CRITICAL LINK

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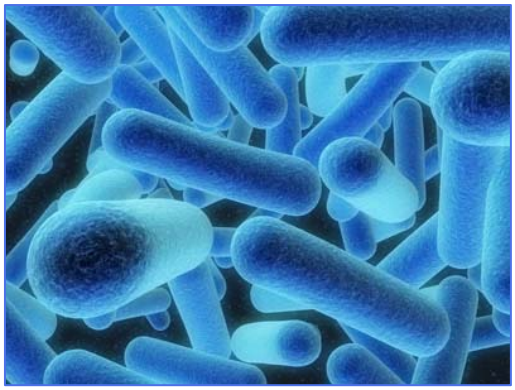
The Laboratories Administration—Maryland's State Public Health Laboratory

Laboratory Diagnosis of Legionellosis

The Laboratories Administration provides testing for clinical specimens and environmental samples

The outbreak of pneumonia in July 1976 that occurred among attendees of an American Legion convention in Philadelphia led to an investigation by the Centers for Disease Control and Prevention (CDC). This resulted in the identification of a causative agent, then referred to as *Legionella* bacterium.[1] Since then, more than 48 species and 71 serogroups of *Legionella* bacteria have been identified.[2] While more than half of these species/serogroups have been associated with human disease,[3, 4] *L. pneumophila*, accounts for approximately 90% of infections, with illness most frequently associated with serogroups 1, 4, and 6.[5] *Legionella* can cause two clinically distinct syndromes: Legionnaires' disease (LD) and Pontiac fever. LD is a multisystem illness, with mild to severe pneumonia, characterized by fever, cough, and progressive respiratory distress. In contrast, Pontiac fever is a milder febrile, self-limited influenza-like illness, without pneumonia, that occurs in clusters. The incubation period (the time in days from exposure to the onset of symptoms) is two to ten days for LD and one to three for Pontiac fever. In the United States, over 25,000 cases of the LD illness occur each year and cause more than 4,000 deaths. The fatality rate is approximately 15 percent,[6] which is similar to other forms of pneumonia.



Culture and enumeration of Legionella from environmental sources involves several steps including concentration of the bacteria, resuspension, selective pre-treatments, and the use of complex media. Photo credit: CDC PHIL

Legionella organisms are Gram-negative aerobic, motile, and nutritionally fastidious pleomorphic rods. The growth of the organism depends on the presence of L-cysteine and iron in special media. The organism has been isolated in natural aquatic habitats (freshwater streams and lakes, water reservoirs) and artificial sources (cooling towers, potable water

(Continued on page 2)

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(Continued from page 1)

Laboratory Diagnosis of Legionellosis

distribution systems). Freshwater amoebae appear to be the natural reservoir for the organisms. Optimal growth temperature range is 28-40°C; organisms are dormant below 20°C and are killed at temperatures above 60°C.[7, 8]

LD is characterized as an "opportunistic" disease that attacks individuals who have an underlying illness or weakened immune system. Direct inhalation is the most common method of transmission, with aerosol-generating systems playing a crucial role.

Person-to-person transmission has not been documented. The highest incidence occurs during the warmer months, when air conditioning systems are used more frequently. Nosocomial acquisition likely occurs via aspiration, respiratory therapy equipment, or contaminated water. Transmission has also been linked to the use of humidifiers, nebulizers, and items that were rinsed with contaminated tap water. Increased colonization of *Legionella* in man-made water environments has been linked to:

(a) Temperature of 25-42°C;

(b) Stagnation;

(c) Biofilm, deposits, scale, and sediment;

(d) Presence of certain free-living aquatic amoebae capable of supporting growth of Legionellae;

(e) Water pH 5.0 - 8.5;

(f) Other non–pathogenic bacteria in water (microbiota) that supply essential nutrients for growth.[9, 17]

Diagnosis

The clinical symptoms of LD are indistinguishable from the symptoms of other causes of pneumonia. Therefore laboratory diagnostic methods are needed for identification of *Legionella*. The CDC defines a confirmed case of LD as a clinically compatible case that is confirmed by a laboratory. A confirmed case requires a physician's diagnosis of pneumonia based on a chest x-ray and positive laboratory test results. A laboratory test is necessary for confirmation because the symptoms and x-ray evidence of LD resemble those of other types of pneumonia.

The CDC laboratory criteria for diagnosis are:

1. Isolation of *Legionella* bacteria from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluids;

2. Demonstration of a fourfold or greater rise in the reciprocal immunofluorescence antibody (IFA) titer to greater than or equal to 128 against *Legionella pneumophila* serogroup 1 between paired acute-phase and convalescent-phase serum specimens;

3. Detection of *L. pneumophila* serogroup 1 in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody testing; or

4. Demonstration of *L. pneumophila* serogroup 1 antigens in urine by enzyme linked immunosorbent assay (ELISA.)[6]

(Continued on page 3)

(Continued from page 2)
Laboratory Diagnosis of Legionellosis

Culture Isolation and Identification

Isolation by culture is the preferred diagnostic method. A number of factors limit the sensitivity of culture. Ideally, a specimen for culture should be taken before antibiotic treatment is initiated. Specimens of choice include respiratory secretions from sputum, bronchial alveolar lavage (BAL), and bronchial aspirates. *Legionella* survives poorly in respiratory secretions and immediate specimen processing of the culture is critical. Pretreatment of the specimen with heat or acidification can reduce other microflora. Identification of the number of *Legionella* spp. is carried out using buffered charcoal yeast extract (BCYE) agar containing L-cysteine. Supplements such as cefamandole, polymixin B, or anisomycin are used to reduce the competing microflora and increase selectivity of media. Suspected colonies of *Legionella* spp. are identified by growth on selective and differential media and confirmed by direct fluorescent assay (DFA) antibody testing.[10]

Isolation of *Legionella* from environmental samples helps to identify the source in outbreak investigations. It also helps assess the effectiveness of remedial action. Proper environmental samples should be collected for microbial analysis. It is necessary to concentrate the sample and suppress the competing background flora during primary culture. Culture results provide useful information about the degree of *Legionella* contamination in a water system. It is difficult to interpret the colony count values for *Legionella* in relation to disease risk. Higher colony counts per unit volume result in a higher exposure, which could be related to a higher infection risk.

L. pneumophila serogroup 1 comprises a fairly heterogeneous group of organisms that accounts for most cases of legionellosis in the United States. *L. pneumophila* serogroup 1 can be divided into a number of subtypes by various phenotypic and genotypic techniques. These procedures are used to match environmental isolates with patient isolates obtained from outbreak investigations of Legionellosis.[11] Because of the diversity within the *L. pneumophila* serogroup 1, clinical and environmental isolates must be matched by molecular techniques to adequately identify environmental sources of the disease. Pulsed field gel electrophoresis (PFGE) and arbitrarily primed polymerase chain reaction (AP-PCR) are able to discriminate within monoclonal subtype of *L. pneumophila* serogroup 1 and identify the source of the disease causing strain.[12]

Direct Fluorescent Assay (DFA)

Microscopic detection of *Legionella* in body fluids and tissue by DFA is a rapid method for identifying *Legionella* species. However, the sensitivity of DFA ranges from 25-75%. DFA specificity is 80-90%. Serological cross-reactions with non-*Legionella* bacteria have been reported against several *Legionella* species.[8]

Serological Testing

Indirect immunofluorescence assay (IFA), ELISA, and microagglutination have been used for detection of antibody for *L. pneumophila*. In the clinical setting, serology has had limited usefulness because to make a definitive clinical diagnosis a fourfold rise in antibody titer from specimens obtained three to six weeks apart is necessary. Patients with non-legionellosis pneumonia and bacteremia have been found to demonstrate falsely-positive *Legionella* serology results. Antibodies produced in response to infections with *Bacteroides fragilis, Chlamydia psittaci, Mycobacteria, Mycoplasmas, Campylobacters, Haemophilus influenzae, Coxiella burnetii, Rickettsia typhi, Proteus vulgaris OX19, and Pseudomonas aeruginosa* in cystic fibrosis patients also have been shown to be cross reactive in *Legionella* serological tests.[14] Cross-reactions occur more frequently with non-*L. pneumophila* species. The sensitivity of *Legionella* serological assays ranges between 70-90% and specificity ranges between 50-99%.[10]

Urine Antigen Detection

The use of ELISA or the immuno-chromatographic assay for detecting *L. pneumophila* serogroup 1 antigen in urine is currently the most frequently used diagnostic test. Rapid testing of urine for *L. pneumophila* antigen is easy to perform and has excellent sensitivity (77-99%) and specificity (99-100%) for *L. pneumophila* serogroup 1. Urine antigen testing has led to the recognition of outbreaks of LD and allows for a rapid public health response.[15] In addition, urine antigen testing permits early diagnosis and initiation of appropriate antibiotic therapy. However, it can only detect infections with *L. pneumophila* serogroup 1.[6]

(Continued on page 4)

(Continued from page 3)
Laboratory Diagnosis of Legionellosis

Polymerase Chain Reaction (PCR)

The ribosomal RNA (rRNA) genes have been used for PCR assay targeting the *Legionella* genus, and the macrophage infectivity potentiator (*mip*) gene has been used as a specific assay for *L. pneumophila*. Currently, there is insufficient data to reliably estimate PCR sensitivity and specificity or to compare PCR to other methods. Several researchers have reported on the use of real-time PCR that utilizes hybridization probes to confirm the product identity for rapid detection of *Legionella* in clinical specimens.[13]

Available testing

The Laboratories Administration provides *Legionella* testing for both clinical specimens and environmental samples. Isolation and identification of *Legionella* by culture, serum antibody testing, and urine antigen tests are performed for clinical diagnostic purposes. Isolation and identification of *Legionella* from environmental water samples are conducted exclusively in support of investigations of suspected outbreaks. PFGE is performed only when both clinical and environmental *Legionella* isolates are obtained and are epidemiologically linked to the same suspected outbreak of *Legionella*.

Questions concerning *Legionella* testing may be directed to laboratory scientists by calling 410-767-5837.

This article compiled by Dr. Leena Trivedi.

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Laboratory Statistics

Reported by the
Laboratories Administration
covering results from the month of
February 2011

ENTERIC BACTERIOLOGY

GENUS SEROVAR	SEX	AGE	#	JURISDICTION
CAMPYLOBACTER JEJUNI				
	M	57	1	ANNE ARUNDEL
	F	3	1	BALTIMORE
	M	49	1	BALTIMORE
	M	25	1	BALTIMORE
	M	70	2	BALTIMORE CITY
	U	77	1	MONTGOMERY
	M	5	1	MONTGOMERY
	M	73	1	OUT OF STATE
	M	20	1	OUT OF STATE
	M	5	1	OUT OF STATE
ESCHERICHIA COLI, SEROTYPE O103:H2				
	F	34	1	BALTIMORE
	F	26	1	OUT OF STATE
ESCHERICHIA COLI, SEROTYPE O157:H7				
	M	20	1	ALLEGANY
	M	17	1	WASHINGTON
ESCHERICHIA COLI, SEROTYPE O26:H11				
	M	14	1	BALTIMORE
	F	1	1	OUT OF STATE
	F	2	1	OUT OF STATE
	F	2	1	OUT OF STATE
	M	10	1	OUT OF STATE
	M	7	1	OUT OF STATE
	M	2	1	OUT OF STATE
	F	17	1	OUT OF STATE
	M	1	1	OUT OF STATE
SALMONELLA				
	M	81	1	BALTIMORE
	M	19	1	BALTIMORE
	F	48	1	BALTIMORE CITY
	M	4	2	BALTIMORE CITY
	M	27	1	MONTGOMERY
	F	69	1	OUT OF STATE
	F	38	1	OUT OF STATE
	M	43	1	OUT OF STATE
SALMONELLA SER. 4,12:I:-				
	F	1	1	BALTIMORE CITY
	F	67	1	OUT OF STATE
SALMONELLA SER. ALBANY				
	F	34	1	FREDERICK
SALMONELLA SER. ENTERITIDIS				
	F	3	1	BALTIMORE
	M	5	1	BALTIMORE
	M	61	1	BALTIMORE CITY
	M	1	1	BALTIMORE CITY
	M	0	1	MONTGOMERY
	M	47	1	OUT OF STATE
	M	25	1	OUT OF STATE
SALMONELLA SER. JAVIANA				
	F	21	1	ANNE ARUNDEL
SALMONELLA SER. MUENCHEN				
	F	68	1	OUT OF STATE
	M	35	1	OUT OF STATE
SALMONELLA SER. PARATYPHI B				
	F	3	1	BALTIMORE
SALMONELLA SER. SENFTENBERG				
	M	40	1	OUT OF STATE
SALMONELLA SER. TYPHI				
	M	30	1	MONTGOMERY
SALMONELLA SER. TYPHIMURIUM				
	M	24	1	BALTIMORE
	M	1	3	BALTIMORE
	U	0	1	BALTIMORE CITY
	M	54	1	BALTIMORE CITY
	M	3	4	BALTIMORE CITY
	F	0	1	OUT OF STATE
	M	0	1	OUT OF STATE
	M	80	1	TALBOT
SHIGELLA FLEXNERI				
	M	42	1	BALTIMORE
	M	10	1	CHARLES
	U	49	1	MONTGOMERY
	U	51	1	PRINCE GEORGE'S
SHIGELLA FLEXNERI II:3,4				
	F	70	1	MONTGOMERY
	M	25	1	PRINCE GEORGE'S
SHIGELLA SONNEI				
	M	45	1	ANNE ARUNDEL
	M	47	1	BALTIMORE
	M	24	1	BALTIMORE
TOTAL			**71**	

ISOLATES - REFERENCE

GENUS SPECIES	SOURCE	#	JURISDICTION
STAPHYLOCOCCUS AUREUS			
	CERVIX	1	BALTIMORE CITY
	VAGINAL	1	BALTIMORE CITY
TOTAL		**2**	

ISOLATES - MISCELLANEOUS

GENUS SPECIES	SOURCE	#	JURISDICTION
ENTEROCOCCUS FECALIS			
	VAGINAL	1	PRINCE GEORGE'S
ESCHERICHIA COLI			
	LUNG	2	BALTIMORE CITY
	WOUND	1	BALTIMORE CITY
	VAGINAL	1	PRINCE GEORGE'S
	WOUND	1	PRINCE GEORGE'S
GARDNERELLA VAGINALIS			
	VAGINAL	6	PRINCE GEORGE'S
	VAGINAL	1	SOMERSET
GRAM-NEGATIVE BACILLUS			
	BLOOD	4	BALTIMORE CITY
KLEBSIELLA PNEUMONIAE			
	BLOOD	1	BALTIMORE CITY
STAPHYLOCOCCUS AUREUS			
	BLOOD	1	BALTIMORE CITY
	LUNG	2	BALTIMORE CITY
	SKIN	1	BALTIMORE CITY
	WOUND	1	BALTIMORE CITY
	WOUND	2	BALTIMORE CITY
	FOOT	1	CARROLL
	NASAL	1	CARROLL
	WOUND	2	CARROLL
	VAGINAL	1	PRINCE GEORGE'S
	WOUND	1	PRINCE GEORGE'S
	VAGINAL	1	SOMERSET
	VAGINAL	1	TALBOT
	SPUTUM	1	WASHINGTON
	SPUTUM	1	WASHINGTON
STAPHYLOCOCCUS, COAGULASE NEGATIVE			
	BLOOD	1	BALTIMORE CITY
	CSF	3	BALTIMORE CITY
	WOUND	2	CARROLL
	WOUND	1	WICOMICO
STREPTOCOCCUS, BETA HEMOLYTIC GROUP A			
	THROAT	6	ALLEGANY
	BLOOD	1	BALTIMORE CITY
	THROAT	1	MONTGOMERY
STREPTOCOCCUS, BETA HEMOLYTIC NON-GROUP A			
	THROAT	22	ALLEGANY
STREPTOCOCCUS, BETA HEMOLYTIC GROUP B			
	VAGINAL	3	PRINCE GEORGE'S
	VAGINAL	2	PRINCE GEORGE'S
TOTAL		**49**	

SEXUALLY TRANSMITTED DISEASES

GENUS SPECIES	SEX	#	JURISDICTION
SYPHILIS SEROLOGY			
	M	1	ANNE ARUNDEL
	U	1	ANNE ARUNDEL
	F	6	BALTIMORE
	M	2	BALTIMORE

U	2	BALTIMORE
F	8	BALTIMORE CITY
M	34	BALTIMORE CITY
U	2	BALTIMORE CITY
M	2	CARROLL
F	1	CHARLES
F	1	DORCHESTER
M	4	HARFORD
F	6	MONTGOMERY
M	9	MONTGOMERY
F	7	PRINCE GEORGE'S
M	30	PRINCE GEORGE'S
F	1	SOMERSET
M	1	SOMERSET
F	1	TALBOT
F	1	WICOMICO
M	1	WICOMICO

TOTAL 121

CHLAMYDIA TRACHOMATIS

F	12	ALLEGANY
M	4	ALLEGANY
U	1	ALLEGANY
F	23	ANNE ARUNDEL
M	7	ANNE ARUNDEL
F	21	BALTIMORE
M	16	BALTIMORE
U	1	BALTIMORE
F	21	BALTIMORE CITY
M	15	BALTIMORE CITY
U	2	BALTIMORE CITY
F	6	CALVERT
M	4	CALVERT
F	2	CAROLINE
M	2	CAROLINE
F	6	CARROLL
M	2	CARROLL
F	3	CECIL
M	2	CECIL
F	11	CHARLES
M	8	CHARLES
F	2	DORCHESTER
F	2	FREDERICK
M	9	FREDERICK
F	2	GARRETT
F	10	HARFORD
M	3	HARFORD
F	2	HOWARD
M	2	HOWARD
F	2	KENT
M	3	KENT
F	16	MONTGOMERY
M	5	MONTGOMERY
F	59	PRINCE GEORGE'S
M	70	PRINCE GEORGE'S
F	4	QUEEN ANNE'S
M	1	QUEEN ANNE'S
F	3	SAINT MARY'S
M	1	SAINT MARY'S
F	1	SOMERSET
M	5	SOMERSET
F	2	TALBOT
M	2	TALBOT
F	8	WASHINGTON
M	6	WASHINGTON
F	16	WICOMICO
M	13	WICOMICO
F	5	WORCESTER
M	6	WORCESTER

TOTAL 429

NEISSERIA GONORRHOEAE

M	1	BALTIMORE CITY
F	1	DORCHESTER
M	3	MONTGOMERY
F	12	PRINCE GEORGE'S
M	10	PRINCE GEORGE'S

TOTAL 27

MYCOBACTERIUM SUSCEPTIBILITY RESULTS

10 ISOLATES IDENTIFIED

0 DRUG RESISTANT STRAINS FOUND

[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. africanum*
M. bovis	*M. microti*
M. bovis, BCG	*M. canettii*

MYCOBACTERIOLOGY

ISOLATE SEX	AGE	#	JURISDICTION
MYCOBACTERIUM ABSCESSUS			
M	63	1	ANNE ARUNDEL
M	35	1	BALTIMORE
MYCOBACTERIUM AVIUM COMPLEX			
F	35	1	BALTIMORE
F	61	1	BALTIMORE
F	68	1	BALTIMORE
F	76	1	BALTIMORE
M	42	1	BALTIMORE
M	82	3	BALTIMORE
M	94	1	BALTIMORE
F	41	1	BALTIMORE CITY
F	44	1	BALTIMORE CITY
F	62	4	BALTIMORE CITY
F	66	1	BALTIMORE CITY
F	80	1	BALTIMORE CITY
M	48	2	BALTIMORE CITY
M	49	1	BALTIMORE CITY
M	52	1	BALTIMORE CITY
M	61	2	MONTGOMERY
U	75	2	MONTGOMERY
F	80	1	OUT OF STATE
F	89	1	OUT OF STATE
M	51	1	OUT OF STATE
F	77	2	PRINCE GEORGE'S
M	37	1	PRINCE GEORGE'S
M	38	1	PRINCE GEORGE'S
M	42	1	PRINCE GEORGE'S
M	63	1	PRINCE GEORGE'S
F	88	1	WASHINGTON
M	71	3	WASHINGTON
MYCOBACTERIUM BOVIS			
M	35	1	OUT OF STATE
MYCOBACTERIUM CHELONAE			
F	63	1	BALTIMORE
MYCOBACTERIUM FORTUITUM COMPLEX			
M	83	1	BALTIMORE CITY
M	47	1	MONTGOMERY
F	65	1	OUT OF STATE
M	66	1	OUT OF STATE
F	41	1	PRINCE GEORGE'S
M	37	1	PRINCE GEORGE'S
M	71	1	WICOMICO
MYCOBACTERIUM GORDONAE			
M	52	1	ANNE ARUNDEL
F	61	1	BALTIMORE
M	31	2	HARFORD
F	68	1	MONTGOMERY
F	84	1	MONTGOMERY
M	85	1	MONTGOMERY
M	47	1	PRINCE GEORGE'S
U	0	1	UNKNOWN
F	55	1	UNKNOWN
MYCOBACTERIUM KANSASII			
M	10	1	PRINCE GEORGE'S
M	67	3	WICOMICO
MYCOBACTERIUM MARINUM			
M	42	1	ANNE ARUNDEL
	55	1	CECIL
MYCOBACTERIUM SZULGAI			
M	76	1	PRINCE GEORGE'S
MYCOBACTERIUM TERRAE			
M	74	1	BALTIMORE CITY
MYCOBACTERIUM TUBERCULOSIS			
F	37	1	BALTIMORE
F	64	1	BALTIMORE
M	41	1	BALTIMORE
M	63	1	BALTIMORE
M	58	1	HARFORD
M	39	2	HOWARD
F	68	1	MONTGOMERY
M	16	1	MONTGOMERY
M	42	1	MONTGOMERY
M	53	1	MONTGOMERY
F	22	1	OUT OF STATE
M	30	1	OUT OF STATE
M	74	1	OUT OF STATE
M	75	1	OUT OF STATE
M	24	1	PRINCE GEORGE'S
M	84	1	PRINCE GEORGE'S
U	0	1	UNKNOWN
MYCOBACTERIUM TUBERCULOSIS COMPLEX			
F	37	2	BALTIMORE
M	41	2	BALTIMORE
M	63	1	BALTIMORE
M	26	4	CHARLES
M	58	2	HARFORD
M	39	3	HOWARD
M	16	3	MONTGOMERY
M	32	3	MONTGOMERY
M	42	2	MONTGOMERY
M	50	1	MONTGOMERY
M	53	3	MONTGOMERY
U	1	1	OUT OF STATE
F	89	1	OUT OF STATE
M	35	1	OUT OF STATE
M	47	1	OUT OF STATE
M	61	1	OUT OF STATE
U	87	1	OUT OF STATE
F	36	3	PRINCE GEORGE'S

F	45	5	PRINCE GEORGE'S
M	24	1	PRINCE GEORGE'S
M	63	2	PRINCE GEORGE'S
M	56	5	SOMERSET
M	56	3	WICOMICO
NON-PHOTOCHROMOGENIC MYCOBACTERIA			
F	47	1	PRINCE GEORGE'S
RAPIDLY GROWING MYCOBACTERIA			
M	81	1	BALTIMORE
SCOTOCHROMOGENIC MYCOBACTERIA			
M	58	1	ANNE ARUNDEL
M	42	1	MONTGOMERY
M	76	3	PRINCE GEORGE'S
F	49	1	WASHINGTON
M	64	1	WICOMICO

TOTAL 145

PARASITOLOGY

GENUS/SPECIES	#	JURISDICTION
BLASTOCYSTIS HOMINIS		
	1	FREDERICK
	3	PRINCE GEORGE'S
DIENTAMOEBA FRAGILIS		
	3	HOWARD
ENDOLIMAX NANA		
	3	PRINCE GEORGE'S
	4	MONTGOMERY
	2	FREDERICK
	1	MONTGOMERY
	1	HOWARD
	1	MONTGOMERY
	1	HARFORD
ENTAMOEBA COLI		
	1	HOWARD
	1	MONTGOMERY
	1	PRINCE GEORGE'S
	3	BALTIMORE CITY
	1	PRINCE GEORGE'S
	3	MONTGOMERY
	1	HOWARD
	1	FREDERICK
	1	PRINCE GEORGE'S
	2	MONTGOMERY
	3	PRINCE GEORGE'S
ENTAMOEBA HARTMANNI		
	2	BALTIMORE CITY
	1	MONTGOMERY
	1	FREDERICK
	3	MONTGOMERY
	1	CARROLL
ENTEROBIUS VERMICULARIS		
	2	TALBOT
	1	CARROLL
	1	FREDERICK
GIARDIA LAMBLIA		
	2	PRINCE GEORGE'S
	1	MONTGOMERY
	1	MONTGOMERY
IODAMOEBA BÜTSCHLII		
	1	HARFORD
LARVAE		
	1	HARFORD

TOTAL 56

WATER MICROBIOLOGY

	# TESTED	# NON-COMPLIANT
COMMUNITY	1	0
NON-COMMUNITY	181	28
TOTAL	**182**	**28**

FOOD PROTECTION

	TOTALS
FOOD	
NUMBER OF SAMPLES	40
NOTABLE PATHOGENS:	
CAMPYLOBACTER SP.	6
ENTEROCOCCUS	33
E. COLI	13
MRSA	24
SALMONELLA SP.	3
VRE	6
CRABMEAT	
NUMBER OF SAMPLES	0
EXCEEDING STANDARDS[1]	0
NOTABLE PATHOGENS:	
LISTERIA INNOCUA	0
SHELLFISH	
NUMBER OF SAMPLES	0
EXCEEDING STANDARDS[2]	0
TOTAL STANDARDS EXCEEDED	0
SHELLFISH GROWING WATERS	
NUMBER OF SAMPLES	97
TOTAL NUMBER OF SAMPLES	**137**

STANDARDS

[1]CRABMEAT FRESH

ESCHERICHIA COLI AT < 36 MPN/100 GRAMS

STANDARD PLATE COUNT AT < 100

[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	1	1	BALTIMORE
	F	2	1	GARRETT
HERPES SIMPLEX VIRUS TYPE 1				
	M	37	1	MONTGOMERY
	M	20	1	PRINCE GEORGE'S
	U	23	1	BALTIMORE CITY
	M	52	1	BALTIMORE CITY
	F	19	1	BALTIMORE CITY
HUMAN METAPNEUMOVIRUS				
	M	0	1	BALTIMORE
INFLUENZA A VIRUS				
	M	25	1	ALLEGANY
	F	54	1	BALTIMORE
	F	69	1	BALTIMORE
	M	85	1	BALTIMORE
	F	46	1	CALVERT
	M	10	1	CALVERT
	F	27	1	CALVERT
	M	4	1	CHARLES
	M	9	1	CHARLES
	M	20	1	CHARLES
	F	24	1	CHARLES
	U	2	1	CHARLES
	F	87	1	HARFORD
	F	44	1	HARFORD
	U	93	1	MONTGOMERY
	F	54	1	BALTIMORE CITY
	F	35	1	BALTIMORE CITY
	F	1	1	BALTIMORE CITY
	F	41	1	BALTIMORE CITY
	M	1	1	BALTIMORE CITY
	M	0	1	BALTIMORE CITY
INFLUENZA B VIRUS				
	F	8	1	CALVERT
	M	28	1	CECIL

TOTAL 31

VIRAL POLYMERASE CHAIN REACTION (PCR)

ISOLATE	SEX	AGE	#	JURISDICTION
HERPES SIMPLEX VIRUS TYPE 1				
	F	19	1	ALLEGANY
	F	21	1	ALLEGANY
	F	16	1	ANNE ARUNDEL
	F	24	1	ANNE ARUNDEL
	U	23	1	BALTIMORE CITY
	F	17	1	BALTIMORE CITY
	F	20	1	BALTIMORE CITY
	F	21	1	BALTIMORE CITY
	F	23	1	BALTIMORE CITY
	F	31	1	BALTIMORE CITY
	M	22	1	BALTIMORE CITY
	M	45	1	BALTIMORE CITY
	F	28	1	FREDERICK
	M	25	1	MONTGOMERY
	F	20	2	WICOMICO
HERPES SIMPLEX VIRUS TYPE 2				
	F	31	1	ANNE ARUNDEL
	F	28	1	BALTIMORE
	U	44	1	BALTIMORE CITY
	U	49	1	BALTIMORE CITY
	F	17	1	BALTIMORE CITY
	F	25	1	BALTIMORE CITY

F	30	2	BALTIMORE CITY
F	4	1	BALTIMORE CITY
F	49	1	BALTIMORE CITY
F	58	1	BALTIMORE CITY
M	0	1	BALTIMORE CITY
M	19	1	BALTIMORE CITY
M	20	1	BALTIMORE CITY
M	22	1	BALTIMORE CITY
M	26	1	BALTIMORE CITY
M	28	1	BALTIMORE CITY
M	39	1	BALTIMORE CITY
M	55	1	BALTIMORE CITY
F	20	1	CHARLES
F	27	1	MONTGOMERY
M	36	1	MONTGOMERY
F	26	1	PRINCE GEORGE'S
F	40	1	PRINCE GEORGE'S
F	41	1	PRINCE GEORGE'S
F	20	1	WASHINGTON
F	19	1	WICOMICO
M	22	1	WICOMICO
F	23	1	WORCESTER
F	26	1	WORCESTER

INFLUENZA 2009 A/H1

F	19	2	ALLEGANY
F	23	1	ALLEGANY
F	25	1	ALLEGANY
F	50	1	ALLEGANY
F	53	1	ALLEGANY
F	58	1	ALLEGANY
M	14	1	ALLEGANY
M	15	1	ALLEGANY
M	18	1	ALLEGANY
M	2	1	ALLEGANY
M	3	1	ALLEGANY
M	30	1	ALLEGANY
M	33	1	ALLEGANY
M	39	1	ALLEGANY
M	43	1	ALLEGANY
M	72	1	ALLEGANY
F	0	3	ANNE ARUNDEL
F	24	1	ANNE ARUNDEL
F	27	1	ANNE ARUNDEL
F	38	1	ANNE ARUNDEL
F	54	2	ANNE ARUNDEL
F	83	1	ANNE ARUNDEL
M	27	1	ANNE ARUNDEL
M	36	1	ANNE ARUNDEL
M	60	1	ANNE ARUNDEL
M	73	1	ANNE ARUNDEL
M	78	1	ANNE ARUNDEL
U	33	1	BALTIMORE
U	54	1	BALTIMORE
F	0	2	BALTIMORE
F	18	3	BALTIMORE
F	19	6	BALTIMORE
F	20	3	BALTIMORE
F	21	7	BALTIMORE
F	22	2	BALTIMORE
F	24	1	BALTIMORE
F	26	1	BALTIMORE
F	27	1	BALTIMORE
F	28	1	BALTIMORE
F	29	1	BALTIMORE
F	35	2	BALTIMORE
F	38	1	BALTIMORE
F	4	1	BALTIMORE
F	44	1	BALTIMORE
F	47	1	BALTIMORE
F	48	1	BALTIMORE
F	52	1	BALTIMORE
F	53	1	BALTIMORE
F	58	1	BALTIMORE
F	69	1	BALTIMORE
F	76	1	BALTIMORE
F	78	2	BALTIMORE
M	0	3	BALTIMORE
M	18	1	BALTIMORE
M	19	1	BALTIMORE
M	20	4	BALTIMORE
M	21	1	BALTIMORE
M	22	1	BALTIMORE
M	23	2	BALTIMORE
M	24	1	BALTIMORE
M	25	1	BALTIMORE
M	26	1	BALTIMORE
M	37	1	BALTIMORE
M	45	1	BALTIMORE
M	51	1	BALTIMORE
M	52	1	BALTIMORE
M	53	1	BALTIMORE
M	55	1	BALTIMORE
M	60	1	BALTIMORE
M	75	1	BALTIMORE
M	78	1	BALTIMORE
U	0	2	BALTIMORE CITY
U	20	1	BALTIMORE CITY
U	24	2	BALTIMORE CITY
U	25	2	BALTIMORE CITY
U	37	2	BALTIMORE CITY
U	6	1	BALTIMORE CITY
U	7	1	BALTIMORE CITY
F	0	10	BALTIMORE CITY
F	1	6	BALTIMORE CITY
F	10	1	BALTIMORE CITY
F	11	1	BALTIMORE CITY
F	12	1	BALTIMORE CITY
F	13	1	BALTIMORE CITY
F	14	1	BALTIMORE CITY
F	18	5	BALTIMORE CITY
F	2	1	BALTIMORE CITY
F	20	6	BALTIMORE CITY
F	22	2	BALTIMORE CITY
F	23	2	BALTIMORE CITY
F	24	1	BALTIMORE CITY
F	25	4	BALTIMORE CITY
F	26	3	BALTIMORE CITY
F	28	1	BALTIMORE CITY
F	3	1	BALTIMORE CITY
F	30	1	BALTIMORE CITY
F	31	2	BALTIMORE CITY
F	32	1	BALTIMORE CITY
F	35	2	BALTIMORE CITY
F	37	2	BALTIMORE CITY
F	39	1	BALTIMORE CITY
F	41	1	BALTIMORE CITY
F	43	2	BALTIMORE CITY
F	44	1	BALTIMORE CITY
F	45	3	BALTIMORE CITY
F	48	2	BALTIMORE CITY
F	49	1	BALTIMORE CITY
F	5	1	BALTIMORE CITY
F	50	3	BALTIMORE CITY
F	51	2	BALTIMORE CITY
F	52	3	BALTIMORE CITY
F	54	1	BALTIMORE CITY
F	55	2	BALTIMORE CITY
F	56	1	BALTIMORE CITY
F	57	1	BALTIMORE CITY
F	59	1	BALTIMORE CITY
F	65	1	BALTIMORE CITY
F	69	1	BALTIMORE CITY
F	7	1	BALTIMORE CITY
F	70	2	BALTIMORE CITY
F	75	1	BALTIMORE CITY
M	0	8	BALTIMORE CITY
M	1	5	BALTIMORE CITY
M	11	2	BALTIMORE CITY
M	18	3	BALTIMORE CITY
M	2	4	BALTIMORE CITY
M	20	2	BALTIMORE CITY
M	21	2	BALTIMORE CITY
M	23	1	BALTIMORE CITY
M	24	2	BALTIMORE CITY
M	25	1	BALTIMORE CITY
M	26	1	BALTIMORE CITY
M	28	1	BALTIMORE CITY
M	29	2	BALTIMORE CITY
M	3	4	BALTIMORE CITY
M	31	1	BALTIMORE CITY
M	37	2	BALTIMORE CITY
M	40	1	BALTIMORE CITY
M	41	2	BALTIMORE CITY
M	42	1	BALTIMORE CITY
M	44	1	BALTIMORE CITY
M	48	2	BALTIMORE CITY
M	49	1	BALTIMORE CITY
M	5	2	BALTIMORE CITY
M	50	4	BALTIMORE CITY
M	53	1	BALTIMORE CITY
M	56	1	BALTIMORE CITY
M	57	2	BALTIMORE CITY
M	6	3	BALTIMORE CITY
M	60	1	BALTIMORE CITY
M	63	1	BALTIMORE CITY
M	64	2	BALTIMORE CITY
M	66	1	BALTIMORE CITY
M	7	1	BALTIMORE CITY
M	72	1	BALTIMORE CITY
M	73	1	BALTIMORE CITY
M	78	1	BALTIMORE CITY
M	8	1	BALTIMORE CITY
F	46	1	CALVERT
F	70	1	CALVERT
F	74	1	CALVERT
M	4	1	CALVERT
M	66	1	CALVERT
F	26	1	CECIL
F	28	1	CECIL
F	37	1	CECIL
F	58	1	CECIL
M	19	1	CECIL
M	2	1	CECIL
M	39	1	CECIL
M	4	1	CECIL
M	43	1	CECIL
M	47	1	CECIL
M	48	1	CECIL
M	5	1	CECIL
M	62	1	CECIL
U	2	1	CHARLES
F	0	1	CHARLES
F	1	2	CHARLES
F	20	1	CHARLES
F	3	1	CHARLES
F	4	1	CHARLES
M	2	1	CHARLES
M	26	1	CHARLES
M	7	1	CHARLES
F	24	2	DORCHESTER
F	43	1	DORCHESTER
M	67	1	DORCHESTER
F	0	1	FREDERICK
M	61	1	FREDERICK
M	72	1	FREDERICK
M	65	1	GARRETT
F	11	2	HARFORD
F	23	1	HARFORD
F	26	2	HARFORD
F	27	1	HARFORD
F	44	1	HARFORD
F	50	1	HARFORD

F	52	1	HARFORD
F	54	1	HARFORD
F	58	1	HARFORD
M	1	1	HARFORD
M	13	1	HARFORD
M	15	1	HARFORD
M	24	1	HARFORD
M	5	1	HARFORD
M	57	1	HARFORD
F	0	1	MONTGOMERY
F	21	1	MONTGOMERY
F	30	2	MONTGOMERY
F	38	1	MONTGOMERY
F	60	1	MONTGOMERY
M	0	1	MONTGOMERY
M	46	1	MONTGOMERY
U	54	1	PRINCE GEORGE'S
F	0	1	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
F	26	1	PRINCE GEORGE'S
F	27	1	PRINCE GEORGE'S
F	39	1	PRINCE GEORGE'S
F	50	1	PRINCE GEORGE'S
M	0	2	PRINCE GEORGE'S
M	28	1	PRINCE GEORGE'S
M	9	1	PRINCE GEORGE'S
M	18	2	SOMERSET
F	26	1	TALBOT
F	51	1	TALBOT
M	44	1	TALBOT
F	18	1	WICOMICO
F	19	2	WICOMICO
F	21	1	WICOMICO
F	22	1	WICOMICO
M	21	4	WICOMICO
INFLUENZA 2009 A/H1 AND A(H3)			
M	19	1	BALTIMORE
M	29	1	DORCHESTER
INFLUENZA A(H3)			
M	73	1	
F	1	1	ALLEGANY
F	2	1	ALLEGANY
F	23	1	ALLEGANY
F	29	1	ALLEGANY
F	5	1	ALLEGANY
F	6	2	ALLEGANY
F	72	1	ALLEGANY
F	73	1	ALLEGANY
F	86	1	ALLEGANY
F	95	1	ALLEGANY
M	0	1	ALLEGANY
M	12	1	ALLEGANY
M	25	1	ALLEGANY
M	28	1	ALLEGANY
M	32	1	ALLEGANY
M	39	1	ALLEGANY
M	45	1	ALLEGANY
M	53	1	ALLEGANY
M	66	1	ALLEGANY
M	69	1	ALLEGANY
M	70	2	ALLEGANY
M	93	1	ALLEGANY
F	1	1	ANNE ARUNDEL
F	31	1	ANNE ARUNDEL
F	44	1	ANNE ARUNDEL
F	49	1	ANNE ARUNDEL
F	55	1	ANNE ARUNDEL
F	71	1	ANNE ARUNDEL
M	66	1	ANNE ARUNDEL
M	7	1	ANNE ARUNDEL
M	79	1	ANNE ARUNDEL
M	90	1	ANNE ARUNDEL
U	56	1	BALTIMORE
U	86	1	BALTIMORE
F	0	1	BALTIMORE
F	1	1	BALTIMORE
F	12	1	BALTIMORE
F	14	1	BALTIMORE
F	18	1	BALTIMORE
F	19	1	BALTIMORE
F	20	1	BALTIMORE
F	27	1	BALTIMORE
F	32	1	BALTIMORE
F	34	1	BALTIMORE
F	35	1	BALTIMORE
F	52	1	BALTIMORE
F	54	1	BALTIMORE
F	56	1	BALTIMORE
F	59	1	BALTIMORE
F	61	1	BALTIMORE
F	71	1	BALTIMORE
F	77	1	BALTIMORE
F	78	1	BALTIMORE
F	79	1	BALTIMORE
F	81	3	BALTIMORE
F	85	1	BALTIMORE
F	86	3	BALTIMORE
F	88	1	BALTIMORE
F	89	1	BALTIMORE
F	91	1	BALTIMORE
F	92	2	BALTIMORE
M	1	1	BALTIMORE
M	20	1	BALTIMORE
M	24	1	BALTIMORE
M	28	1	BALTIMORE
M	34	1	BALTIMORE
M	46	1	BALTIMORE
M	5	1	BALTIMORE
M	59	1	BALTIMORE
M	69	1	BALTIMORE
M	73	1	BALTIMORE
M	77	1	BALTIMORE
M	78	1	BALTIMORE
M	79	1	BALTIMORE
M	82	1	BALTIMORE
M	83	1	BALTIMORE
M	85	1	BALTIMORE
M	86	1	BALTIMORE
M	87	1	BALTIMORE
M	93	1	BALTIMORE
U	0	1	BALTIMORE CITY
U	19	1	BALTIMORE CITY
U	2	1	BALTIMORE CITY
U	3	2	BALTIMORE CITY
U	36	1	BALTIMORE CITY
U	47	1	BALTIMORE CITY
U	49	1	BALTIMORE CITY
U	52	1	BALTIMORE CITY
U	6	1	BALTIMORE CITY
U	60	1	BALTIMORE CITY
U	82	1	BALTIMORE CITY
F	0	9	BALTIMORE CITY
F	1	1	BALTIMORE CITY
F	104	1	BALTIMORE CITY
F	13	1	BALTIMORE CITY
F	18	1	BALTIMORE CITY
F	19	1	BALTIMORE CITY
F	2	5	BALTIMORE CITY
F	20	1	BALTIMORE CITY
F	21	1	BALTIMORE CITY
F	22	2	BALTIMORE CITY
F	26	1	BALTIMORE CITY
F	27	2	BALTIMORE CITY
F	28	1	BALTIMORE CITY
F	29	1	BALTIMORE CITY
F	3	2	BALTIMORE CITY
F	34	1	BALTIMORE CITY
F	38	2	BALTIMORE CITY
F	41	2	BALTIMORE CITY
F	42	1	BALTIMORE CITY
F	45	2	BALTIMORE CITY
F	46	2	BALTIMORE CITY
F	48	1	BALTIMORE CITY
F	49	4	BALTIMORE CITY
F	5	1	BALTIMORE CITY
F	50	4	BALTIMORE CITY
F	51	1	BALTIMORE CITY
F	54	1	BALTIMORE CITY
F	56	2	BALTIMORE CITY
F	57	1	BALTIMORE CITY
F	58	1	BALTIMORE CITY
F	6	3	BALTIMORE CITY
F	60	1	BALTIMORE CITY
F	61	1	BALTIMORE CITY
F	64	1	BALTIMORE CITY
F	67	1	BALTIMORE CITY
F	69	1	BALTIMORE CITY
F	7	1	BALTIMORE CITY
F	72	1	BALTIMORE CITY
F	78	1	BALTIMORE CITY
F	79	1	BALTIMORE CITY
F	80	1	BALTIMORE CITY
F	81	1	BALTIMORE CITY
F	84	1	BALTIMORE CITY
F	86	1	BALTIMORE CITY
F	87	1	BALTIMORE CITY
F	89	1	BALTIMORE CITY
F	90	1	BALTIMORE CITY
F	98	1	BALTIMORE CITY
M	0	5	BALTIMORE CITY
M	1	5	BALTIMORE CITY
M	10	1	BALTIMORE CITY
M	11	2	BALTIMORE CITY
M	12	2	BALTIMORE CITY
M	17	1	BALTIMORE CITY
M	2	3	BALTIMORE CITY
M	26	1	BALTIMORE CITY
M	27	1	BALTIMORE CITY
M	29	1	BALTIMORE CITY
M	3	1	BALTIMORE CITY
M	32	1	BALTIMORE CITY
M	34	1	BALTIMORE CITY
M	4	1	BALTIMORE CITY
M	40	1	BALTIMORE CITY
M	41	2	BALTIMORE CITY
M	50	2	BALTIMORE CITY
M	55	1	BALTIMORE CITY
M	56	3	BALTIMORE CITY
M	57	1	BALTIMORE CITY
M	59	1	BALTIMORE CITY
M	6	2	BALTIMORE CITY
M	64	2	BALTIMORE CITY
M	66	1	BALTIMORE CITY
M	68	1	BALTIMORE CITY
M	70	1	BALTIMORE CITY
M	71	1	BALTIMORE CITY
M	74	1	BALTIMORE CITY
M	79	1	BALTIMORE CITY
M	8	1	BALTIMORE CITY
M	81	1	BALTIMORE CITY
M	83	1	BALTIMORE CITY
M	9	1	BALTIMORE CITY
M	91	1	BALTIMORE CITY
M	92	2	BALTIMORE CITY
M	0	1	CALVERT
M	69	1	CARROLL
F	0	1	CECIL
F	13	1	CECIL
F	4	1	CECIL
F	69	1	CECIL
F	9	1	CECIL
M	5	1	CECIL

M	63	1	CECIL
F	0	1	CHARLES
F	1	2	CHARLES
F	24	1	CHARLES
F	4	1	CHARLES
F	41	1	CHARLES
F	5	1	CHARLES
F	74	1	CHARLES
F	85	1	CHARLES
F	86	1	CHARLES
M	0	2	CHARLES
M	2	3	CHARLES
M	4	1	CHARLES
M	55	1	CHARLES
M	6	1	CHARLES
M	70	1	CHARLES
M	80	1	CHARLES
M	83	1	CHARLES
F	54	1	DORCHESTER
F	30	1	FREDERICK
F	62	1	FREDERICK
F	79	1	FREDERICK
F	80	1	FREDERICK
M	0	1	FREDERICK
F	74	1	GARRETT
F	86	1	GARRETT
F	89	1	GARRETT
F	93	1	GARRETT
F	95	1	GARRETT
M	75	1	GARRETT
M	89	1	GARRETT
U	7	1	HARFORD
F	1	1	HARFORD
F	78	1	HARFORD
F	80	1	HARFORD
F	87	1	HARFORD
M	0	2	HARFORD
M	1	1	HARFORD
M	15	1	HARFORD
M	29	1	HARFORD
M	3	1	HARFORD
M	35	1	HARFORD
M	4	1	HARFORD
M	50	1	HARFORD
M	53	1	HARFORD
M	7	1	HARFORD
M	79	1	HARFORD
M	83	1	HARFORD
U	86	1	MONTGOMERY
U	93	1	MONTGOMERY
F	49	1	MONTGOMERY
F	84	1	MONTGOMERY
F	93	1	MONTGOMERY
U	5	1	PRINCE GEORGE'S
U	54	1	PRINCE GEORGE'S
F	0	2	PRINCE GEORGE'S
F	21	1	PRINCE GEORGE'S
F	44	1	PRINCE GEORGE'S
F	61	1	PRINCE GEORGE'S
F	65	1	PRINCE GEORGE'S
F	68	1	PRINCE GEORGE'S
F	71	1	PRINCE GEORGE'S
F	72	1	PRINCE GEORGE'S
F	74	1	PRINCE GEORGE'S
F	79	1	PRINCE GEORGE'S
F	80	1	PRINCE GEORGE'S
F	88	1	PRINCE GEORGE'S
F	90	1	PRINCE GEORGE'S
F	93	1	PRINCE GEORGE'S
F	96	2	PRINCE GEORGE'S
M	0	1	PRINCE GEORGE'S
M	50	1	TALBOT
M	57	1	TALBOT
F	92	1	WASHINGTON
F	93	1	WASHINGTON
F	99	1	WASHINGTON
M	76	1	WASHINGTON
M	95	1	WASHINGTON
M	88	1	WICOMICO

INFLUENZA B VIRUS

M	62	1	ALLEGANY
F	28	1	ANNE ARUNDEL
F	95	1	ANNE ARUNDEL
M	62	1	ANNE ARUNDEL
M	86	1	ANNE ARUNDEL
F	61	1	BALTIMORE
F	88	1	BALTIMORE
F	13	1	BALTIMORE CITY
F	14	1	BALTIMORE CITY
F	21	1	BALTIMORE CITY
F	3	1	BALTIMORE CITY
F	4	1	BALTIMORE CITY
F	43	1	BALTIMORE CITY
F	77	1	BALTIMORE CITY
M	0	1	BALTIMORE CITY
M	11	1	BALTIMORE CITY
M	30	1	BALTIMORE CITY
M	6	1	BALTIMORE CITY
F	8	1	CALVERT
F	13	1	CECIL
M	1	1	CECIL
M	17	1	CECIL
M	28	1	CECIL
F	1	1	CHARLES
M	1	2	CHARLES
M	4	1	GARRETT
U	1	1	MONTGOMERY
F	26	2	PRINCE GEORGE'S
F	47	1	PRINCE GEORGE'S
M	21	1	PRINCE GEORGE'S
M	5	1	PRINCE GEORGE'S
M	29	1	SAINT MARY'S
M	22	1	WICOMICO

TOTAL 763

VIRAL HEPATITIS

ORGANISM	# SPECIMENS	# POSITIVES	JURISDICTION
HEPATITIS A			
	1	0	PRINCE GEORGE'S
SUBTOTAL	1	0	
HEPATITIS B			
	53	0	ALLEGANY
	112	1	ANNE ARUNDEL
	52	0	BALTIMORE
	354	2	BALTIMORE CITY
	10	0	CALVERT
	9	0	CARROLL
	91	2	CECIL
	6	0	CHARLES
	14	0	FREDERICK
	13	0	GARRETT
	22	0	HARFORD
	18	1	HOWARD
	1	0	KENT
	308	3	MONTGOMERY
	308	7	PRINCE GEORGE'S
	1	0	QUEEN ANNE'S
	12	0	SAINT MARY'S
	1	0	SOMERSET
	7	0	TALBOT
	2	0	UNKNOWN
	37	0	WASHINGTON
	50	1	WICOMICO
	2	0	WORCESTER
SUBTOTAL	**1,483**	**17**	
HEPATITIS C			
	49	7	ALLEGANY
	146	18	ANNE ARUNDEL
	53	2	BALTIMORE
	200	58	BALTIMORE CITY
	9	0	CALVERT
	14	0	CARROLL
	80	16	CECIL
	3	0	CHARLES
	13	1	FREDERICK
	15	0	GARRETT
	54	3	HARFORD
	9	0	HOWARD
	1	0	KENT
	89	1	MONTGOMERY
	192	6	PRINCE GEORGE'S
	3	0	QUEEN ANNE'S
	12	0	SAINT MARY'S
	2	0	SOMERSET
	7	0	TALBOT
	1	0	UNKNOWN
	13	0	WASHINGTON
	6	2	WICOMICO
	1	0	WORCESTER
SUBTOTAL	**972**	**114**	
TOTALS	**2,456**	**131**	

RABIES

SOURCE	#	JURISDICTION
CAT	2	FREDERICK
FOX	1	BALTIMORE
RACCOON	2	ALLEGANY
	2	BALTIMORE
	1	BALTIMORE CITY
	1	CALVERT
	1	CARROLL
	2	CHARLES
	2	FREDERICK
	3	HARFORD
	1	PRINCE GEORGE'S
	2	SOMERSET
	3	WORCESTER
TOTAL POSITIVES	**23**	
TOTAL SPECIMENS	**213**	

CHLAMYDIOPHILIA PSITTACI
(CHLAMYDIA)

REPORTED QUARTERLY
NO REPORT THIS MONTH

CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY
NO REPORT THIS MONTH

NEWBORN & CHILDHOOD SCREENING

PRESUMPTIVE POSITIVES

DISORDERS	#
PHENYLKETONURIA (PKU)	0
MAPLE SYRUP URINE DISEASE (MSUD)	4
HOMOCYSTINURIA	10
TYROSINEMIA	25
ARGININEMIA	0
CITRULLINEMIA	1
GALACTOSEMIA	5
BIOTINIDASE DEFICIENCY	5
HYPOTHYROIDISM	62
HEMOGLOBIN -DISEASE	11
HEMOGLOBIN -BENIGN	426
CONGENITAL ADRENAL HYPERPLASIA (CAH)	5
CYSTIC FIBROSIS	4
FATTY ACID OXIDATIONS	5
ORGANIC ACIDEMIAS	4
ACYLCARNITINE - BORDERLINE	6
ACYLCARNITINE - OTHERS	0

MONTHLY TOTALS

# OF SPECIMENS SCREENED	11,162
NUMBER OF TESTS	783,995
% UNSATISFACTORY SPECIMENS	2.1

2011 YEAR-TO-DATE CONFIRMED CASES

CONDITIONS	# CONFIRMED
MEDIUM CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY (MCAD)	1
SHORT CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY (SCAD)	1
VERY LONG-CHAIN ACY-Co-A DEHYDROGENASE DEFICIENC(VLCAD)	1
HYPOTHYROIDISM - PRIMARY	6
OTHER HYPOTHYROIDISM	3
TBG DEFICIENCY	2
SICKLE CELL DISEASE -SS	2
BIOTINIDASE DEFICIENCY - CARRIER	1
CYSTIC FIBROSIS	3
GALACTOSEMIA - VARIANT -DG	1
GALACTOSEMIA - VARIANT -DN	1
SICKLE CELL DISEASE -SS	3
SICKLE CELL DISEASE -SC	2

ENVIRONMENTAL CHEMISTRY

SAMPLE TYPES	# NON-COMPLIANT	# TESTED
ASBESTOS		
AIR	0	0
BULK	1	3
AIR QUALITY		
PM $_{2.5}$	0	141
RADIATION		
AIR/CHARCOAL FILTERS	0	56
MILK	0	0
WIPES	0	44
RAW WATER	0	7
VEGETATION	0	0
OTHER	0	12
DRINKING WATER		
METALS		
COMMUNITY	2	8
NON-COMMUNITY	3	6
PRIVATE WELLS	15	158
PESTICIDES & PCBs		
COMMUNITY	0	35
NON-COMMUNITY	0	8
PRIVATE WELLS	0	0
VOLATILE ORGANIC COMPOUNDS		
COMMUNITY	0	88
NON-COMMUNITY	0	8
PRIVATE WELLS	0	23
RADIATION		
COMMUNITY	0	17
NON-COMMUNITY	0	15
PRIVATE WELLS	0	0
INORGANICS		
COMMUNITY	0	4
NON-COMMUNITY	7	139
PRIVATE WELLS	2	112
FOOD CHEMISTRY		
SUSPECTED TAMPERING	0	0
MICROSCOPIC FILTH	0	0
LABELING	0	0
SURVEILLANCE	0	0
CHEMICAL CONTAMINATION	0	0
TOTAL	**30**	**884**

VIRAL LOAD SPECIMENS

HIV-1 RNA COPIES/ML	$<10^3$	10^3—10^4	10^4—10^5	$>10^5$	**TOTALS**
ALLEGANY	10	0	1	0	11
FREDERICK	0	1	0	1	2
MONTGOMERY	61	11	7	2	81
PRINCE GEORGE'S	119	12	9	2	142
WASHINGTON	7	2	2	0	11
WICOMICO	3	1	1	0	5
SUBTOTALS	200	27	20	5	252
DEPARTMENT OF CORRECTIONS	13	2	2	1	18
TOTALS	213	29	22	6	270

HIV ANTIBODY SCREENING

SUBMITTER	TOTAL SPECIMENS	# EIA POSITIVE	% EIA POSITIVE	# WB POSITIVE	% WB POSITIVE
CORRECTION FACILITY JUVENILE	69	2	2.90%	2	100.00%
CORRECTIONAL INSTITUTIONS	187	2	1.07%	2	100.00%
FAMILY PLANNING (NON-GOVERNMENT)	54	1	1.85%	1	100.00%
HEALTH CENTERS (NON-GOVERNMENT)	328	20	6.10%	18	90.00%
HEALTH DEPT, NON-STD, FAMILY PLANNING	314	1	0.32%	1	100.00%
HEALTH DEPT, NON-STD, OB/GYN	93	1	1.08%	0	0.00%
HEALTH DEPT, NON-STD, OTHER	442	32	7.24%	31	96.88%
HEALTH DEPT, STD CLINICS	991	14	1.41%	12	85.71%
HOSPITAL, OTHER	114	6	5.26%	5	83.33%
HOSPITAL, PUBLIC	30	0	0.00%	0	0.00%
LABORATORIES (NON-HOSPITAL)	314	11	3.50%	7	63.64%
PEDIATRIC - CHILD HEALTH	7	0	0.00%	0	0.00%
PRIVATE PHYSICIANS	2	0	0.00%	0	0.00%
PRIVATE STUDENT HEALTH CTRS	41	0	0.00%	0	0.00%
PUBLIC STUDENT HEALTH CTRS	227	0	0.00%	0	0.00%
TOTALS	**3,213**	**90**	**2.80%**	**79**	**87.78%**

MAILING LABEL

Critical Link
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