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CRITICAL LINK

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Microbiological Stains; Gram Stain

One of the most important and widely used stains is the Gram-stain. It allows differentiation of bacteria by producing either a blue (violet) or a red color. The Gram-stain is one of the first steps used in the identification of bacteria.

The foundation for the Gram-stain was laid with the development of synthetic dyes in the late 19th century. Researchers looked for new applications for synthetic dyes, including their possible use for medical purposes. Paul Ehrlich studied dyes both for their staining properties and their medicinal value. One of the dyes that Ehrlich investigated was Gentian violet.

Building on Ehrlich's studies using Gentian violet, Hans Christian Gram began using this stain to observe its effects on certain tissues. Gram was looking for methods to stain kidney tubules to differentiate kidney tissue from urinary casts. Staining these tissues with Gentian violet, he hoped that once the stain was removed (with the use of alcohol) only cell nuclei would retain the stain's color. He found that this did not occur.

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Changes Within the Registration and Reports Unit

For more than fifty years, the Registration and Reports Unit of the Laboratories Administration has received and registered specimens. In the early years, log sheets were typed for the laboratory scientists. Later, the data was entered in a computer system. Laboratory results were expedited within the same room. Now all of this has changed.

Now the Registration and Reports Unit is divided into three working areas; Specimen Receiving, Specimen Registration, and Data Entry/Reporting. Approximately three years ago, for security purposes, Specimen Receiving relocated to the loading dock area of the building.

Once the planning for the new Laboratories Administration building began (see February 2005 issue of Critical Link, Vol. 5, No.2), it was inevitable more changes would be necessary. Dr. Jack DeBoy, Director of the Laboratories Administration, Mr. Michael Wajda, Deputy Director for Administrative and Regulatory Programs, and Ms. Denise Shackleford, Head of Support Services, decided it was time to find a new location for Specimen Registration within the laboratory building to provide staff with operations that more closely match those anticipated in the new building. After weeks of searching and some negotiating, a location was identified.

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Microbiological Stains; Gram Stain

All tissues lost the color of the stain. However, he did notice that some bacteria contained in the tissues did not lose color of the stain. This made them easier to differentiate from the surrounding tissue cells. This observation led to further research. Eventually Gram was able to describe two types of bacteria (Gram-positive and Gram-negative) based on color after staining. He published his findings in 1884 and the staining procedure he described became known as the Gram-stain.

Gram's work had immediate implications, especially in the study of lobar pneumonia (an infection of a lobe of the lung). Examination of lung tissue from patients with lobar pneumonia showed that bacteria were present in areas of inflammation. In some patients, these bacteria were primarily Gram-positive diplococci; while in others, the lung tissue contained many Gram-negative bacilli. These findings helped doctors understand the roles of various bacteria in causing lobar pneumonia.

The first step in Gram-staining a bacterial cell is preparation of the smear. A smear is prepared by taking a drop of liquid from a bacterial suspension and placing the drop on a clean, dry glass slide. For bacteria growing on solid media, a sterile swab or wooden applicator stick can be used to remove a small amount of growth and transfer it to the glass slide. This growth can be rubbed on the slide or emulsified in a drop of sterile water or saline solution. The material is allowed to dry and is then heat fixed. Care must be taken that the slide does not get too hot. Excessive heat can distort bacterial morphology, causing added stains not to work properly. Once the slide is cool, the selected stain can be applied.

A typical conventional Gram-stain procedure is listed below:

1. Using the fixed smear (described above), take the primary stain (Crystal violet) and flood the slide. Allow the stain to stay on the smear for one minute.
2. Remove the primary stain by rinsing with tap water.
3. Flood the slide with Gram's Iodine solution (mordant) and let stand for one minute.
4. Remove the mordant by rinsing with tap water.
5. Decolorize the slide until the solvent (95% acetone/ethyl alcohol, 50/50 mixture) running off the slide is colorless.
6. Rinse the slide with tap water.
7. Flood the slide with counterstain (safranin) for one minute.
8. Rinse the slide with tap water.
9. Allow slide to air dry.
10. Examine the smear under the microscope using an oil immersion lens.

The Gram-stain procedure used today is basically the same procedure developed by Gram. Changes in his procedure include changes in reagents and the timing of exposure of the specimen to these reagents. Crystal violet is used in place of Gentian violet because it is more stable and has a greater ability to differentiate bacteria. Gram's iodine was found to lose available iodine from the solution at a rapid rate. Creating stabilized Gram's iodine by adding polyvinylpyrrolidone to the Gram's iodine solution eliminated this problem.

Different laboratories or researchers may adjust reagent exposure time based on their experience and purpose for using the stain. However, the basic steps of the procedure remain unchanged. These steps include staining, adding a mordant, decolorizing, and counterstaining. Organisms that retain the original stain (blue or violet color) are classified as Gram-positive. Organisms that lose the original stain and are counterstained (red) are classified as Gram-negative.

Not all organisms react well to this procedure. Some do not stain or stain poorly (e.g., *Mycoplasma*, *Chlamydia*, *Rickettsia* and *Mycobacteria*). Some may require the use of different reagents to enhance the stain color. Staining *Campylobacter*, *Legionella*, and *Brucella* species is enhanced using fuchsin as a different counterstain instead of safranin.

The Gram-stain differentiates cells based on cell-wall permeability. It is believed that the cell walls of Gram-positive organisms are dehydrated by the use of the decolorizer. This causes a loss of permeability, resulting in retention of the crystal violet-iodine complex (organisms turn blue). Gram-negative bacteria have higher lipid contents in their cell walls. They become more permeable with the addition of the decolorizer. This increase in permeability allows these cells to take up the counterstain (organisms turn red).

Permeability is dependent on cell wall integrity. Factors that influence that integrity will affect the accuracy of the Gram-stain. One factor is the age of the cultured organism. Cultured cells that are 18–24 hours old are optimum for use in Gram-staining. Cells outside this range may produce Gram-stains that are difficult to discern or inaccurate. Other factors that affect cell wall integrity and Gram-stain accuracy include organisms that have undergone phagocytosis, organisms obtained from areas of inflammation, organisms exposed to antibiotic therapy, and organisms with autolytic enzyme systems. Specimen condition should be noted before starting the Gram-stain procedure.

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Microbiological Stains; Gram Stain

High quality Gram-stains are dependent on utilizing proper procedure and reagents. Care must be taken to avoid improper heat fixation, excessive washing between steps, prolonged decolorization, and excessive counterstaining. Reagents must be stable and mixed in the proper concentrations.

Quality control procedures must be in place to ensure high quality Gram-stains. Stain a prepared slide of a known Gram-negative organism (e.g., *Escherichia coli*) and a known Gram-positive organism (e.g., *Staphylococcus aureus*) using standard operating procedures and reagents to perform the Gram-stain. Examine the slide under the microscope. The Gram-stain reagents and procedures are satisfactory if anticipated results are observed. It is recommended that these quality con-

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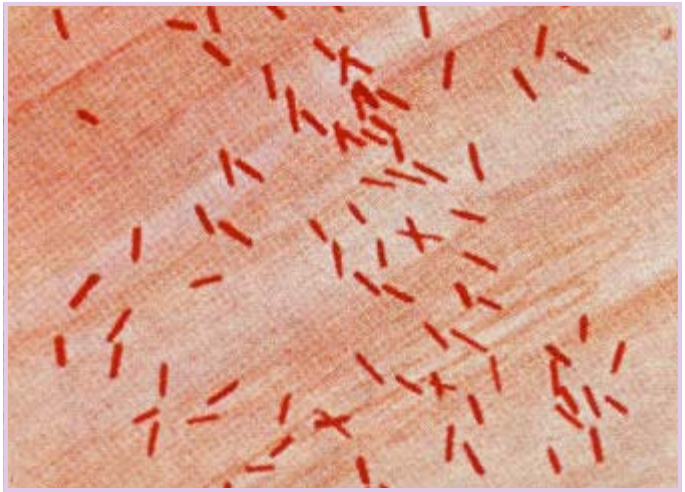
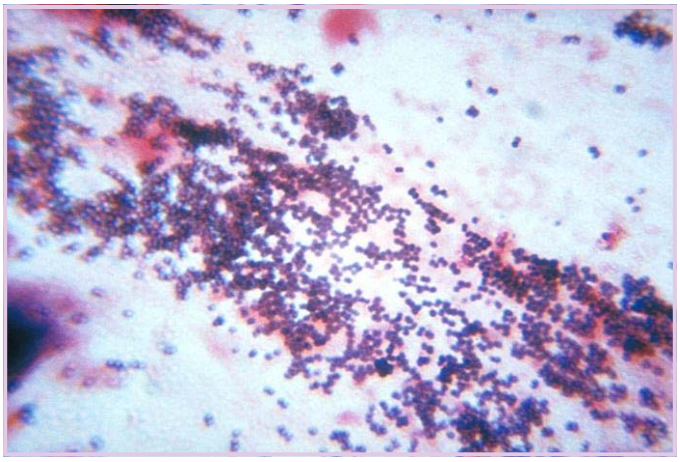


A photomicrograph of *Escherichia coli*, a Gram-negative bacterium, using Gram stain technique.



***Staphylococcus aureus* is a Gram-positive diplococcal organism. This sputum smear shows staphylococcus bacteria using Gram stain technique.**

Photos courtesy of the CDC Image Library.

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Microbiological Stains; Gram Stain

trol slides be stained daily and whenever a new reagent is used. These quality control slides can be used to check procedures and reagents when Gram-stains suddenly become difficult to discern or unreadable.

The Gram-stain is a rapid, simple procedure that provides great insight into bacterial identification. Once obtained, a Gram-stain result provides the basis for selecting further tests (biochemical, rapid identification, etc.) that will determine or verify bacteriological identity.

This article was written by Mark Massey.

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Changes Within the Registration and Reports Unit

Concerns of moving to a new location were discussed within the Unit and on September 18, 2006, Specimen Registration relocated to another floor within the existing Central Laboratory Tower. Although there were a few problems initially, these were resolved by the staff. The new area is working effectively and efficiently. The Specimen Registration area will be undergoing more change in the very near future. Laboratory Technicians will begin to work in this area. They will not only be handling specimen registration, but aliquoting specimen/samples and performing a number of other state laboratory functions. This process could not be developed in the previous area because space did not allow for centrifuges, biological safety cabinets, or fume hoods.

The changes are working well within the Administration and will make it easier to make the transition to the new laboratory facility.

This article written by Denise Shackleford.

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 11/01/06 - 11/30/06

ENTERIC BACTERIOLOGY

GENUS SEROVAR	SEX	AGE	#	JURISDICTION
CAMPYLOBACTER JEJUNI				
	F		1	ALLEGANY
	F	14	1	ANNE ARUNDEL
	F	34	1	BALTIMORE
	F	41	1	BALTIMORE
	M	74	1	CECIL
	M	62	1	CHARLES
	M	32	1	OUT OF STATE
ESCHERICHIA COLI O157:H7				
	M	51	1	HARFORD
	F		1	BALTIMORE CITY
	M		1	BALTIMORE CITY
	F	4	1	OUT OF STATE
SALMONELLA BERTA				
	M	54	1	BALTIMORE
	M	2	1	FREDERICK
SALMONELLA BRAENDERUP				
	M	2	1	BALTIMORE
	M	1	2	PRINCE GEORGE'S
	M	60	1	OUT OF STATE
SALMONELLA ENTERITIDIS				
	M	12	1	ALLEGANY
	M	48	1	ANNE ARUNDEL
	U	26	1	ANNE ARUNDEL
	F	4	1	BALTIMORE
	F	47	1	BALTIMORE
	M		1	BALTIMORE
	M	86	1	CECIL
	F	36	1	FREDERICK
	M	44	1	FREDERICK
	F	4	1	WASHINGTON
	F	48	1	WASHINGTON
	F		3	BALTIMORE CITY
	F	2	1	BALTIMORE CITY
	F	5	1	BALTIMORE CITY
	F	24	1	BALTIMORE CITY
	M		2	BALTIMORE CITY
	M	28	1	BALTIMORE CITY
	M	41	2	BALTIMORE CITY
	M	58	1	BALTIMORE CITY
	U		1	BALTIMORE CITY
	U	38	1	BALTIMORE CITY
	F	34	1	OUT OF STATE
	F		2	UNKNOWN
SALMONELLA GAMINARA				
	M	2	1	BALTIMORE CITY
SALMONELLA HADAR				
	M	72	1	BALTIMORE
	M	59	1	HARFORD
	M	21	1	PRINCE GEORGE'S
SALMONELLA HEIDELBERG				
	M	88	1	PRINCE GEORGE'S
	M	1	1	OUT OF STATE
SALMONELLA I 4,5,12:b:-				
	U		1	UNKNOWN

SALMONELLA JAVIANA			
M	2	2	ANNE ARUNDEL
M	77	1	ANNE ARUNDEL
F	65	1	DORCHESTER
M	29	1	PRINCE GEORGE'S
F		1	WORCESTER
F	5	1	OUT OF STATE
F	48	1	OUT OF STATE
SALMONELLA KIAMBU			
F	6	1	MONTGOMERY
SALMONELLA MBANDAKA			
M	19	1	BALTIMORE CITY
SALMONELLA MONTEVIDEO			
M	9	1	TALBOT
SALMONELLA NEWPORT			
F		1	MONTGOMERY
F	58	1	WICOMICO
F		1	OUT OF STATE
F	78	1	OUT OF STATE
M	36	1	OUT OF STATE
SALMONELLA NORWICH			
F	56	1	WICOMICO
SALMONELLA ORANIENBURG			
F		1	BALTIMORE
F	19	1	BALTIMORE
M		1	BALTIMORE CITY
M	23	1	OUT OF STATE
SALMONELLA PARATYPHI B			
F	42	1	MONTGOMERY
SALMONELLA PENARTH			
M		1	BALTIMORE CITY
SALMONELLA TELELKEBIR			
F	43	1	PRINCE GEORGE'S
F	5	1	BALTIMORE CITY
M		1	BALTIMORE CITY
U		1	BALTIMORE CITY
SALMONELLA THOMPSON			
F		1	DORCHESTER
F	27	1	OUT OF STATE
SALMONELLA TSHIONGWE			
F	42	1	PRINCE GEORGE'S
SALMONELLA TYPHI			
F	38	1	ANNE ARUNDEL
M	5	1	ANNE ARUNDEL
M	6	1	ANNE ARUNDEL
F	2	1	BALTIMORE
SALMONELLA TYPHIMURIUM			
F		1	ANNE ARUNDEL
F	2	1	BALTIMORE
F	82	1	BALTIMORE
M	4	1	HOWARD
M		1	BALTIMORE CITY
F	2	1	OUT OF STATE
F	64	1	OUT OF STATE
F	67	1	OUT OF STATE
U	8	1	OUT OF STATE
SALMONELLA TYPHIMURIUM VAR COPENHAGEN			
F	3	1	WICOMICO
F	5	1	BALTIMORE CITY
F	1	1	OUT OF STATE
M		1	OUT OF STATE
SALMONELLA UNTYPABLE			
M	16	1	CHARLES
F	58	1	MONTGOMERY
M	82	1	TALBOT
SALMONELLA 4,5,12:i:-			
M	15	1	ANNE ARUNDEL
F	78	1	BALTIMORE
M	8	1	BALTIMORE
M	16	1	BALTIMORE
M	25	1	MONTGOMERY
F	66	1	BALTIMORE CITY
M	21	1	OUT OF STATE
SHIGELLA BOYDII 2			
U		1	ANNE ARUNDEL
SHIGELLA FLEXNERI III:(3,4),6,7,8			
M	40	1	BALTIMORE CITY
F	14	1	OUT OF STATE
SHIGELLA FLEXNERI VAR Y -:3,4			
M	53	1	ANNE ARUNDEL
SHIGELLA FLEXNERI VI:(4)			
U	5	1	BALTIMORE
SHIGELLA SONNEI			
F		1	MONTGOMERY
M	5	1	PRINCE GEORGE'S
F	4	1	BALTIMORE CITY
F	26	1	OUT OF STATE
VIBRIO ALGINOLYTICUS			
U	18	1	BALTIMORE
VIBRIO FLUVIALIS			
F	81	1	WICOMICO
VIBRIO PARAHAEMOLYTICUS			
U	65	1	BALTIMORE
TOTAL		**121**	

ISOLATES – THROAT CULTURES

COUNTY	GROUP A[1]	NON-GROUP A
ALLEGANY	3	18
ANNE ARUNDEL	0	1
BALTIMORE CITY	3	0
BALTIMORE	2	0
MONTGOMERY	1	2
PRINCE GEORGE'S	1	4
SOMERSET	1	3
WICOMICO	1	8
TOTAL	**12**	**36**

[1] *Streptococcus pyogenes*

BACTERIOLOGY IDENTIFICATIONS
Referrals

GENUS SPECIES SOURCE	#	JURISDICTION
HAEMOPHILUS INFLUENZAE NON-TYPEABLE		
BLOOD	1	ANNE ARUNDEL
BLOOD	1	MONTGOMERY
BLOOD	1	PRINCE GEORGE'S
BLOOD	1	WASHINGTON
CSF	1	ANNE ARUNDEL
CYST	1	PRINCE GEORGE'S
HAEMOPHILUS INFLUENZAE SEROTYPE F		
BLOOD	1	MONTGOMERY
TOTAL	**7**	

ISOLATES – MISCELLANEOUS

GENUS SPECIES SOURCE	#	JURISDICTION
ACINETOBACTER CALCOACETICUS-BAUMANNII COMPLEX		
FOOT	2	FREDERICK
ACINETOBACTER LWOFFII		
TOE	2	FREDERICK

AEROBIC GRAM NEGATIVE RODS		
BLOOD	7	BALTIMORE CITY
BACILLUS CEREUS		
CSF	1	BALTIMORE CITY
BACILLUS SPECIES		
FOOT	1	FREDERICK
CORYNEBACTERIUM SPECIES		
EAR	1	BALTIMORE
ENTEROBACTER CLOACAE		
BLOOD	1	BALTIMORE CITY
TOE	1	FREDERICK
ENTEROBACTER HORMAECHEI		
BLOOD	1	BALTIMORE CITY
ENTEROCOCCUS FAECALIS		
BLOOD	2	BALTIMORE CITY
TOE	1	FREDERICK
ENTEROCOCCUS FAECIUM		
BLOOD	1	BALTIMORE CITY
ENTEROCOCCUS GALLINARUM		
BLOOD	2	BALTIMORE CITY
ESCHERICHIA COLI		
BLOOD	3	BALTIMORE CITY
CSF	1	BALTIMORE CITY
WOUND	1	BALTIMORE CITY
FOOT	1	FREDERICK
VAGINAL	1	SOMERSET
GARDNERELLA VAGINALIS		
VAGINAL	1	MONTGOMERY
VAGINAL	1	PRINCE GEORGE'S
VAGINAL	4	SOMERSET
HAEMOPHILUS SPECIES		
URETHRAL	1	CECIL
KLEBSIELLA OXYTOCA		
TOE	1	FREDERICK
KLEBSIELLA PNEUMONIAE		
BLOOD	1	BALTIMORE CITY
SKIN	1	MONTGOMERY
MORGANELLA MORGANII		
FOOT	1	FREDERICK
PANTOEA AGGLOMERANS		
TOE	1	FREDERICK
PROTEUS MIRABILIS		
FOOT	2	FREDERICK
PROTEUS SPECIES		
VAGINAL	2	PRINCE GEORGE'S
SPUTUM	1	WASHINGTON
PROTEUS VULGARIS		
TOE	1	FREDERICK
PSEUDOMONAS AERUGINOSA		
BREAST	1	CALVERT
EAR	1	CARROLL
LEG	1	CARROLL
TOE	3	FREDERICK
RHIZOBIUM RADIOBACTER		
TOE	1	FREDERICK
SERRATIA MARCESCENS		
SPUTUM	1	WASHINGTON
STAPHYLOCOCCUS AUREUS		
WOUND	2	BALTIMORE
BLOOD	3	BALTIMORE CITY
CSF	1	BALTIMORE CITY
LUNG	1	BALTIMORE CITY
SKIN	2	BALTIMORE CITY
FOOT	1	FREDERICK
SKIN	1	FREDERICK
TOE	4	FREDERICK
WOUND	1	MONTGOMERY
SKIN	1	MONTGOMERY
WOUND	1	PRINCE GEORGE'S
BLOOD	1	WASHINGTON
STAPHYLOCOCCUS EPIDERMIDIS		
BLOOD	1	BALTIMORE CITY
STAPHYLOCOCCUS SPECIES		
BLOOD	1	BALTIMORE CITY
CSF	2	BALTIMORE CITY
ABSCESS	1	CARROLL
PENIS	1	CECIL
FOOT	1	FREDERICK
TOE	3	FREDERICK
WOUND	1	FREDERICK
WOUND	1	MONTGOMERY
BREAST	1	PRINCE GEORGE'S
STENOTROPHOMONAS MALTOPHILIA		
TOE	2	FREDERICK
STREPTOCOCCUS ALPHA-HEMOLYTIC		
BLOOD	5	BALTIMORE CITY
STREPTOCOCCUS BETA-HEMOLYTIC GROUP B		
VAGINAL	3	ANNE ARUNDEL
BLOOD	1	BALTIMORE CITY
TOE	1	FREDERICK
VAGINAL	2	HOWARD
VAGINAL	2	MONTGOMERY
CERVICAL	1	PRINCE GEORGE'S
VAGINAL	2	PRINCE GEORGE'S
VAGINAL	4	SOMERSET
STREPTOCOCCUS INTERMEDIUS		
BLOOD	1	BALTIMORE CITY
STREPTOCOCCUS NON-HEMOLYTIC		
BLOOD	4	BALTIMORE CITY
STREPTOCOCCUS ORALIS		
BLOOD	1	BALTIMORE CITY
STREPTOCOCCUS SALIVARIUS		
BLOOD	1	BALTIMORE CITY
WOUND	1	BALTIMORE CITY
TOTAL	**119**	

SEXUALLY TRANSMITTED DISEASES

GENUS SPECIES	SEX	#	JURISDICTION
NEISSERIA GONORRHEAE			
	F	4	ANNE ARUNDEL
	M	2	ANNE ARUNDEL
	F	3	BALTIMORE
	M	2	BALTIMORE
	F	1	CALVERT
	F	2	CAROLINE
	M	2	CAROLINE
	F	1	CARROLL
	M	2	CECIL
	U	1	CECIL
	F	1	CHARLES
	M	2	CHARLES
	F	4	DORCHESTER
	M	2	DORCHESTER
	F	1	HARFORD
	M	2	HARFORD
	F	1	KENT
	M	1	HOWARD
	F	2	MONTGOMERY
	M	2	MONTGOMERY
	F	13	PRINCE GEORGE'S
	M	31	PRINCE GEORGE'S
	F	1	QUEEN ANNE'S
	M	0	QUEEN ANNE'S
	M	1	ST. MARY'S
	F	1	WASHINGTON CO
	F	6	WICOMICO
	M	4	WICOMICO
	F	1	WORCESTER
	M	4	WORCESTER
	F	3	BALTIMORE CITY
	M	6	BALTIMORE CITY
TOTAL		**109**	

SYPHILIS SEROLOGY

M	1	ALLEGANY
F	8	ANNE ARUNDEL
M	7	ANNE ARUNDEL
F	7	BALTIMORE
M	16	BALTIMORE
F	2	CALVERT
F	1	CAROLINE
M	1	CARROLL
M	2	CHARLES
M	1	DORCHESTER
F	2	HARFORD
M	1	HARFORD
M	4	HOWARD
F	4	MONTGOMERY
M	8	MONTGOMERY
U	1	MONTGOMERY
F	8	PRINCE GEORGE'S
M	17	PRINCE GEORGE'S
M	2	QUEEN ANNE'S
M	1	ST. MARY'S
M	1	SOMERSET
M	1	TALBOT
F	2	WASHINGTON
F	5	WICOMICO
M	1	WICOMICO
F	2	WORCESTER
F	23	BALTIMORE CITY
M	50	BALTIMORE CITY
U	1	BALTIMORE CITY
F	2	OUT OF STATE
M	3	OUT OF STATE
TOTAL	**185**	

CHLAMYDIA TRACHOMATIS

F	3	ALLEGANY
M	5	ALLEGANY
F	17	ANNE ARUNDEL
M	9	ANNE ARUNDEL
U	1	ANNE ARUNDEL
F	21	BALTIMORE
M	10	BALTIMORE
F	4	CALVERT
M	1	CALVERT
F	5	CAROLINE
M	2	CAROLINE
F	1	CARROLL
F	1	CECIL
M	2	CECIL
U	1	CECIL
F	11	CHARLES
M	3	CHARLES
F	3	DORCHESTER
M	2	DORCHESTER
F	8	FREDERICK
M	1	FREDERICK
F	1	GARRETT
M	1	GARRETT
F	9	HARFORD
M	3	HARFORD
F	6	HOWARD
M	2	HOWARD
M	2	KENT
F	18	MONTGOMERY
M	10	MONTGOMERY
F	59	PRINCE GEORGE'S
M	31	PRINCE GEORGE'S
F	3	QUEEN ANNE'S
F	2	ST. MARY'S
M	2	ST. MARY'S
F	4	SOMERSET
M	1	SOMERSET
F	5	TALBOT
F	3	WASHINGTON
M	6	WASHINGTON
F	17	WICOMICO
M	10	WICOMICO
F	3	WORCESTER
M	1	WORCESTER
F	9	BALTIMORE CITY
M	22	BALTIMORE CITY
U	2	BALTIMORE CITY
F	3	OUT OF STATE
TOTAL	**346**	

MYCOBACTERIOLOGY

GENUS SPECIES

SEX	AGE	#	JURISDICTION
MYCOBACTERIUM TUBERCULOSIS			
F	67	1	ANNE ARUNDEL
M	49	1	CECIL
F	31	1	MONTGOMERY
F	44	1	MONTGOMERY
M	42	1	OUT OF STATE
MYCOBACTERIUM TUBERCULOSIS COMPLEX			
F	34	1	BALTIMORE
F	66	1	BALTIMORE
F	82	1	BALTIMORE
F	28	1	CAROLINE
F	48	1	CECIL
M	80	1	HOWARD
F	25	1	MONTGOMERY
F	31	1	MONTGOMERY
F	37	1	MONTGOMERY
F	44	1	MONTGOMERY
F	71	1	MONTGOMERY
M	36	1	MONTGOMERY
M	40	1	MONTGOMERY
M	59	1	MONTGOMERY
M	63	1	MONTGOMERY
F	22	1	PRINCE GEORGE'S
F	29	1	PRINCE GEORGE'S
M	26	1	PRINCE GEORGE'S
M	28	1	PRINCE GEORGE'S
M	71	1	PRINCE GEORGE'S
F	27	1	BALTIMORE CITY
M	41	1	BALTIMORE CITY
M	55	1	BALTIMORE CITY
U		1	OUT OF STATE
MYCOBACTERIUM ABSCESSUS			
F	73	1	BALTIMORE CITY
M	60	1	OUT OF STATE
MYCOBACTERIUM AVIUM COMPLEX			
F	79	1	ALLEGANY
F	43	2	ANNE ARUNDEL
F	38	1	BALTIMORE
F	43	1	BALTIMORE
F	84	1	BALTIMORE
F	81	1	FREDERICK
M	75	1	FREDERICK
M	60	1	HOWARD
M	81	1	HOWARD
F	83	1	MONTGOMERY
M	37	1	MONTGOMERY
F	38	1	PRINCE GEORGE'S
F	60	1	PRINCE GEORGE'S
M	20	1	PRINCE GEORGE'S
F	75	1	SOMERSET
M	55	1	SOMERSET
F	66	1	WASHINGTON
F	59	1	WICOMICO
F	69	1	WICOMICO
M	67	1	WORCESTER

F	27	1	BALTIMORE CITY
F	31	2	BALTIMORE CITY
F	32	1	BALTIMORE CITY
F	33	1	BALTIMORE CITY
F	38	1	BALTIMORE CITY
F	48	1	BALTIMORE CITY
F	86	1	BALTIMORE CITY
M	57	1	BALTIMORE CITY
M	46	1	OUT OF STATE
MYCOBACTERIUM FORTUITUM			
M	9	1	ANNE ARUNDEL
M	58	1	CALVERT
M	55	1	CECIL
M	62	1	HARFORD
M	31	1	HOWARD
F	25	1	BALTIMORE CITY
F	33	1	BALTIMORE CITY
M	47	1	BALTIMORE CITY
M	54	1	OUT OF STATE
M	68	1	OUT OF STATE
MYCOBACTERIUM FORTUITUM COMPLEX			
F	48	1	BALTIMORE CITY
F	85	1	BALTIMORE CITY
M	66	1	BALTIMORE CITY
MYCOBACTERIUM GORDONAE			
M	73	1	ANNE ARUNDEL
F	82	1	BALTIMORE
F	84	1	BALTIMORE
F	63	1	CECIL
F	74	1	FREDERICK
F	31	1	MONTGOMERY
F	40	1	MONTGOMERY
F	45	1	MONTGOMERY
F	63	1	MONTGOMERY
F	70	1	WASHINGTON
F	49	1	BALTIMORE CITY
M	82	1	BALTIMORE CITY
MYCOBACTERIUM KANSASII			
M	30	1	BALTIMORE CITY
M	51	1	OUT OF STATE
MYCOBACTERIUM MARINUM			
F	71	1	BALTIMORE
M	69	1	TALBOT
MYCOBACTERIUM XENOPI			
U	44	1	WASHINGTON
TOTAL		**92**	

MYCOLOGY

GENUS SPECIES			
SEX	AGE	#	JURISDICTION
ABSIDIA SP			
M	20	1	OUT OF STATE
AEROBIC ACTINOMYCETES			
M	46	1	BALTIMORE
ALTERNARIA SP			
F	61	1	OUT OF STATE
ASPERGILLUS FLAVUS			
F	92	1	TALBOT
ASPERGILLUS FUMIGATUS			
F	39	2	ALLEGANY
M		1	CECIL
F	37	1	CHARLES
F	71	1	MONTGOMERY
F	58	1	PRINCE GEORGE'S
F	81	1	QUEEN ANNE'S
F	69	1	TALBOT
M	68	2	TALBOT

MYCOBACTERIUM SUSCEPTIBILITY RESULTS

DURING THE MONTH OF NOVEMBER, 2006, SUSCEPTIBILITY RESULTS ON 21 ISOLATES OF *M. TUBERCULOSIS* COMPLEX * WERE IDENTIFIED.

TOTAL: 9 DRUG RESISTANT STRAINS FOUND

#	COUNTY	DRUG
1[A]	ALLEGANY	® to PYRAZINAMIDE
1	ANNE ARUNDEL	® to STREPTOMYCIN
3[B]	MONTGOMERY	® to STREPTOMYCIN
1	MONTGOMERY	® to STREPTOMYCIN, ISONIAZID and PARA AMINOSALICYLIC ACID
1	MONTGOMERY	® to ISONIAZID
1	PRINCE GEORGE'S	® to STREPTOMYCIN
1	BALTIMORE CITY	® 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

ASPERGILLUS NIGER			
F	70	1	CECIL
M	72	1	BALTIMORE CITY
ASPERGILLUS OCHRACEUS			
M	87	1	TALBOT
ASPERGILLUS VERSICOLOR GROUP			
M		1	ANNE ARUNDEL
M	27	1	ANNE ARUNDEL
M	29	1	ANNE ARUNDEL
M	54	1	ANNE ARUNDEL
M	77	1	ANNE ARUNDEL
M		1	WICOMICO
CANDIDA ALBICANS			
F	18	1	ANNE ARUNDEL
M	38	1	CALVERT
F	15	1	CECIL
F	26	1	CECIL
M	35	1	HOWARD
F	34	1	MONTGOMERY
F	66	1	MONTGOMERY
F	18	3	PRINCE GEORGE'S
F	19	2	PRINCE GEORGE'S
F	49	1	PRINCE GEORGE'S
F	56	1	PRINCE GEORGE'S
F	59	2	PRINCE GEORGE'S
F	73	1	PRINCE GEORGE'S
F	79	1	PRINCE GEORGE'S
F	18	6	SOMERSET
F	19	1	SOMERSET
F	20	1	SOMERSET
F	21	2	SOMERSET
F	22	1	SOMERSET
M		1	BALTIMORE CITY
M	36	1	BALTIMORE CITY
M	57	1	BALTIMORE CITY
M	70	1	BALTIMORE CITY

M	77	1	BALTIMORE CITY
U		1	BALTIMORE CITY
F	19	1	OUT OF STATE
M	80	1	OUT OF STATE
CANDIDA FAMATA (T. CANDIDA)			
F	21	1	MONTGOMERY
CANDIDA GLABRATA			
U	57	1	ANNE ARUNDEL
F	58	1	PRINCE GEORGE'S
F	38	1	BALTIMORE CITY
M	88	1	BALTIMORE CITY
CANDIDA LUSITANIAE			
F	21	1	MONTGOMERY
CANDIDA PARAPSILOSIS			
F	79	1	PRINCE GEORGE'S
M	71	1	PRINCE GEORGE'S
M	59	1	BALTIMORE CITY
CANDIDA SP (NOT C. ALBICANS)			
F	39	1	PRINCE GEORGE'S
CANDIDA TROPICALIS			
M	82	1	CECIL
M		1	BALTIMORE CITY
CHRYSOSPORIUM SP			
U		1	ANNE ARUNDEL
F	39	1	TALBOT
CLADOSPORIUM SP			
M	72	1	ANNE ARUNDEL
CRYPTOCOCCUS SP (NOT NEOFORMANS)			
M		1	WICOMICO
CURVULARIA SP			
F	80	1	TALBOT
M	64	1	TALBOT
ENGYODONTIUM ALBUM			
M	20	1	BALTIMORE
M		1	WICOMICO
EPICOCCUM SP			
M	72	1	CARROLL
EXOPHIALA JEANSELMEI			
F	67	1	QUEEN ANNE'S
HISTOPLASMA CAPSULATUM			
M	38	1	PRINCE GEORGE'S
MICROSPORUM CANIS			
M	10	1	ALLEGANY
MUCOR SP			
F	59	1	PRINCE GEORGE'S
U	83	1	WICOMICO
NOCARDIA ASTEROIDES COMPLEX			
M	79	1	MONTGOMERY
NOCARDIA FARCINICA			
M	74	1	CAROLINE
NOCARDIA NOVA			
M	45	1	BALTIMORE CITY
PAECILOMYCES SP			
M	59	1	OUT OF STATE
PAECILOMYCES VARIOTTII			
F	28	1	QUEEN ANNE'S
PENICILLIUM SP			
F		1	ANNE ARUNDEL
M	40	1	ANNE ARUNDEL
M	80	1	FREDERICK
M	29	1	PRINCE GEORGE'S
M	55	1	PRINCE GEORGE'S
F	65	1	TALBOT
M	35	1	TALBOT
M	59	1	TALBOT
M	74	1	TALBOT
M	87	1	TALBOT
M		1	WICOMICO
M	56	1	BALTIMORE CITY
M	72	1	BALTIMORE CITY
F	61	1	OUT OF STATE
M	60	1	OUT OF STATE
PESTALOTIA SP			
F	70	1	WICOMICO
PITHOMYCES SP			
M	72	1	CARROLL
SCEDOSPORIUM APIOSPERMUM			
F	67	1	ANNE ARUNDEL
SCOPULARIOPSIS SP			
F	80	1	TALBOT
M	39	1	TALBOT
STREPTOMYCES SP			
F	81	1	TALBOT
TRICHOPHYTON MENTAGROPHYTES			
M	56	1	ALLEGANY
M	73	1	CARROLL
TRICHOPHYTON RUBRUM			
F	29	1	DORCHESTER
F	34	1	TALBOT
F	57	1	TALBOT
TRICHOPHYTON TONSURANS			
F	2	1	ALLEGANY
M	7	1	BALTIMORE
TRICHOSPORON INKIN			
F	19	1	PRINCE GEORGE'S
TRICHOSPORON MUCOIDES			
F	19	1	SOMERSET
TOTAL		**121**	

PARASITOLOGY

GENUS SPECIES	#	JURISDICTION
PROTOZOA		
BLASTOCYSTIS HOMINIS		
	1	BALTIMORE CITY
	1	MONTGOMERY
	1	PRINCE GEORGE'S
ENDOLIMAX NANA		
	1	MONTGOMERY
	5	PRINCE GEORGE'S
	2	WASHINGTON
ENTAMOEBA COLI		
	3	PRINCE GEORGE'S
ENTAMOEBA HARTMANNI		
	1	BALTIMORE CITY
GIARDIA LAMBLIA		
	4	WICOMICO
IODAMOEBA BUTSCHLII		
	1	PRINCE GEORGE'S
TOTAL	**20**	
NEMATODES		
NECATOR AMERICANUS		
	2	MONTGOMERY
TRICHURIS TRICHIURA		
	1	PRINCE GEORGE'S
TOTAL	**3**	

TICK IDENTIFICATION

NONE

WATER MICROBIOLOGY

	# TESTED	**# NON-COMPLIANT**
COMMUNITY	8	0
NON-COMMUNITY	270	107
TOTAL	**278**	**107**

FOOD SAFETY

FOOD AND SHELLFISH MICROBIOLOGY

	# OF SAMPLES	NOTABLE PATHOGENS
FOOD	1	0
		# STANDARDS EXCEEDED *
CRABMEAT	0	0
		# STANDARDS EXCEEDED **
SHELLFISH	0	0
SHELLFISH GROWING WATERS	141	
OTHER	18	0
WATER SAMPLES FOR STANDARD PLATE COUNT		
TOTAL	**160**	**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
INFLUENZA A				
	M	63	1	FREDERICK
	F	1	1	MONTGOMERY
	F	22	1	MONTGOMERY
	M		1	BALTIMORE CITY
SUBTOTAL			**4**	
ADENOVIRUS				
	M	2	1	MONTGOMERY
	U		2	MONTGOMERY
	U	4	1	MONTGOMERY
SUBTOTAL			**4**	
PARAINFLUENZA TYPE 1				
	F	45	1	BALTIMORE CITY
SUBTOTAL			**1**	
PARAINFLUENZA TYPE 3				
	M		1	MONTGOMERY
	U		1	MONTGOMERY
SUBTOTAL			**2**	
RESPIRATORY SYNCITIAL VIRUS				
	M		1	MONTGOMERY
	U		1	MONTGOMERY
SUBTOTAL			**2**	
HERPES SIMPLEX UNTYPABLE				
	F	24	1	MONTGOMERY
	M	27	1	MONTGOMERY
	F	22	1	BALTIMORE CITY
	F	27	1	BALTIMORE CITY
	F	45	1	BALTIMORE CITY
SUBTOTAL			**5**	
COXSACKIE				
	F	32	1	FREDERICK
SUBTOTAL			**1**	
ECHOVIRUS				
	M	30	1	ANNE ARUNDEL
	M		1	BALTIMORE CITY
SUBTOTAL			**2**	
HERPES SIMPLEX I				
	F	18	1	ALLEGANY
	F	24	1	ANNE ARUNDEL
	M	27	1	ANNE ARUNDEL
	F	24	1	BALTIMORE
	M	22	1	BALTIMORE
	F	28	1	CALVERT
	M	22	1	CARROLL
	F	20	1	FREDERICK
	F	19	1	PRINCE GEORGE'S
	F	20	1	PRINCE GEORGE'S
	F	21	1	PRINCE GEORGE'S
	M	20	1	TALBOT
	F	21	1	WASHINGTON
	F	16	1	WICOMICO
	F	19	1	WICOMICO
	F	19	2	BALTIMORE CITY
	F	21	2	BALTIMORE CITY
	F	23	1	BALTIMORE CITY
	F	24	1	BALTIMORE CITY
	F	25	1	BALTIMORE CITY
	F	32	1	BALTIMORE CITY
	M	22	1	BALTIMORE CITY
	M	28	1	BALTIMORE CITY
	F	15	1	UNKNOWN
SUBTOTAL			**26**	
HERPES SIMPLEX II				
	F	22	1	ANNE ARUNDEL
	F	21	1	BALTIMORE
	F	22	2	BALTIMORE
	F	23	1	BALTIMORE
	F	25	1	BALTIMORE
	F	33	1	BALTIMORE

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.

M	22	1	BALTIMORE
M	18	1	CAROLINE
F	35	1	CARROLL
F	20	1	CECIL
F	23	1	CHARLES
F	27	1	CHARLES
F	20	1	FREDERICK
F	30	1	FREDERICK
F		1	MONTGOMERY
F	29	1	MONTGOMERY
F	35	1	MONTGOMERY
F	18	2	PRINCE GEORGE'S
F	19	1	PRINCE GEORGE'S
F	20	1	PRINCE GEORGE'S
F	22	1	PRINCE GEORGE'S
F	23	1	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
F	25	1	PRINCE GEORGE'S
F	27	1	PRINCE GEORGE'S
F	31	1	PRINCE GEORGE'S
M	23	1	PRINCE GEORGE'S
M	27	1	PRINCE GEORGE'S
M	65	1	PRINCE GEORGE'S
U	26	1	PRINCE GEORGE'S
F	17	1	ST. MARY'S
F	26	1	ST. MARY'S
F	16	1	WICOMICO
F	18	1	WICOMICO
F	25	1	WICOMICO
F	26	1	WICOMICO
F	32	1	WICOMICO
F	16	1	BALTIMORE CITY
F	19	1	BALTIMORE CITY
F	21	2	BALTIMORE CITY
F	24	1	BALTIMORE CITY
F	25	1	BALTIMORE CITY
F	29	1	BALTIMORE CITY
F	30	1	BALTIMORE CITY
F	31	1	BALTIMORE CITY
F	32	1	BALTIMORE CITY
F	50	1	BALTIMORE CITY
M	16	1	BALTIMORE CITY
M	17	1	BALTIMORE CITY
M	19	2	BALTIMORE CITY
M	20	2	BALTIMORE CITY
M	22	1	BALTIMORE CITY
M	25	1	BALTIMORE CITY
M	26	1	BALTIMORE CITY
M	30	1	BALTIMORE CITY
M	32	1	BALTIMORE CITY
M	49	1	BALTIMORE CITY
M	57	1	BALTIMORE CITY
U	22	1	BALTIMORE CITY
F	22	1	OUT OF STATE
SUBTOTAL		**65**	
TOTAL		**112**	

VIRAL HEPATITIS

ORGANISM	# OF SPECIMENS	POSITIVES	JURISDICTION
HEPATITIS A			
	2	0	ALLEGANY
	1	0	ANNE ARUNDEL
	17	0	BALTIMORE
	2	0	CARROLL
	2	0	HOWARD
	1	0	MONTGOMERY
	2	0	PRINCE GEORGE'S
	3	0	SOMERSET
	1	0	TALBOT
	1	0	WASHINGTON
	2	0	WICOMICO
	6	0	BALTIMORE CITY
SUBTOTAL	**40**	**0**	
HEPATITIS B			
	22	1	ALLEGANY
	105	2	ANNE ARUNDEL
	105	3	BALTIMORE
	8	0	CALVERT
	13	1	CAROLINE
	32	1	CARROLL
	104	0	CECIL
	5	0	CHARLES
	1	0	DORCHESTER
	80	0	FREDERICK
	19	0	GARRETT
	30	1	HARFORD
	44	1	HOWARD
	254	6	MONTGOMERY
	300	7	PRINCE GEORGE'S
	2	0	QUEEN ANNE'S
	16	0	SOMERSET
	8	0	TALBOT
	51	2	WASHINGTON
	117	0	WICOMICO
	4	0	WORCESTER
	347	8	BALTIMORE CITY
	12	0	OUT OF STATE
SUBTOTAL	**1,679**	**33**	
HEPATITIS C			
	20	8	ALLEGANY
	150	54	ANNE ARUNDEL
	114	13	BALTIMORE
	6	1	CALVERT
	13	0	CAROLINE
	39	8	CARROLL
	42	7	CECIL
	5	0	CHARLES
	1	0	DORCHESTER
	84	4	FREDERICK
	18	1	GARRETT
	23	1	HARFORD
	22	1	HOWARD
	37	5	MONTGOMERY
	191	3	PRINCE GEORGE'S
	2	0	QUEEN ANNE'S
	9	0	ST. MARY'S
	30	9	SOMERSET
	10	0	TALBOT
	58	28	WASHINGTON
	22	1	WICOMICO
	2	0	WORCESTER
	409	128	BALTIMORE CITY
	8	0	OUT OF STATE
SUBTOTAL	**1,315**	**272**	
TOTAL	**3,034**	**305**	

CHLAMYDOPHILIA (CHLAMYDIA) PSITTACI

REPORTED QUARTERLY
NO REPORT THIS QUARTER

RABIES

SOURCE	#	JURISDICTION
CAT	1	FREDERICK
	1	GARRETT
	1	SOMERSET
FOX	1	BALTIMORE
	1	FREDERICK
RACCOON	2	BALTIMORE
	1	CECIL
	1	CHARLES
	1	DORCHESTER
	2	FREDERICK
	3	GARRETT
	5	MONTGOMERY
	1	WICOMICO
	1	WORCESTER
	1	BALTIMORE CITY
SKUNK	1	CHARLES
	1	FREDERICK
	1	QUEEN ANNE'S
TOTAL POSITIVES	**26**	
TOTAL SPECIMENS	**326**	

CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY
NO REPORT THIS MONTH

This Gram-stained smear depicts *N. gonorrhoeae* gonococci from a patient diagnosed with acute gonococcal urethritis. Diagnosis depends on Gram-staining and culturing of the discharge.

NEWBORN & CHILDHOOD SCREENING

STATISTICS FOR NOVEMBER 2006

PRESUMPTIVE POSITIVES	
DISORDERS	**#**
PHENYLKETONURIA	1
MAPLE SYRUP URINE DISEASE	5
HOMOCYSTINURIA	6
TYROSINEMIA	3
ARGININEMIA	0
CITRULLINEMIA	0
GALACTOSEMIA	1
BIOTINIDASE DEFICIENCY	0
HYPOTHYROIDISM	61
HEMOGLOBIN -DISEASE	18
HEMOGLOBIN -BENIGN	297
CONGENITAL ADRENAL HYPERPLASIA (CAH)	35
CYSTIC FIBROSIS	3
FATTY ACID OXIDATIONS	18
ORGANIC ACIDEMIAS	36
ACYLCARNITINE - BORDERLINE	8
ACYLCARNITINE - OTHERS	3

MONTHLY TOTALS	
# OF SPECIMENS SCREENED	10,561
NUMBER OF TESTS	726,460
% OF UNSATISFACTORY SPECIMENS	4

YEAR-TO-DATE CONFIRMED CASES	
CONDITIONS	**# CONFIRMED**
MCAD	3
3MCC	3
SCAD	6
VLCAD	1
GA-I	1
MAPLE SYRUP URINE DISEASE	1
PKU- CLINICALLY SIGNIFICANT VARIANT	1
GALACTOSEMIA- CLASSICAL GALT DEFICIENCY	1
GALACTOSEMIA - VARIANT	3
BIOTINIDASE DEFICIENCY	1
GALACTOSE EPIMERASE DEFICIENCY	1
PARTIAL BIOTINIDASE DEFICIENCY	1
CAH- CLASSICAL SALT WASTING	3
CAH-NON-CLASSICAL	1
HYPOTHYROIDISM - PRIMARY	10
SICKLE CELL DISEASE -SS	4
SICKLE CELL DISEASE -SC	9
SICKLE CELL DISEASE -S BETA THALASSEMIA	5
CYSTIC FIBROSIS	3

HIV ANTIBODY SCREENING – BLOOD (NOVEMBER 2006)

SPECIMEN SOURCES	TOTAL	POSITIVE EIA	%	POSITIVE WB	%
HEALTH DEPARTMENTS AND CLINICS	1,999	84	4.20%	80	95.23%
HOSPITALS	115	7	6.09%	4	57.14%
DETENTION CENTERS	449	12	2.67%	11	91.67%
PRIVATE PHYSICIANS	18	0	0.00%	0	0.00%
STUDENT HEALTH CLINICS	298	0	0.00%	0	0.00%
EMPLOYEE HEALTH CLINICS	14	0	0.00%	0	0.00%
AUTOPSIES	350	26	7.43%	14	53.85%
ORGAN/TISSUE DONORS	46	1	2.17%	0	0.00%
TOTAL	**3,289**	**130**	**3.95%**	**109**	**83.85%**

ENVIRONMENTAL CHEMISTRY

SAMPLES	# NON-COMPLIANT	# TESTED
ASBESTOS		
AIR	0	0
BULK	4	12
AIR QUALITY		
$PM_{2.5}$	0	361
PM_{10}	0	0
RADIATION		
AIR/CHARCOAL FILTERS	0	58
MILK	0	3
WIPES	0	36
RAW WATER	0	10
VEGETATION	0	0
OTHER	0	2
DRINKING WATER		
METALS		
COMMUNITY	0	0
NON-COMMUNITY	3	4
PRIVATE WELLS	69	226
PESTICIDES & PCBs		
COMMUNITY	0	20
NON-COMMUNITY	0	20
PRIVATE WELLS	0	0
VOLATILE ORGANIC COMPOUNDS		
COMMUNITY	0	162
NON-COMMUNITY	0	74
PRIVATE WELLS	0	112
RADIATION		
COMMUNITY	20	51
NON-COMMUNITY	0	0
PRIVATE WELLS	0	0
INORGANICS		
COMMUNITY	2	14
NON-COMMUNITY	1	46
PRIVATE WELLS	9	204
FOOD CHEMISTRY		
SUSPECTED TAMPERING	0	0
MICROSCOPIC FILTH	0	0
LABELING	0	0
SURVEILLANCE	0	1
CHEMICAL CONTAMINATION	0	0
TOTAL	**108**	**1,416**

LEAD ENVIRONMENTAL

TEST	#	ELEV	BRL	UNSAT
TOTAL PAINT	**6**	**2**	**0**	**0**
TOTAL SOIL	**9**	**4**	**2**	**0**
DUST FLOOR	329	14	287	5
SILL	522	16	387	7
WELL	200	10	126	1
OTHER	23	3	16	0
TOTAL DUST	**1,074**	**43**	**816**	**13**
GRAND TOTAL	**1,089**	**49**	**818**	**13**

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	TESTS # of
MARYLAND			
	I	<10	89
	IIA	10-14	9
	IIB	15-19	4
	III	20-44	14
	IV	45-69	0
	V	>69	0
TOTAL			**116**
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**

VIRAL LOAD SPECIMENS (NOVEMBER 2006)

HIV–1 RNA COPIES/ML	$<10^3$	$10^3 – 10^4$	$10^4 – 10^5$	$>10^5$	TOTALS
ALLEGANY CO.	7	5	2	0	0
SOMERSET CO.	1	0	0	0	1
MONTGOMERY COUNTY	133	86	20	22	5
PG COUNTY	64	48	5	7	4
SPRINGFIELD HOSPITAL CENTER	2	2	0	0	0
WASHINGTON CO.	10	7	1	0	2
WICOMICO CO.	1	0	1	0	0
FREDERICK CO.	2	2	0	0	0
SUBTOTAL	220	150	29	29	12
DEPARTMENT OF CORRECTIONS	134	69	22	30	13
GRAND TOTALS	354	219	51	59	25

MAILING LABEL

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