHARLES |
| | 105 | 4 | FREDERICK |
| | 8 | 0 | GARRETT |
| | 94 | 0 | HARFORD |
| | 40 | 2 | HOWARD |
| | 7 | 0 | KENT |
| | 353 | 1 | MONTGOMERY |
| | 588 | 13 | PRINCE GEORGE'S |
| | 1 | 0 | QUEEN ANNE'S |
| | 3 | 0 | SAINT MARY'S |
| | 8 | 0 | SOMERSET |
| | 8 | 0 | TALBOT |
| | 2 | 0 | UNKNOWN |
| | 35 | 1 | WASHINGTON |
| | 165 | 0 | WICOMICO |
| **SUBTOTAL** | **2,871** | **36** | |
| HEPATITIS C | | | |
| | 126 | 10 | ALLEGANY |
| | 102 | 23 | ANNE ARUNDEL |
| | 87 | 10 | BALTIMORE |
| | 365 | 145 | BALTIMORE CITY |
| | 5 | 0 | CALVERT |
| | 59 | 13 | CARROLL |
| | 77 | 10 | CECIL |
| | 2 | 0 | CHARLES |
| | 113 | 6 | FREDERICK |
| | 9 | 0 | GARRETT |
| | 33 | 3 | HARFORD |
| | 13 | 1 | HOWARD |
| | 7 | 2 | KENT |
| | 40 | 4 | MONTGOMERY |
| | 290 | 6 | PRINCE GEORGES |
| | 1 | 0 | QUEEN ANNE'S |
| | 2 | 0 | SAINT MARY'S |
| | 3 | 0 | SOMERSET |
| | 6 | 1 | TALBOT |
| | 2 | 1 | UNKNOWN |
| | 12 | 0 | WASHINGTON |
| | 43 | 1 | WICOMICO |
| **SUBTOTAL** | **1,397** | **236** | |
| **TOTALS** | **4,307** | **272** | |

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 applies 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.

**RABIES**

| SOURCE | # | JURISDICTION |
|---|---|---|
| BAT | 1 | BALTIMORE |
| | 1 | WICOMICO |
| | 1 | BALTIMORE CITY |
| CAT | 1 | BALTIMORE |
| | 1 | CALVERT |
| | 1 | CECIL |
| | 2 | FREDERICK |
| | 1 | HARFORD |
| | 1 | HOWARD |
| FOX | 1 | CHARLES |
| | 1 | MONTGOMERY |
| | 2 | PRINCE GEORGE'S |
| | 1 | WORCESTER |
| RACCOON | 1 | ANNE ARUNDEL |
| | 1 | BALTIMORE |
| | 1 | CALVERT |
| | 1 | CARROLL |
| | 1 | CECIL |
| | 2 | FREDERICK |
| | 2 | HARFORD |
| | 1 | HOWARD |
| | 4 | MONTGOMERY |
| | 4 | PRINCE GEORGE'S |
| | 1 | ST. MARY'S |
| | 2 | SOMERSET |
| | 1 | TALBOT |
| | 1 | WASHINGTON |
| | 1 | WORCESTER |
| SKUNK | 1 | ALLEGANY |
| | 1 | CAROLINE |
| | 1 | CARROLL |
| | 1 | CECIL |
| | 2 | CHARLES |
| | 2 | FREDERICK |
| | 1 | ST. MARY'S |
| **TOTAL POSITIVES** | **48** | |
| **TOTAL SPECIMENS** | **375** | |

## CHLAMYDOPHILIA (CHLAMYDIA) PSITTACI

REPORTED QUARTERLY
NO REPORT THIS MONTH

## CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY
NO REPORT THIS MONTH

## NEWBORN & CHILDHOOD SCREENING

STATISTICS FOR OCTOBER 2007

### PRESUMPTIVE POSITIVES

| DISORDERS | # |
|---|---|
| PHENYLKETONURIA | 4 |
| MAPLE SYRUP URINE DISEASE | 2 |
| HOMOCYSTINURIA | 8 |
| TYROSINEMIA | 7 |
| ARGININEMIA | 1 |
| CITRULLINEMIA | 0 |
| GALACTOSEMIA | 0 |
| BIOTINIDASE DEFICIENCY | 0 |
| HYPOTHYROIDISM | 104 |
| HEMOGLOBIN -DISEASE | 35 |
| HEMOGLOBIN -BENIGN | 393 |
| CONGENITAL ADRENAL HYPERPLASIA (CAH) | 36 |
| CYSTIC FIBROSIS | 0 |
| FATTY ACID OXIDATIONS | 10 |
| ORGANIC ACIDEMIAS | 22 |
| ACYLCARNITINE - BORDERLINE | 5 |
| ACYLCARNITINE - OTHERS | 8 |

### MONTHLY TOTALS

| | |
|---|---|
| # OF SPECIMENS SCREENED | 11,779 |
| NUMBER OF TESTS | 822,952 |
| % OF UNSATISFACTORY SPECIMENS | 4.59 |

### YEAR-TO-DATE CONFIRMED CASES

| CONDITIONS | # CONFIRMED |
|---|---|
| MCAD | 2 |
| 3MCC | 3 |
| SCAD | 2 |
| VLCAD | 2 |
| GA-I | 0 |
| 3-HYDROXY 3 METHYLGLUTTARYL COA LYASE DEFICIENCY (HMG) | 1 |
| MAPLE SYRUP URINE DISEASE | 2 |
| PKU- CLINICALLY SIGNIFICANT | 2 |
| VARIATANT HYPERPHENYLALANINEMIA - NOT CLINICALLY SIGNIFICANT | 2 |
| GALACTOSEMIA- CLASSICAL GALT DEFICIENCY | 3 |
| GALACTOSEMIA - VARIANT | 1 |
| BIOTINIDASE DEFICIENCY | 2 |
| GALACTOSE EPIMERASE DEFICIENCY | 0 |
| GALACTOSE TRANSFERASE DEFICIENCY- (GALT CLASSICAL) | 1 |
| PARTIAL BIOTINIDASE DEFICIENCY | 2 |
| CAH- CLASSICAL SALT WASTING | 2 |
| CAH-NON-CLASSICAL | 0 |
| HYPOTHYROIDISM - PRIMARY | 7 |
| HYPOTHYROIDISM - SECONDARY | 2 |
| OTHER HYPOTHYROIDISM | 6 |
| TRANSIENT HYPOTHYROIDISM | 1 |
| SICKLE CELL DISEASE -SS | 10 |
| SICKLE CELL DISEASE -SC | 5 |
| SICKLE CELL DISEASE -S BETA THALASSEMIA | 2 |
| CYSTIC FIBROSIS | 8 |

## HIV ANTIBODY SCREENING – BLOOD (OCTOBER 2007)

| SPECIMEN SOURCES | TOTAL | POSITIVE EIA | % | POSITIVE WB | % |
|---|---|---|---|---|---|
| HEALTH DEPARTMENTS AND CLINICS | 2,571 | 128 | 4.98% | 115 | 89.84% |
| HOSPITALS | 143 | 5 | 3.50% | 5 | 100.00% |
| DETENTION CENTERS | 661 | 8 | 1.21% | 5 | 62.50% |
| PRIVATE PHYSICIANS | 8 | 0 | 0.00% | 0 | 0.00% |
| STUDENT HEALTH CLINICS | 368 | 2 | 0.54% | 1 | 50.00% |
| EMPLOYEE HEALTH CLINICS | 21 | 0 | 0.00% | 0 | 0.00% |
| AUTOPSIES | 314 | 9 | 2.87% | 4 | 44.44% |
| ORGAN/TISSUE DONORS | 67 | 0 | 0.00% | 0 | 0.00% |
| **TOTAL** | **4,153** | **152** | **3.66%** | **130** | **85.53%** |

## ENVIRONMENTAL CHEMISTRY

| SAMPLES | # NON-COMPLIANT | # TESTED |
|---|---|---|
| **ASBESTOS** | | |
| AIR | 0 | 0 |
| BULK | 5 | 8 |
| **AIR QUALITY** | | |
| $PM_{2.5}$ | 0 | 465 |
| $PM_{10}$ | 0 | 0 |
| **RADIATION** | | |
| AIR/CHARCOAL FILTERS | 0 | 72 |
| MILK | 0 | 4 |
| WIPES | 0 | 53 |
| RAW WATER | 0 | 12 |
| VEGETATION | 0 | 0 |
| OTHER | 0 | 0 |
| **DRINKING WATER** | | |
| **METALS** | | |
| COMMUNITY | 20 | 95 |
| NON-COMMUNITY | 1 | 25 |
| PRIVATE WELLS | 61 | 213 |
| **PESTICIDES & PCBs** | | |
| COMMUNITY | 0 | 77 |
| NON-COMMUNITY | 0 | 24 |
| PRIVATE WELLS | 0 | 5 |
| **VOLATILE ORGANIC COMPOUNDS** | | |
| COMMUNITY | 1 | 378 |
| NON-COMMUNITY | 0 | 101 |
| PRIVATE WELLS | 0 | 131 |
| **RADIATION** | | |
| COMMUNITY | 30 | 71 |
| NON-COMMUNITY | 0 | 0 |
| PRIVATE WELLS | 5 | 9 |
| **INORGANICS** | | |
| COMMUNITY | 0 | 9 |
| NON-COMMUNITY | 3 | 42 |
| PRIVATE WELLS | 2 | 347 |
| **FOOD CHEMISTRY** | | |
| SUSPECTED TAMPERING | 0 | 0 |
| MICROSCOPIC FILTH | 0 | 0 |
| LABELING | 0 | 0 |
| SURVEILLANCE | 0 | 0 |
| CHEMICAL CONTAMINATION | 0 | 2 |
| **TOTAL** | **128** | **2,143** |

## LEAD ENVIRONMENTAL

| TEST | # | ELEV | BRL | UNSAT |
|---|---|---|---|---|
| TOTAL PAINT | 2 | 2 | 0 | 0 |
| TOTAL SOIL | 4 | 3 | 0 | 0 |
| DUST | | | | |
| FLOOR | 400 | 30 | 342 | 2 |
| SILL | 599 | 29 | 511 | 0 |
| WELL | 330 | 22 | 227 | 0 |
| OTHER | 25 | 3 | 21 | 0 |
| TOTAL DUST | 1,354 | 84 | 1,101 | 2 |
| TOTAL SAMPLES | 1,360 | 89 | 1,101 | 2 |

INTERPRETATION OF RESULTS:
# = Number of Samples Received
ELEV= Elevated
BRL= Below Reporting Limit
UNSAT = Unsatisfactory
PAINT Positive in excess of 0.5%
SOIL Action level 400 - 5,000 ppm
DUST Clearance limits: Floor/Other 40 ug/sq ft
Window Sill 250 ug/sq ft
Window Well 400 ug/sq ft

## LEAD SCREENING - BLOOD LEAD

| CLASS | RANGE ug/dl | # TESTED |
|---|---|---|
| MARYLAND | | |
| I | <10 | 162 |
| IIA | 10-14 | 11 |
| IIB | 15-19 | 13 |
| III | 20-44 | 16 |
| IV | 45-69 | 2 |
| V | >69 | 0 |
| **TOTAL** | | **204** |
| WASHINGTON DC | | |
| I | <10 | 46 |
| IIA | 10-14 | 0 |
| IIB | 15-19 | 0 |
| III | 20-44 | 0 |
| IV | 45-69 | 0 |
| V | >69 | 0 |
| **TOTAL** | | **46** |

# VIRAL LOAD SPECIMENS (OCTOBER 2007)

| HIV–1 RNA Copies/ml | $<10^3$ | $10^3 – 10^4$ | $10^4 – 10^5$ | $>10^5$ | Totals |
|---|---|---|---|---|---|
| ALLEGANY COUNTY HEALTH DEPT. | 8 | 1 | 4 | 1 | 14 |
| BALTIMORE COUNTY HEALTH DEPT. | 1 | 0 | 0 | 0 | 1 |
| FREDERICK COUNTY HEALTH DEPT. | 3 | 1 | 0 | 0 | 4 |
| HOWARD COUNTY HEALTH DEPT. | 0 | 2 | 0 | 0 | 2 |
| MONTGOMERY COUNTY HEALTH DEPT. | 90 | 10 | 9 | 5 | 114 |
| PRINCE GEORGE'S COUNTY HEALTH DEPT. | 70 | 11 | 14 | 7 | 102 |
| WASHINGTON COUNTY HEALTH DEPT. | 3 | 0 | 1 | 0 | 4 |
| WICOMICO COUNTY HEALTH DEPT. | 0 | 0 | 1 | 1 | 2 |
| **SUBTOTALS** | **175** | **25** | **29** | **14** | **243** |
| DEPT. OF CORRECTIONS | 75 | 19 | 35 | 16 | 145 |
| **TOTALS** | **250** | **44** | **64** | **30** | **388** |

MAILING LABEL

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