

BACTERIOLOGY PROFICIENCY TESTING PROGRAM

General Category

September 16, 2008

This report summarizes the results of the proficiency test administered September 16, 2008 to laboratories in the General Bacteriology category.

If you have any questions or comments, please contact either:

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Bacteriology Proficiency Testing Program

GENERAL INFORMATION

The Bacteriology Proficiency Testing Program. Three proficiency testing events are given annually, each consisting of a minimum of five specimens. In order to successfully complete a test event, participating laboratories must achieve a score of 80% or greater. Unsuccessful performance in the testing program is defined as a score of less than 80% on two of three consecutive test events.

Authentication. The presence and identity of the organism(s) in each specimen must be confirmed by at least 80% of the referee or participating laboratories. Referee laboratories are selected from New York State participating laboratories (located throughout the State) with acceptable and reproducible levels of performance. Sample vials are subjected to extensive quality control testing in our laboratory during preparation and storage.

Grading System. Laboratories are to process proficiency test specimens in the same manner as patient specimens. Thus, laboratories are responsible for identifying test isolates to the same level as performed on patient isolates. If your laboratory identifies an organism to the species level on special request, then you must also identify the organisms to the species level on the proficiency test; consider speciation to have been requested on all reportable isolates. In addition, laboratories are not responsible for culturing any test samples from specimen sources that they do not process. Information regarding your laboratory's reporting protocol was provided to us in the questionnaire previously distributed to all laboratories. Any changes in reporting protocol must be received by our office prior to the mailout date for proficiency testing for that information to be considered in grading.

Our testing format is in compliance with HCFA CMS guidelines as specified in the regulations of CLIA '88. One-half of our samples require identification of all organisms present. The other half requires that only the pathogenic organism(s) be reported. We recognize the potential for any organism to be pathogenic depending on the clinical condition of the patient. However, our samples are designed so that only well-established pathogens should be reported.

Tests are graded in strict adherence to HCFA CMS guidelines, as specified in the regulations of CLIA '88. Each of the specimens receives a score as determined by the following formula:

$$(a + b)/(c + d + e) \times 100\%$$

a = # correct identifications

b = # correct antibiotic susceptibility results (if applicable)

c = # possible identifications

d = # possible antibiotic susceptibility results (if applicable)

e = # additional organisms reported

Grades for each sample are then averaged to determine the final grade for this testing event. The minimum passing grade for each test event is 80%.

Disclaimer

The use of brand and/or trade names in this report does not constitute an endorsement of the products on the part of the Wadsworth Center or the New York State Department of Health.

Notes of Interest

New Bacteriology Proficiency Testing Program Coordinator

Effective January 1, 2009, Geetha Nattanmai will assume the duties as the Coordinator of the Bacteriology Proficiency Testing Program. Ms. Nattanmai is also a Research Scientist in the Bacteriology Laboratory of the Wadsworth Center, NYSDOH. She can be reached at (518) 474-4177 or by email to bacti@wadsworth.org.

EPTRS Reporting Tips

The EPTRS system has greatly streamlined the transmission of proficiency test results and has drastically reduced the turnaround time for scoring test events. However, the system has certain restrictions and attempts by users to circumvent these restrictions result in a slower grading process and can cause scoring errors. Below are some helpful tips on data entry that can help minimize these problems:

1. Please do not enter an organism more than once for the same sample. For example, do not enter '*E. coli*' under Bacterial Identification 1 and again under Bacterial Identification 2. Do not enter an identification twice in order to list multiple methods of identification – see 2.
2. Please do not enter multiple systems for one identification. The system information is only for statistical purposes and we do not count multiple systems entered. Please choose the ONE system you relied on most for your identification.
3. Please use the drop down list if at all possible. There are very few times when you should need to use the "other" box. Entries such as "Catalase, sugars, gram stain" should be entered as "Conventional biochemicals" rather than typed in the "Other" box. Individual biochemical results are not noted in the statistics.
4. Please do not enter both an MIC and a zone size for one susceptibility result. Enter only the value appropriate for the main system you used to generate your response.
5. Please do not enter extraneous information in the Bacterial Identification field, such as "would send to reference lab for confirmation". We realize this is what you may report to a physician but it is unnecessary for proficiency results and does not affect your grade. If you would like to enter additional information, please utilize the "Comment" field on the first page of the EPTRS form.

Please follow these suggestions to ensure that your grade is accurate. All extra information, etc can adversely affect the grading program we use.

Bacteriology Questionnaires

Please make sure that the information on your laboratory's Bacteriology Questionnaire is accurate. If you need a copy of your questionnaire for review, please contact our office at 518-474-4177 or email us at bacti@wadsworth.org. Please note that proficiency test results are graded in accordance with information on the questionnaire. **Grades will not be revised due to incorrect information submitted on the questionnaire.**

SEPTEMBER 16, 2008 TEST EVENT

Number of Participating Laboratories:

Receiving specimens 211

Returning results 209

Grade Distribution		
Score	Number	Percent
100%	127	61
90 – 99%	26	12
80 – 89%	47	22
70 – 79%	6	3
60 – 69%	3	1

BACTERIOLOGY - GENERAL
SEPTEMBER 16, 2008
ANSWER KEY

Specimen No. 1 - Stool (Pathogens Only)

Vibrio parahaemolyticus

Specimen No. 2 – Sputum (Pathogens Only)

Streptococcus pneumoniae

Specimen No. 3 – Wound - Aerobic / Anaerobic (All Organisms)

Clostridium sordellii

Enterococcus faecalis

Specimen No. 4 – Blood (All Organisms) A/S

Staphylococcus lugdunensis

Susceptibility of *S. lugdunensis* to: Penicillin - Susceptible

Oxacillin - Susceptible

Specimen No. 5 – CSF (All Organisms)

Neisseria meningitidis

Educational

Klebsiella pneumoniae, KPC producer

***Chlamydia* Specimen**

Positive for *Chlamydia trachomatis*

Direct Antigen Detection - A (Throat)

Negative for Group A *Streptococcus*

REFEREE LABORATORY RESULTS

Specimen Number	Referee Laboratory Responses	Percent*
1	<i>Vibrio parahaemolyticus</i>	90
	No enteric pathogens isolated	10
2	<i>Streptococcus pneumoniae</i>	100
3	<i>Clostridium sordellii</i>	100
	<i>Enterococcus faecalis</i>	100
4	<i>Staphylococcus lugdunensis</i>	100
	Penicillin – Susceptible	100
	Oxacillin Susceptible	100
5	<i>Neisseria meningitidis</i>	100
Educational	<i>Klebsiella pneumoniae</i>	100

*Based on responses of 10 referee laboratories

Specimen Number 1 - Stool (Pathogens Only)

This simulated stool specimen contained *Vibrio parahaemolyticus*. This pathogen was correctly identified by 90% of the referee laboratories. Of the participating laboratories that process stool cultures for *Vibrio*, 75% isolated this organism, with 96% of them reporting *Vibrio parahaemolyticus* and 4% reporting *Vibrio* species. Additional organisms in this sample were *Enterobacter cloacae* and *Citrobacter freundii*.

Vibrio parahaemolyticus is a natural inhabitant of coastal waters worldwide¹. This organism is a halophilic, Gram-negative bacterium that causes gastroenteritis in humans. Infections can result from the consumption of contaminated seafood, particularly raw shellfish. *Vibrio parahaemolyticus* is the most common *Vibrio* isolated from clinical specimens in the United States. Infection with *V. parahaemolyticus* causes watery diarrhea, often with abdominal cramping, nausea, vomiting, fever and chills. *V. parahaemolyticus* can also cause infection of the skin when an open wound is exposed to warm seawater.

An estimated 4500 cases of *V. parahaemolyticus* infection occur each year in the United States². *Vibrio parahaemolyticus* cases can go undetected if laboratories do not routinely use a selective media to identify this organism. *Vibrio* can be isolated from cultures of stool, wound or blood. For isolation from stool, use of a selective medium that has thiosulfate, citrate, bile salts, and sucrose (TCBS agar) is recommended.

References:

¹Twedt, R. M. 1989. *Vibrio parahaemolyticus*, p. 552–554. In M. P. Doyle (ed.), Foodborne bacterial pathogens. Marcel Dekker Inc., New York, N.Y.

²http://www.cdc.gov/nczved/dfbmd/disease_listing/vibriop_gi.html

Number 1 - Methods of identification used by laboratories reporting:

Vibrio parahaemolyticus

bioMerieux API 20E	33
bioMerieux Vitek 2 GN	32
Dade Behring MicroScan Gram Neg ID	27
bioMerieux Vitek 1 GNI +	26
bioMerieux API 20NE	10
bioMerieux API Rapid 20E	6
BD Phoenix Gram Negative ID	3
Conventional biochemicals	2
BD BBL Crystal Enteric/Nonfermenter	2
Not given	1
Two or more systems	1
BD BBL Oxi/Ferm II	1
TOTAL	144

***Vibrio* species**

Conventional biochemicals	3
Dade Behring MicroScan Gram Neg ID	2
bioMerieux Vitek 2 GN	1
TOTAL	6
<i>Vibrio alginolyticus</i>	
Dade Behring MicroScan Rapid Gram Neg	1
<i>Salmonella species</i>	
bioMerieux Vitek 1 GNI +	1
No enteric pathogens isolated	49
Specimen source not tested	8
Total All Responses	209
Extra organisms reported	
<i>Enterobacter cloacae</i>	
bioMerieux Vitek 2 GN	2
<i>Citrobacter freundii</i>	
bioMerieux Vitek 2 GN	2

Specimen No. 2 – Sputum (Pathogens Only)

The pathogenic organism included in this simulated sputum specimen was *Streptococcus pneumoniae*. This organism was identified by all referee laboratories and all participating laboratories that process sputum specimens. Additional organisms in this sample were *Staphylococcus epidermidis* and *Corynebacterium striatum*.

Number 2 - Methods of identification used by laboratories reporting:

Streptococcus pneumoniae

Conventional biochemicals	122
bioMerieux Vitek 2 GP	27
bioMerieux Vitek 1 GPI	14
Dade Behring MicroScan Gram Pos ID	11
BD BBL Pneumoslide	9
Remel RapID STR	4
bioMerieux API 20 Strep	3
Boule Diagnostics Phadebact Streptococcus	2
BD Phoenix Gram Positive ID	2
Difco Pasco	1
BD Phoenix SMIC/ID Panel	1
Remel: Phadebact Pneumococcus Test : BACTUS AB	1
bioMerieux API 20E	1
Vitek 2 Compact "Biomerieux"	1
DPC PathoDX Strep Grouping	1
Other - Phadebact Streptococcus pneumoniae latex	1
Not given	1
TOTAL	202

Specimen source not tested **7**

Total All Responses **209**

Extra organisms reported

Staphylococcus aureus

bioMerieux Vitek 2 GP 1

Corynebacterium striatum

Remel RapID CB Plus 1

Specimen No. 3 – Wound - Aerobic/Anaerobic (All Organisms)

This simulated wound specimen was to be cultured both aerobically and anaerobically. It contained *Clostridium sordellii* and *Enterococcus faecalis*.

Clostridium sordellii was identified by 100% of the referee laboratories and by 90% of participating laboratories that processed the sample. An additional 6% of participants reported *Clostridium* species.

Enterococcus faecalis was identified by 100% of the referee laboratories and by 87% of participating laboratories that processed the sample. An additional 12% of participants reported *Enterococcus* species.

Number 3 (Anaerobe) - Methods of identification used by laboratories reporting:

Clostridium sordellii

Remel RapID ANA II	101
bioMerieux API 20A	20
bioMerieux Vitek 1 ANI	20
Dade Behring MicroScan Rapid Anaerobe	17
bioMerieux API Rapid ID 32A	4
Conventional biochemicals	2
BD BBL Crystal Anaerobe	2
Remel RapID CB Plus	1
Other - Vitek 2 ANC	1
Other - RAPID IDS ANA II SYSTEM	1
16s rDNA sequencing	1
bioMerieux Vitek 2 ANC	5
Not given	1
vitek anc id card	1
TOTAL	177

***Clostridium* species**

Remel RapID ANA II	6
Conventional biochemicals	2
Dade Behring MicroScan Rapid Anaerobe	1
bioMerieux Vitek 1 ANI	1
bioMerieux API 20A	1
TOTAL	11

No anaerobic organisms 2

***Clostridium* sp. not perfringens**

Remel RapID ANA II	2
Gram stain, morphology	1

Anaerobe not tested in this source 1

No <i>Bifidobacterium</i> isolated	
No growth on selective media.	1
<i>Clostridium bifermentans</i>	
bioMerieux API 20A	1
<i>Clostridium sporogenes</i>	
bioMerieux API 20A	1
Do not process anaerobes	10
Specimen source not tested	2
Total All Responses	209

Number 3 (Aerobe) - Methods of identification used by laboratories reporting:

<i>Enterococcus faecalis</i>	
Dade Behring MicroScan Gram Pos ID	70
bioMerieux Vitek 2 GP	47
bioMerieux Vitek 1 GPI	28
Conventional biochemicals	12
bioMerieux API 20 Strep	8
BD Phoenix Gram Positive ID	4
Remel RapID STR	3
Other - Dade Behring Pos combo	1
Biolog MicroLog Gram Positive	1
Not given	1
Dade Behring MicroScan Rapid Gram Pos	1
Vitek 2 Compact "Biomerieux"	1
dade behring micro scan positive break point combo	1
Polymerase chain reaction	1
Other – RiboPrinter	1
TOTAL	180
<i>Enterococcus species</i>	
Conventional biochemicals	18
Dade Behring MicroScan Gram Pos ID	4
bioMerieux Vitek 2 GP.	1
Pro-Lab Prolex Streptococcal Grouping Latex	1
TOTAL	24
<i>Streptococcus, group D</i>	
Conventional biochemicals	1

<i>Staphylococcus, coagulase-negative</i>	
Other - Sure Vue - Color Staph ID (Fisher)	1
<i>Enterococcus faecium</i>	
Conventional biochemicals	1
Specimen source not tested	2
Total All Responses	209

Specimen No. 4 – Blood - Antibiotic Susceptibility

This simulated blood specimen contained *Staphylococcus lugdunensis*. This organism was identified by all referee laboratories. Of the participating laboratories that processed this sample, 88% reported *S. lugdunensis* with 10% reporting *Staphylococcus*, coagulase-negative. This organism was first included in our proficiency test in January 2003 and again in May 2006. Although the percentage of participating laboratories that correctly identified *S. lugdunensis* has increased from 37% in January 2003 to 59% in May 2006 to 88% in this event, there are still laboratories that do not distinguish this pathogen from other coagulase-negative staphylococci.

As stated in the May 2006 Bacteriology - General critique, identification of *S. lugdunensis* is important both because of this organism's pathogenicity and because correct identification is needed for proper antimicrobial susceptibility testing. *S. lugdunensis* is a coagulase-negative *Staphylococcus* that has the potential to cause clinically significant infections that resemble those caused by *S. aureus*. Infections attributed to *S. lugdunensis* include infective endocarditis, bacteremia, meningitis, bone and joint infections and soft tissue infections.¹

In the laboratory *S. lugdunensis* isolates can give a positive slide coagulase test result but tube coagulase tests are negative.² According to a validation study by Tan Y et al. (2008), the use of simple screening methods such as PYR (pyrrolidonylarylamidase), ornithine decarboxylase and mannose utilization can be used to differentiate *S. lugdunensis* from other coagulase-negative staphylococci. Based on these screening tests, isolates of coagulase-negative staphylococci that are PYR positive, ornithine positive and mannose positive can be identified as *S. lugdunensis*.³

Antimicrobial susceptibility testing was indicated with penicillin and oxacillin. This isolate was susceptible to both antibiotics. Penicillin was reported as susceptible by all referee laboratories and 86% of participating laboratories. Oxacillin was reported as susceptible by all referee laboratories and 95% of participating laboratories.

Effective with the 2006 guidelines, Clinical and Laboratory Standards Institute (CLSI) recommends that cefoxitin disks be used in place of oxacillin disks to test *S. lugdunensis* for oxacillin susceptibility.⁴ In addition, there are no interpretive criteria for evaluating results obtained when using oxacillin disks with *S. lugdunensis*. For laboratories performing MIC testing, it should be noted that the cefoxitin disk is more reliable for detecting oxacillin-susceptible strains of coagulase-negative staphylococci (including *S. lugdunensis*) than oxacillin MIC testing.⁵

As stated in the May 2006 PT critique, the identification of *S. lugdunensis* has an impact on the interpretation of susceptibility results. Laboratories are strongly encouraged to screen coagulase-negative staphylococci from sterile body sites for this species. For those laboratories that are unable to differentiate this organism from coagulase-negative staphylococci, an interpretation for oxacillin susceptibility cannot be determined and should not be reported. The isolate should be forwarded to a reference laboratory for full identification and susceptibility testing if required.

¹Thean, Y. et al. Microbiological Characteristics, Presumptive Identification, and Antibiotic Susceptibilities of *Staphylococcus lugdunensis*. J. Clin. Microbiol. 2008 46: 2393-2395.

²http://en.wikipedia.org/wiki/Staphylococcus_lugdunensis

³Schnitzler, N. et al. *Staphylococcus lugdunensis*: Report of a case of peritonitis and an easy-to-perform screening strategy. *J Clin Microbiol*, 1998; 36: 812-813.

⁴Clinical and Laboratory Standards Institute. 2006. Performance standards for antimicrobial susceptibility testing; eighteenth information supplement, M100-S16. Clinical and Laboratory Standards Institute, Wayne, PA.

⁵Clinical and Laboratory Standards Institute. 2008. Performance standards for antimicrobial susceptibility testing; eighteenth information supplement, M100-S18. Clinical and Laboratory Standards Institute, Wayne, PA.

Number 4 - Methods of identification used by laboratories reporting

Staphylococcus lugdunensis

Dade Behring MicroScan Gram Pos ID	71
bioMerieux Vitek 2 GP	52
Conventional biochemicals	29
bioMerieux API Staph	16
BD Phoenix Gram Positive ID	5
Dade Behring MicroScan Rapid Gram Pos	2
Not given	1
Biolog MicroLog Gram Positive	1
RiboPrinter	1
bioMerieux Vitek 1 GPI	2
TOTAL	180

Staphylococcus, coagulase-negative

Conventional biochemicals	10
Dade Behring MicroScan Gram Pos ID	3
Remel BactiStaph	2
Other - coagulase test	1
Murex Staphaurex	1
Pro-Lab Diagnostics Prolex Staph latex	1
Fisher Healthcare SureVue Color Staph	1
BD BBL Staphyloslide	1
LifeSign Staph Latex	1
TOTAL	21

Staphylococcus species, not Staphylococcus aureus

Other - Latex agglutination testing with confirmation by bioMerieux Vitek 2 GP.

1

Staphylococcus epidermidis

Conventional biochemicals **1**

Enterococcus species

bioMerieux Vitek 2 GP **1**

Specimen source not tested 5

Total All Responses 209

Extra organism reported
Klebsiella pneumoniae
 bioMerieux Vitek 2 GN

1

Results of Antimicrobial Susceptibility Testing
Staphylococcus lugdunensis with Penicillin

Result	Method	MIC – ug/ml	Zone - mm
Susceptible (167)	BD Phoenix (3)	≤0.125 (1)	
		≤0.13 (1)	
		0.5 (1)	
	bioMerieux Vitek 1 (2)	≤0.03 (2)	
	bioMerieux Vitek 2 (40)	0.12 (18)	
		0.06 (9)	
		≤0.03 (5)	
		≤0.03 (1)	45
		0.12 (6)	
		≤0.06 (1)	
	E-test (3)	0.064 (1)	
		0.094 (1)	
		0.12 (1)	
	MicroScan (77)	≤0.03 (56)	
		<0.03 (10)	
		Not given (3)	
		0.12 (4)	
		≤0.25 (2)	
		≤0.03 (1)	42
		0.03 (1)	
		1 (1)	
	in-house prepared frozen mic (1)	0.12 (1)	
	Trek Sensititre (3)	≤0.06 (2)	
		≤0.06 (1)	42
	Disk diffusion (35)		40 (6)
			35 (4)
			37 (4)
		39 (4)	
		42 (4)	
		36 (3)	
		38 (3)	
		41 (2)	
		43 (2)	
		32 (1)	
		33 (1)	
		46 (1)	

	Agar dilution		33 (1)
			44 (1)
		1 (1)	
Resistant (27)	bioMerieux Vitek 1	≥16 (9)	
		0.5 (1)	
		Not given (1)	
	bioMerieux Vitek 2 (12)	≥0.5 (5)	
		0.12 (4)	
		0.25 (2)	
		≤0.03 (1)	
	MicroScan (3)	≤0.03 (2)	
		2 (1)	
	Disk diffusion (1)		35 (1)
Test not performed (14)			
Susceptibility not offered (1)			
Total All Responses (209)			

Results of Antimicrobial Susceptibility Testing

Staphylococcus lugdunensis with Oxacillin

Result	Method	MIC – ug/ml	Zone - mm	
Susceptible (183)	BD Phoenix (4)	≤0.25 (2)		
		≤0.125 (1)		
		0.25 (1)		
		bioMerieux Vitek 1 (6)	0.5 (6)	
		bioMerieux Vitek 2 (51)	0.5 (23)	
			1.0 (19)	
			2.0 (6)	
			≤0.25 (1)	
			<2 (1)	
			0.5 (1)	13
		E-test (2)	0.38 (1)	
			1.0 (1)	
		MicroScan (78)	≤0.25 (31)	
			0.5 (23)	
			<0.25 (6)	
			1.0 (10)	
			Not given (3)	
			≤0.03 (3)	
			≤0.25 (1)	39
			2 (1)	
	in-house prepared frozen mic (1)	0.5 (1)		
	Trek Sensititre (3)	≤0.25 (2)		

		≤0.25 (1)	25
	Disk diffusion (34)		28 (5)
			29 (5)
			30 (5)
			14 (3)
			25 (3)
			Not given (2)
			15 (2)
			23 (2)
			12 (1)
			13 (1)
			16 (1)
			17 (1)
			18 (1)
			19 (1)
			33 (1)
	Agar dilution		19 (1)
			21 (1)
		≤0.06 (1)	
	Cefoxitin screening		28 (1)
Resistant (8)	bioMerieux Vitek 1	0.5 (2)	
		≥16 (1)	
	bioMerieux Vitek 2	1 (1)	
	MicroScan	0.5 (1)	
		1 (1)	
	Disk diffusion		14 (1)
		16 (1)	
Intermediate (1)	MicroScan	0.5 (1)	
Test not performed (16)			
Susceptibility not offered (1)			
Total All Responses (209)			

Specimen No. 5 – Neisseria meningitidis - CSF (Pathogens Only)

This simulated cerebrospinal fluid culture contained *Neisseria meningitidis*. This organism was identified by all referee laboratories and all participating laboratories that processed this specimen source.

Methods of identification used by laboratories reporting:

Neisseria meningitidis

Remel RapID NH	76
bioMerieux API NH	32
Dade Behring MicroScan HNID	26
bioMerieux Vitek 1 NHI	20
Conventional biochemicals	18
bioMerieux Vitek 2 NH	14
BD BBL Crystal Neisseria/Haemophilus	2
16s rDNA sequencing	2
Remel BactiCard Neisseria	2
Not given	1
Two or more systems	1
Remel RapID NF Plus	1
Polymerase chain reaction	1
TOTAL	196
 Specimen source not tested	 13
 Total All Responses	 209
 Extra organisms reported	
<i>Staphylococcus lugdunensis</i>	
bioMerieux Vitek 2 GP	1
<i>Streptococcus viridans</i> group	
Conventional biochemicals	1
<i>Staphylococcus</i> , coagulase-negative	
bioMerieux RAPIDEC Staph	1

Educational – Urine - Antibiotic Susceptibility

This simulated urine specimen contained a carbapenemase-producing *Klebsiella pneumoniae* (KPC). This organism was identified as *Klebsiella pneumoniae* by all of the referee laboratories. Of the participating laboratories that processed this sample, 99% reported *K. pneumoniae* while 0.5% reported *Klebsiella* species.

Antimicrobial susceptibility testing was indicated with ampicillin, tobramycin, cefazolin, ceftriaxone, cephalothin, ciprofloxacin, ertapenem, gentamycin, imipenem, and meropenem. The results for these antibiotics appear on pages 26 through 38. Since the focus of this educational specimen was the detection of carbapenemase resistance, we will highlight the results for ertapenem, meropenem and imipenem.

Antibiotic Susceptibility Results – KPC producing <i>Klebsiella pneumoniae</i>			
Result	Ertapenem	Meropenem	Imipenem
Susceptible	9	50	124
Intermediate	56	7	6
Resistant	59	24	49
Test not performed/No result given	85	128	30

Only 8 labs specifically stated that this isolate was a possible/probable KPC producer. While others may have recognized it as such but did not report it due to the reporting constraints of the electronic system, those labs that did not recognize this isolate as a KPC producer need to re-evaluate their protocol for susceptibility testing to make sure that this resistance is detected.

Carbapenemase production was first identified in *Klebsiella pneumoniae* but has also been reported in other *Enterobacteriaceae* and *Pseudomonas*. This enzyme hydrolyzes all of the β -lactam antibiotics, including cephalosporins, monobactams and carbapenemases resulting in very few therapeutic options. Since isolates may test susceptible to carbapenems using traditional susceptibility tests it is important to recognize when additional testing should be performed to identify KPC producers.

KPC producers are often resistant to all agents that would commonly be used to treat infections caused by *Enterobacteriaceae*. Not all KPC producers will yield an intermediate or resistant result for all carbapenems (ertapenem, imipenem, meropenem) but most will have an MIC $\geq 2\mu\text{g}$ which is above the typical MIC for carbapenems with *Enterobacteriaceae*. Ertapenem is more likely to reveal an intermediate or resistant result (or MIC of $\geq 2\mu\text{g/ml}$) for a KPC-producer as compared to meropenem or imipenem.

The 2009 CLSI Antimicrobial Susceptibility Guidelines will contain significant changes to the recommendations for KPC detection. We strongly recommend that your laboratory obtain a copy of these guidelines as soon as they are released in order to stay abreast of changes in antimicrobial susceptibility testing and reporting guidelines.

The 2009 CLSI guidelines will recommend that labs perform a Modified Hodge Test (MHT) to detect KPC producers. This test should be performed for any isolate that has an elevated but susceptible carbapenem MIC. This includes isolates with an MIC to ertapenem equal to 2 µg/ml; or imipenem or meropenem equal to 2 or 4 µg/ml. Zone size diameters of 19-21 mm for ertapenem and 16-21 mm for meropenem also suggest a possible KPC producer. Isolates that test intermediate or resistant should be reported as such and need not have the Modified Hodge Test performed.

The Modified Hodge Test is performed as follows:

1. Inoculate the surface of a Mueller-Hinton agar plate evenly with a carbapenemase susceptible organism, such as *Escherichia coli* (ATCC 25922)
2. Place an ertapenem or meropenem disk at the center of the plate
3. Heavily streak the test strain (from an overnight culture plate) from the edge of the disk to the periphery of the plate.
4. Incubate overnight

See http://wwwn.cdc.gov/dls/master/view_document.aspx?id=503 for a photograph depicting the interpretation of the MHT.

If the MHT is negative (inhibition of the *E. coli* is uniform around the antibiotic disk) the carbapenem MIC is reported with interpretations. If the MHT is positive (the presence of a distorted inhibition zone with the *E. coli* growing along the streak of the test isolate) the carbapenem MIC may be reported but without an interpretation. A comment should be included stating that the isolate demonstrates carbapenemase production and that the clinical efficacy of the carbapenems has not been established for treating infections caused by organisms that test carbapenem susceptible but demonstrate carbapenemase production *in vitro*. Rarely, an organism can yield an indeterminate result in the MHT. This is demonstrated by inhibition around the antibiotic disk AND along the streak of the isolate. If you encounter such an isolate you should send it to a reference laboratory capable of performing molecular testing. For laboratories located in New York State (outside of New York City) you can send the isolate to the Wadsworth Center Laboratories. Any isolates testing positive for carbapenemase production should be immediately reported to your facility's infection control department.

Emergence of KPC-mediated resistance to the carbapenems continues to challenge clinical laboratories to examine their susceptibility testing protocols. KPC producers are often resistant to all agents that would commonly be used to treat infections caused by *Enterobacteriaceae*. Detection of KPC-producing organisms is the crucial step in controlling their spread.

CDC describes a case study of a KPC producing *Klebsiella pneumoniae* on their Multi-level Antimicrobial Susceptibility Testing Resource (MASTER) website at <http://wwwn.cdc.gov/dls/master/default.aspx>. This website offers more detailed information regarding laboratory testing for KPC producing organisms as well as a picture of a positive and negative MHT.

Anderson, K.F., D. R. Lonsway, J.K. Rasheed, J. Biddle, B. Jensen, L. K. McDougal, R. B. Carey, A. Thompson, S. Stocker, B. Limbago, and J. B. Patel. 2007. Evaluation of Methods To Identify the *Klebsiella pneumoniae* Carbapenemase in *Enterobacteriaceae* J Clin Microbiol. 45: 2723–2725.

Tenover, F. C., R.K. Kalsi, P.P. Williams, R. B. Carey, S. Stocker, D. Lonsway, J. K. Rasheed, J. W. Biddle, J. E. McGowan, Jr., and B. Hanna, 2006. Carbapenem resistance in *Klebsiella pneumoniae* not detected by automated susceptibility testing. *Emerg. Infect. Dis.* 12:1209-1213.

Jean B.Patel, Ph.D. D(ABMM). Public Health Teleconference Series, "Detecting, reporting, and monitoring carbapenemases in public health laboratories". November 19, 2008.

Methods of identification used by laboratories reporting:

Klebsiella pneumoniae

Dade Behring MicroScan Gram Neg ID	69
bioMerieux Vitek 2 GN	51
bioMerieux Vitek 1 GNI +	32
bioMerieux API 20E	20
BD Phoenix Gram Negative ID	6
BD BBL Crystal Enteric/Nonfermenter	2
BD BBL Enterotube II	2
Dade Behring MicroScan Rapid Gram Neg	2
bioMerieux API Rapid 20E	2
16s rDNA sequencing	1
Dade Behring MicroScan negative break point combo	1
Not given	1
Dade Behring Neg Urine Combo	1
bioMerieux Vitek 1 GPI	1
RiboPrinter	1
Conventional biochemicals	1
Vitek 2 Compact "Biomerieux"	1
bioMerieux Vitek 2 GP	1

Klebsiella pneumoniae, probable KPC

Dade Behring Gram Negative Combo 50	1
Dade Behring MicroScan Gram Neg ID	2
bioMerieux GNI+, Spot Indole Negative	1

Klebsiella pneumoniae/ESBL possible KPC producer

bioMerieux Vitek 2 GN	1
BD BBL Crystal Enteric/Nonfermenter	1
Dade Behring MicroScan Gram Neg ID	1
bioMerieux Vitek 2 GN	1
TOTAL	203

Klebsiella species

Dade Behring MicroScan Gram Neg ID	1
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Gram negative bacillus

Dade Behring MicroScan Gram Neg ID	1
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Specimen source not tested

4

Total All Responses

209

Extra organisms reported

Staphylococcus aureus

Remel BactiStaph

1

Summary of Antimicrobial Susceptibility Testing – *Klebsiella pneumoniae*

Antibiotic (total responses)	Susceptible	Intermediate	Resistant
Ampicillin (197)	1	0	196
Tobramycin (168)	1	41	126
Cefazolin (187)	0	0	187
Ceftriaxone (189)	16	29	144
Cephalothin (80)	0	0	80
Ciprofloxacin (190)	0	0	190
Ertapenem (124)	9	56	59
Gentamycin (193)	192	1	0
Imipenem (179)	124	6	49
Meropenem (81)	50	7	24

Results of Antimicrobial Susceptibility Testing

Klebsiella pneumoniae with Ampicillin

Result	Method	MIC – ug/ml	Zone – mm
Resistant (196)	BD Phoenix (4)	>16 (4)	
	bioMerieux Vitek 1 (28)	≥32 (26)	
		>32 (1)	
		Not given (1)	
	bioMerieux Vitek 2 (52)	≥32 (47)	
		>32 (4)	
		Not given (1)	
	E-test (2)	≥256 (1)	
		>256 (1)	
	MIC (1)	≥32 (1)	
	MicroScan (74)	>16 (65)	
		≥16 (4)	
		Not given (3)	
		≥16 (1)	6
		>16 (1)	0
	Not given (1)	>16 (1)	
	Trek Sensititre (5)	>32 (3)	
		>16 (1)	
		>32 (1)	6
	Vitek 2 Compact "Biomerieux" (1)	≥32 (1)	
	Agar dilution (2)		0
		>16 (1)	
	Disk diffusion (26)		Not given (1)
		0 (15)	
≥32		6 (1)	
		6 (6)	
		7 (1)	
		8 (2)	
Susceptible (1)	bioMerieux Vitek 1 (1)	8 (1)	
Test not performed (7)			
Specimen source not tested (2)			
No report (3)			

***Klebsiella pneumoniae* with Tobramycin**

Result	Method	MIC – ug/ml	Zone – mm	
Intermediate (41)	BD Phoenix (1)	8 (1)		
	bioMerieux Vitek 1 (2)	8 (2)		
	bioMerieux Vitek 2 (37)	8 (37)		
	MIC (1)	8 (1)		
Resistant (126)	BD Phoenix (3)	>8 (2)		
		>8.0 (1)		
	bioMerieux Vitek 1 (25)	≥16 (23)		
		≥8 (1)		
		>16 (1)		
	bioMerieux Vitek 2 (9)	≥16 (8)		
		≥8 (1)		
	E-test (1)	96 (1)		
	MicroScan (64)	>8 (58)		
		Not given (2)		
		≥8 (1)		
		≥8 (1)	11	
		>6 (1)		
		>8 (1)	10	
	Not given (2)	≥16 (1)		
		>8 (1)		
	Trek Sensititre (5)	>8 (4)		
		16 (1)		
	Vitek 2 Compact "Biomerieux" (1)	≥16 (1)		
	Agar dilution (2)	Not given (1)	11	
		>8 (1)		
	Disk diffusion (14)			0 (3)
				6 (3)
			8 (1)	
			10 (6)	
			12 (1)	
Susceptible (1)	MicroScan (1)	<1 (1)		
Test not performed (28)				
Specimen source not tested (3)				
No report (10)				

***Klebsiella pneumoniae* with Cefazolin**

Result	Method	MIC – ug/ml	Zone – mm
Resistant (187)	BD Phoenix (4)	>16 (4)	
	bioMerieux Vitek 1 (27)	≥32 (23)	
		>32 (1)	
		32 (1)	
		≥34 (1)	
		Not given (1)	
	bioMerieux Vitek 2 (52)	≥64 (48)	
		>64 (3)	
		Not given (1)	
	MIC (1)	≥32 (1)	
	MicroScan (74)	>16 (65)	
		≥16 (4)	
		Not given (3)	
		≥16 (1)	6
		>32 (1)	
	Not given (1)	>16 (1)	
	Vitek 2 Compact "Biomérieux" (1)	≥64 (1)	
	Trek Sensititre (5)	>32 (3)	
		>16 (1)	
		>32 (1)	6
	Agar dilution (2)		0 (1)
		>16 (1)	
	Disk diffusion (20)		0 (9)
		6 (7)	
≥32		6 (1)	
		7 (1)	
		8 (1)	
		10 (1)	
		Not given (1)	
Test not performed (16)			
Specimen source not tested (2)			
No report (4)			

***Klebsiella pneumoniae* with Ceftriaxone**

Result	Method	MIC – ug/ml	Zone – mm
Intermediate (29)	bioMerieux Vitek 1 (8)	16 (8)	
	bioMerieux Vitek 2 (1)	16 (1)	
	MicroScan (8)	32 (5)	
		16 (2)	
		32 (1)	17
	Not given (2)	16 (2)	
	Trek Sensititre (1)	32 (1)	
	Agar dilution (1)		18 (1)
	Disk diffusion (8)		
			17 (3)
Resistant (144)	BD Phoenix (4)	>32 (2)	
		32 (2)	
	bioMerieux Vitek 1 (10)	≥64 (3)	
		≤8 (2)	
		16 (2)	
		Not given (1)	
		32 (1)	
		≥32 (1)	
	bioMerieux Vitek 2 (45)	16 (16)	
		8 (16)	
		16 (8)	
		Not given (4)	
		≥64 (3)	
		4 (1)	
	E-test (4)	Not given (1)	
		24 (1)	
		64 (1)	
		>32 (1)	
	MicroScan (61)	>32 (39)	
		32 (12)	
		Not given (3)	
		≤8 (2)	
		16 (1)	
		8 (1)	
		≥32 (1)	
		>16 (1)	
		>32 (1)	15
	Not given (1)	>32 (1)	
	Vitek 2 Compact "Biomerieux" (1)	4 (1)	
	Trek Sensititre (4)	Not given (1)	
		16 (1)	
		4 (1)	
		8 (1)	15
Agar dilution (1)	>32 (1)		

	Disk diffusion (13)		0 (2)
			6 (1)
			8 (1)
			12 (1)
			14 (2)
			15 (1)
	16		15 (1)
			16 (2)
			19 (2)
Susceptible (16)	bioMerieux Vitek 1 (7)	≤8 (5)	
		≤4 (1)	
		<8 (1)	
	bioMerieux Vitek 2 (4)	8 (4)	
	MIC (1)	≤8 (1)	
	MicroScan (3)	≤8 (2)	
		<8 (1)	
Disk diffusion (1)		12 (1)	
Test not performed (13)			
Specimen source not tested (2)			
No report (5)			
Total All Responses (209)			

***Klebsiella pneumoniae* with Cephalothin**

Result	Method	MIC – ug/ml	Zone – mm	
Resistant (80)	bioMerieux Vitek 1 (4)	≥32 (3)		
		>32 (1)		
	bioMerieux Vitek 2 (2)	≥64 (2)		
	E-test (1)	≥256 (1)		
	MicroScan (52)	>16 (47)		
		Not given (2)		
		≥16 (1)		
		≥16 (1)	6	
		>16 (1)	0	
	Not given (1)	>16 (1)		
	in-house prepared (1)	>32 (1)		
	Vitek 2 Compact "Biomereieux" (1)	≥64 (1)		
	Agar dilution (1)		0 (1)	
	Disk diffusion (17)			0 (13)
				6 (3)
			8 (1)	
Test not performed (106)				
Specimen source not tested (2)				
No report (21)				

***Klebsiella pneumoniae* with Ciprofloxacin**

Result	Method	MIC – ug/ml	Zone – mm
Resistant (190)	BD Phoenix (4)	>2 (4)	
	bioMerieux Vitek 1 (29)	≥4 (26)	
		>4 (2)	
		Not given (1)	
	bioMerieux Vitek 2 (51)	≥4 (47)	
		>4 (3)	
		4 (1)	
	E-test (2)	32.0 (1)	
		>32 (1)	
	MicroScan (69)	>2 (57)	
		>4 (6)	
		Not given (2)	
		≥2 (1)	
		≥2 (1)	6
		≥4 (1)	
		>2 (1)	0
	Not given (1)	>2 (1)	
	MIC (1)	≥4 (1)	
	Vitek 2 Compact "Biomerieux" (1)	≥4 (1)	
	Trek Sensititre (5)	>4 (3)	
		>16 (1)	
		>4 (1)	6
	Agar dilution (2)		0 (1)
		>2 (1)	
	Disk diffusion (24)		0 (15)
			6 (5)
		≥4	6 (1)
		7 (1)	
		8 (1)	
		10 (1)	
Not given (1)		6 (1)	
Test not performed (10)			
Specimen source not tested (3)			
No report (6)			

***Klebsiella pneumoniae* with Ertapenem**

Result	Method	MIC – ug/ml	Zone – mm
Intermediate (56)	bioMerieux Vitek 2 (28)	4 (28)	
	E-test (2)	4.0 (1)	
		6 (1)	
	MicroScan (22)	4 (19)	
		Not given (2)	
		4 (1)	18
	Not given (1)		18 (1)
	Trek Sensititre (1)	4 (1)	
Disk diffusion (2)		17 (2)	
Resistant (59)	BD Phoenix (1)	>4 (1)	
	bioMerieux Vitek 1 (1)	Not given (1)	
	bioMerieux Vitek 2 (9)	4 (5)	
		≥8 (2)	
		16 (1)	
		4 (1)	15
	E-test (6)	>32 (2)	
		4 (2)	
		6 (1)	
		≥32.0 (1)	
	MicroScan (19)	>4 (14)	
		4 (5)	
	Not given (3)	>4 (3)	
	Hodge test (1)	4 (1)	
	Trek Sensititre (1)	2 (1)	
	Agar dilution (2)		15 (1)
		>4 (1)	
	Disk diffusion (15)		11 (1)
			12 (1)
			13 (3)
		14 (5)	
		15 (5)	
Not given (1)		11 (1)	
Susceptible (9)	E-test (1)	2 (1)	
	MicroScan (7)	≤2 (6)	
		≤4 (1)	
	Trek Sensititre (1)	≤2 (1)	
Test not performed (67)			
Specimen source not tested (3)			
No report (15)			

***Klebsiella pneumoniae* with Gentamycin**

Result	Method	MIC – ug/ml	Zone – mm
Intermediate (1)	Disk diffusion (1)		20 (1)
Susceptible (192)	BD Phoenix (4)	≤2 (3)	
		1.0 (1)	
	bioMerieux Vitek 1 (29)	≤0.5 (17)	
		1 (6)	
		2 (2)	
		(1)	
		≤4 (1)	
		<0.5 (1)	
		0.5 (1)	
	bioMerieux Vitek 2 (52)	≤1 (49)	
		<1 (2)	
		4 (1)	
	E-test (3)	≤4 (1)	
		1.0 (1)	
		2 (1)	
	MicroScan (73)	≤4 (39)	
		≤1 (14)	
		<4 (8)	
		2 (5)	
		Not given (2)	
		<2 (2)	
		≤4 (1)	21
		<1 (1)	
		<4 (1)	23
	Not given (1)	≤4 (1)	
	MIC (1)	≤0.5 (1)	
	Vitek 2 Compact “Biomerieux” (1)	≤1 (1)	
	Trek Sensititre (5)	≤2 (2)	
		≤2 (1)	20
		<2 (1)	
		0.5 (1)	
	Agar dilution (2)		21
		≤1 (1)	
Disk diffusion (20)		17 (1)	
		19 (1)	
		20 (8)	
		21 (2)	
		22 (4)	
	2	22 (1)	
		23 (1)	

		25 (1)
		26 (1)
	Not given (1)	20 (1)
Test not performed (7)		
Specimen source not tested (3)		
No report (6)		

***Klebsiella pneumoniae* with Imipenem**

Result	Method	MIC – ug/ml	Zone - mm
Intermediate (6)	bioMerieux Vitek 2 (2)	≤1 (2)	
	MIC Broth Dilution (1)	≤1.0 (1)	
	MicroScan (2)	≤4 (1)	
		8 (1)	
	Disk diffusion (1)		18 (1)
Resistant (49)	bioMerieux Vitek 1 (6)	≤4 (4)	
		Not given (2)	
	bioMerieux Vitek 2 (15)	≤1 (6)	
		(3)	
		≥4 (3)	
		≥16 (2)	
		1 (1)	
	E-test (2)	0.75 (1)	
		12.0 (1)	
	MicroScan (16)	≤4 (7)	
		>8 (2)	
		≤1 (2)	
		NG (2)	
		<4 (2)	
		>8 (1)	21
	Not given (3)	Not given (2)	
		≥8 (1)	
	hodge test (1)	≤4 (1)	
	Modified Hodge Test	≤4 (1)	
	MicroScan (1)		
Trek Sensititre (1)	8 (1)		
Disk diffusion (5)		21 (1)	
		22 (2)	
		25 (1)	
Susceptible (124)	BD Phoenix (3)	≤1 (3)	
	bioMerieux Vitek 1 (20)	≤4 (19)	
		<4 (1)	
	bioMerieux Vitek 2 (29)	≤1 (26)	
		<1 (2)	
2 (1)			

	E-test (2)	<4 (1)	
		4 (1)	
	MicroScan (48)	≤4 (34)	
		<4 (6)	
		≤1 (3)	
		Not given (2)	
		<1 (2)	
		≤4 (1)	24
	Not given (1)	≤4 (1)	
	Trek Sensititre (4)	≤2 (1)	
		≤2 (1)	23
		0.5 (1)	
	Vitek 2 Compact "Biomerieux" (1)	≤1 (1)	
	Agar dilution (2)		17 (1)
		≤4 (1)	
	Disk diffusion (15)		16 (1)
			17 (1)
			18 (1)
			20 (4)
			22 (3)
		≤4	22 (1)
		23 (1)	
		24 (1)	
		25 (2)	
Test not performed (21)			
Specimen source not tested (3)			
No report (6)			

***Klebsiella pneumoniae* with Meropenem**

Result	Method	MIC – ug/ml	Zone – mm	
Intermediate (7)	bioMerieux Vitek 2 (2)	1 (2)		
	Not given (2)		15 (2)	
	Disk diffusion (3)			14 (1)
				15 (1)
				20 (1)
Resistant (24)	bioMerieux Vitek 1 (1)	≤2 (1)		
	bioMerieux Vitek 2 (4)	Not given (2)		
		1 (2)		
	E-test (3)	1.0 (1)		
		2 (1)		
		>32 (1)		
	hodge test (1)	≤4 (1)		
	MicroScan (6)	>8 (2)		
		2 (2)		
		≤4 (1)		
		<4.0 (1)		
	Modified Hodge Test /MicroScan (1)	≤4 (1)		
	Not given (1)	Not given (1)		
	Trek Sensititre (1)	2 (1)		
	Agar dilution (1)		0 (1)	
	Disk diffusion (5)			Not given (1)
			10 (1)	
			15 (1)	
			17 (1)	
			18 (1)	
Susceptible (50)	BD Phoenix (3)	≤1 (2)		
		2 (1)		
	bioMerieux Vitek 1 (1)	<2 (1)		
	bioMerieux Vitek 2 (9)	1 (8)		
			20 (1)	
	E-test (4)	0.5 (1)		
		1.0 (1)		
		2 (1)		
4.0 (1)		20		

	MicroScan (23)	≤4 (14)	
		<4 (5)	
		4 (2)	
		≤1 (1)	
		≤4 (1)	17
	Not given (1)	≤4 (1)	
	Trek Sensititre (3)	≤1 (2)	
		≤1 (1)	20
	Agar dilution (2)		20 (1)
		≤4 (1)	
	Disk diffusion (3)		18 (1)
			19 (2)
	Not given (1)		19 (1)
Test not performed (104)			
Specimen source not tested (3)			
No report (21)			

Chlamydia – cervical swab for direct testing

This simulated cervical swab was provided to laboratories that test for *Chlamydia* using direct detection methods. This sample contains non-viable organisms and is not suitable for laboratories performing *Chlamydia* culture. Currently, 105 out of 210 participating laboratories (50.0%) perform direct detection testing for *Chlamydia*.

This sample was positive for *Chlamydia* and was reported as such by 99% of the participating laboratories that tested this specimen.

Test kits used by laboratories reporting this specimen as:

Positive for *Chlamydia trachomatis*

Gen-Probe PACE 2 CT or CT/GC	36
Gen-Probe Aptima Combo 2	28
BD ProbeTec ET CT or CT/GC	19
Roche Diagnostics COBAS AMPLICOR CT/NG	11
bioMerieux VIDAS	5
Wampole Clearview <i>Chlamydia</i>	1
Bio-Rad Chlamydia Microplate EIA	1
real-time PCR	1
Roche Diagnostics AMPLICOR CT/NG	1
Digene Hybrid Capture hc2 CT/GC	1
BioStar <i>Chlamydia</i> OIA	1

Negative for *Chlamydia trachomatis*

Gen-Probe Aptima Combo 2	1
Total	106

Direct Antigen Detection

Specimen A - Source: Throat for Group A *Streptococcus*

This specimen was negative for Group A *Streptococcus*. All of the participating laboratories that processed this specimen reported it as negative.

Test kits used by laboratories reporting this specimen as:

Negative for Group A *Streptococcus*:

Genzyme OSOM Ultra Strep A	18
BD Directigen EZ Strep A	16
BioStar Aceava Strep A	13
Quidel QuickVue + Strep A	8
Abbott Signify Strep A Dipstick	6
Fisher Sure-Vue SELECT Strep A	4
Fisher Sure-Vue Strep A Lateral Flow Test	4
BioStar Strep A OIA Max	4
Quidel QuickVue Inline Strep A	3
GenProbe Group A Strep	3
Cardinal Health SP Brand Strep A Cassette	3
BD Chek Strep A	3
Wampole Clearview Strep A Extract	2
Remel PathoDx Strep A	2
Quidel QuickVue Dipstick Strep A	2
Meridian Bioscience ImmunoCard STAT Strep A	2
Cardinal Health SP Brand Strep A Dipstick	2
Abbott Signify Strep A Cassette	2
Stanbio QuStick	1
BD Directigen EZ Group A Strep	1
Fisher Sure-Vue Signature Strep A Test	1
Mainline Confirms Strep A	1
QuStick Strep A (Stanbio)	1
Sacks Medical Corp RefuAH Strep A	1
Polymedco Poly Stat Strep A	1
Beckman Coulter Icon DS Strep A	1
Beckman Coulter Icon SC Strep A	1
Total	106

BACTERIAL IDENTIFICATION BY PARTICIPATING LABORATORIES

SPECIMEN NUMBER 1	<u>Number Reported</u>	<u>%</u>
<i>Vibrio parahaemolyticus</i>	144	68.9
<i>Vibrio</i> species	6	2.9
<i>Vibrio alginolyticus</i>	1	0.5
<i>Salmonella</i> species	1	0.5
No enteric pathogens isolated	49	23.4
Specimen source not tested	8	3.8

SPECIMEN NUMBER 2		
<i>Streptococcus pneumoniae</i>	202	96.7
Specimen source not tested	7	3.3

SPECIMEN NUMBER 3 - Anaerobic organism

<i>Clostridium sordellii</i>	177	84.7
<i>Clostridium</i> species	11	5.3
No anaerobic organisms	2	1.0
<i>Clostridium</i> sp. not <i>perfringens</i>	3	1.4
Anaerobe not tested in this source	1	0.5
No <i>Bifidobacterium</i> isolated	1	0.5
<i>Clostridium bifermentans</i>	1	0.5
<i>Clostridium sporogenes</i>	1	0.5
Do not process anaerobes	10	4.8
Specimen source not tested	2	1.0

SPECIMEN NUMBER 3 - Aerobic organism

<i>Enterococcus faecalis</i>	180	86.1
<i>Enterococcus</i> species	24	11.5
<i>Streptococcus</i> , group D	1	0.5
<i>Staphylococcus</i> , coagulase-negative	1	0.5
<i>Enterococcus faecium</i>	1	0.5
Specimen source not tested	2	1.0

SPECIMEN NUMBER 4

<i>Staphylococcus lugdunensis</i>	180	86.1
Coagulase-negative <i>Staphylococcus</i>	21	10.0
<i>Staphylococcus</i> species not <i>Staphylococcus aureus</i>	1	0.5
<i>Staphylococcus epidermidis</i>	1	0.5

<i>Enterococcus</i> species	1	0.5
Specimen source not tested	5	0.9

SPECIMEN NUMBER 5

<i>Neisseria meningitidis</i>	196	93.8
Specimen source not tested	13	6.2

EDUCATIONAL SPECIMEN

<i>Klebsiella pneumoniae</i>	203	97.1
Coagulase-negative <i>Staphylococcus</i>	1	0.5
Gram negative bacillus	1	0.5
Specimen source not tested	5	2.4

CHLAMYDIA SPECIMEN

Positive for <i>Chlamydia trachomatis</i>	105	100
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DIRECT ANTIGEN SPECIMEN

A. Negative for Group A <i>Streptococcus</i>	106	100%
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Clinical Bacteriology Laboratory Biosafety Survey

This is a brief summary of the results of the biosafety survey. More information will follow.

An infectious agent risk assessment of the bacteriology laboratory
has been performed. - 147
has not been performed. - 63

The biosafety level of the bacteriology laboratory is
BSL2 - 195
BSL3 - 8
Other - 7

The bacteriology laboratory has access to a certified class II or higher biological safety cabinet (BSC).
Yes - 199
No - 11

The current bacteriology proficiency test samples were opened and reconstituted in a certified class II or higher BSC.
Yes - 196
No - 14

Disposable gloves are used by the bacteriology laboratory staff when vortexing primary specimens.
Always - 202
Sometimes (e.g. for selected specimens) - 8
Never - 0

A laboratory gown is used by the bacteriology laboratory staff when vortexing primary specimens.
Always - 195
Sometimes (e.g. for selected specimens) - 13
Never - 2

A certified class II or higher BSC and/or a face shield or splash guard is/are used by the bacteriology laboratory staff when vortexing primary specimens.
Always - 187
Sometimes (e.g. for selected specimens) - 19
Never - 4

Disposable gloves are used by the bacteriology laboratory staff when plating/inoculating primary specimens.
Always - 205
Sometimes (e.g. for selected specimens) - 5
Never - 0

Disposable gloves are used by the bacteriology laboratory staff when examining plated cultures.

Always - 119

Sometimes (e.g. for selected specimens) - 82

Never - 9

A laboratory gown is used by the bacteriology laboratory staff when plating/inoculating primary specimens.

Always - 198

Sometimes (e.g. for selected specimens) - 11

Never - 1

A certified class II or higher BSC and/or a face shield or splash guard is/are used by the bacteriology laboratory staff when plating/inoculating primary specimens.

Always - 170

Sometimes (e.g. for selected specimens) - 39

Never - 1

The laboratory has a copy of the Wadsworth Center's instructional video *Essentials of Biosafety: Overview of Biosafety Principles and Use of the Biological Safety Cabinet*.

Yes - 108

No - 102

Note: May be obtained by contacting the Wadsworth Center's LRN at LRNexec@health.state.ny.us).