

BACTERIOLOGY PROFICIENCY TESTING PROGRAM

General Category

January 9, 2007

This report summarizes the results of the proficiency test administered January 9, 2007 to laboratories in the General Bacteriology category.

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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 speciates an organism on special request, then you must also speciate it in 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 which 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

CLSI guidelines

The following standards have been updated for 2007 and are available from the Clinical and Laboratory Standards Institute:

- **M100-S17** Performance Standards for Antimicrobial Susceptibility Testing: Seventeenth Informational Supplement. January 2007.
- **M11-A7** Methods for Antimicrobial Susceptibility Testing of Anaerobic Bacteria; Approved Standard – Seventh Edition. January 2007.

Clinical Laboratory and Standards Institute
940 West Valley Road, Suite 1400
Wayne, PA 19087-1898
(610) 688-0100
www.clsi.org

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. **Recently, there have been several instances where laboratories have lost credit on proficiency tests because of inaccurate or outdated information on their Bacteriology Questionnaire. Grades will not be revised due to incorrect information on the questionnaire.**

Bacteriology Workshop

A workshop entitled "Just when you thought you had it covered" will be held April 24-26, 2007 at the Wadsworth Center Laboratories in Albany, NY. This workshop will include updates on diagnostic approaches for *Escherichia coli*, *Burkholderia cepacia* complex and *Staphylococcus aureus*. You can call Robyn Atkinson or Kim Musser at (518) 474-4177 for registration information. Registration materials are also available on our website at: <http://www.wadsworth.org/divisions/infdis/bacti>

JANUARY 9, 2007 TEST EVENT

Number of Participating Laboratories:
Receiving specimens **226**
Returning results **225** **(99.6%)**

Grade Distribution		
Score	Number	Percent
100%	204	90.7
90 – 99%	7	3.1
80 – 89%	8	3.6
70 – 79%	4	1.8
< 70%	2	0.9

BACTERIOLOGY - GENERAL
JANUARY 9, 2007
ANSWER KEY

Specimen No. 1 - Stool (Pathogens Only)

Yersinia enterocolitica

Specimen No. 2 – Throat (Pathogens Only)

Group A *Streptococcus*

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

Peptostreptococcus anaerobius

Pseudomonas aeruginosa

Specimen No. 4 – Urine (All Organisms Reported) and Antibiotic Susceptibility

Klebsiella pneumoniae

Susceptibility of *K. pneumoniae* to: Ciprofloxacin - Susceptible

Imipenem - Susceptible

Specimen No. 5 – Blood (All Organisms Reported)

Plesiomonas shigelloides

***Chlamydia* Specimen**

Positive for *Chlamydia trachomatis*

Direct Antigen Detection

A (Throat)

Positive for Group A *Streptococcus*

C (Genital)

Negative for Group B *Streptococcus*

REFEREE LABORATORY RESULTS

Specimen Number	Referee Laboratory Responses	Percent*
1	<i>Yersinia enterocolitica</i>	100
2	Group A <i>Streptococcus</i>	100
3	<i>Peptostreptococcus anaerobius</i>	90
	<i>Peptostreptococcus</i> species ¹	10
	<i>Pseudomonas aeruginosa</i>	100
4	<i>Klebsiella pneumoniae</i>	100
5	<i>Plesiomonas shigelloides</i>	100

* Based on responses of 10 referee laboratories

¹ This laboratory does not provide a species-level identification for this organism

Specimen Number 1 - Stool (Pathogens Only)

This simulated stool sample contained *Yersinia enterocolitica*. This organism was identified by all referee laboratories. Of the participating laboratories that culture stool samples for *Yersinia*, 98% isolated the organism. Of these, 95% reported *Yersinia enterocolitica* while 5% identified the isolate as *Yersinia* species.

Escherichia coli and *Morganella morganii* were included in this specimen as nonpathogenic flora.

Methods of identification used by laboratories reporting:

Yersinia enterocolitica

bioMerieux Vitek GNI +	64
Dade Behring MicroScan Gram Neg ID	63
bioMerieux API 20E	54
Conventional biochemicals	6
BD BBL Crystal Enteric/Nonfermenter	5
Phoenix	3
BD BBL Enterotube II	1
Dade Behring MicroScan Rapid Gram Neg	1
Remel RapID ONE	1
Two or more test methods	1
TOTAL	199

***Yersinia* species**

bioMerieux API 20E	4
Dade Behring MicroScan Gram Neg ID	3
Vitek 2 GN card	2
bioMerieux Vitek 2 Compact	1
TOTAL	10

Specimen source (stool) not tested 10

No enteric pathogens isolated 3

No *Salmonella*, *Shigella* or *Campylobacter* 2

No *Salmonella*, *Shigella* or *E. coli* O157:H7 1

Specimen No. 2 – Throat (Pathogens Only)

This simulated throat specimen contained Group A *Streptococcus*. This organism was correctly identified by all referee laboratories and by all of participating laboratories that process throat cultures.

Alpha-hemolytic streptococci and *Corynebacterium xerosis* were included as nonpathogenic flora in this simulated specimen.

Methods of identification used by laboratories reporting:

Beta-hemolytic *Streptococcus*, group A

BD BBL Streptocard	63
Murex Streptex	48
DPC PathoDX Strep Grouping	35
Conventional biochemicals	29
bioMerieux Vitek GPI	10
Dade Behring MicroScan Gram Pos ID	10
Hardy Diagnostics Strep Pro Kit	8
Boule Diagnostics Phadebact Streptococcus	5
Pro-Lab Prolex Strep Latex	2
The Binding Site Strep grouping kit	2
bioMerieux API 20 Strep	1
BD Chek Strep A	1
Meridian Diagnostics Meritec Strep	1
Oxoid Strep Grouping kit	1
PML's Identicult AE	1
Phoenix	1
RefuAH Rapid strep kit	1
Remel BactiCard Strep	1
Two or more test methods	1
No test method indicated	1
TOTAL	222
Specimen source (throat) not tested	3

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

This simulated abscess specimen contained *Peptostreptococcus anaerobius* and *Pseudomonas aeruginosa*.

Peptostreptococcus anaerobius was reported by 90% of the referee laboratories while 10% identified the isolate as *Peptostreptococcus* species. Of the participating laboratories that perform anaerobic cultures on abscess specimens, 81% reported *Peptostreptococcus anaerobius* and 11% identified the isolate as *Peptostreptococcus* species.

Pseudomonas aeruginosa was identified by all of the referee laboratories and by 98% of participants that processed this sample.

Methods of identification used by laboratories reporting:

Peptostreptococcus anaerobius

Remel RapID ANA II	100
bioMerieux Vitek ANI	29
Dade Behring MicroScan Rapid Anaerobe	16
bioMerieux API 20A	12
bioMerieux API Rapid ID 32A	8
No test method indicated	2
Conventional biochemicals	2
BD BBL Crystal Anaerobe	2
Dade Behring MicroScan Rapid Gram Pos	1
16s rDNA sequencing	1
TOTAL	173

***Peptostreptococcus* species**

Remel RapID ANA II	12
Conventional biochemicals	5
bioMerieux API 20A	4
bioMerieux Vitek ANI	3
TOTAL	24

Anaerobic gram positive cocci 9

Do not process anaerobic cultures 7

No report 4

Specimen source (abscess) not tested 4

No *Bifidobacterium* isolated 2

Eubacterium limosum
bioMerieux API 20A 1

No anaerobic organisms 1

Pseudomonas aeruginosa
bioMerieux Vitek GNI + 88
Dade Behring MicroScan Gram Neg ID 80
bioMerieux API 20E 19
bioMerieux API 20NE 9
Conventional biochemicals 8
Phoenix 4
BD BBL Crystal Enteric/Nonfermenter 4
Two plus 1
Remel RapID NF Plus 1
bioMerieux Vitek 2 Compact 1
bioMerieux API Rapid 20E 1
Biolog MicroLog Gram Negative 1
BD BBL Oxi/Ferm II 1
TOTAL 218

Specimen source (abscess) not tested 4

Klebsiella pneumoniae
bioMerieux Vitek GNI + 1

Plesiomonas shigelloides
bioMerieux Vitek GNI + 1

Pseudomonas species
Dade Behring MicroScan Gram Neg ID 1

Additional organisms reported in Specimen 3:
Enterococcus faecalis 1
Escherichia coli 1

Specimen No. 4 – Urine (All Organisms) and Antibiotic Susceptibility

This simulated urine specimen contained *Klebsiella pneumoniae*. This organism was correctly identified by all referee laboratories and by 98% of the participating laboratories that processed this sample.

Antimicrobial susceptibility testing was indicated with ciprofloxacin and imipenem. This isolate was susceptible to both antibiotics.

While this particular isolate of *K. pneumoniae* was susceptible to imipenem, many strains of *K. pneumoniae* have been found to harbor a new resistance mechanism: a carbapenemase that can hydrolyze imipenem, ertapenem and meropenem. The *Klebsiella pneumoniae* carbapenemase is a plasmid-mediated β -lactamase that confers resistance to all β -lactams including the extended spectrum cephalosporins as well as possessing specific activity against the carbapenems. This mechanism was first recognized in New York City in 2004 and since that time it has been reported throughout New York State and across the country.

This enzyme is most active against ertapenem, followed by meropenem and has the least activity against imipenem. Therefore, there is increasing consensus that any type of antimicrobial screening procedure in the clinical laboratory should include ertapenem regardless of what carbapenems appear on the hospital formulary.

A guidance document was released by the NYS Department of Health in August of 2005 regarding this issue. Since that time, more research has been performed and we are in the process of updating this guidance with specific instructions for laboratories regarding testing and referral mechanisms for these organisms. Please anticipate formal guidance in the coming months.

Methods of identification used by laboratories reporting:

Klebsiella pneumoniae

bioMerieux Vitek GNI +	96
Dade Behring MicroScan Gram Neg ID	80
bioMerieux API 20E	32
BD BBL Crystal Enteric/Nonfermenter	4
Phoenix	3
Conventional biochemicals	2
BD BBL Enterotube II	2
bioMerieux Vitek 2 Compact	1
Biolog MicroLog Gram Negative	1
TOTAL	221

Klebsiella species

Dade Behring MicroScan Gram Neg ID	1
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Pseudomonas aeruginosa
bioMerieux Vitek GNI + 1

Serratia rubidaea
Dade Behring MicroScan Gram Neg ID 1

Specimen source (urine) not tested 1

Additional organisms reported in Specimen 4:
Enterococcus faecalis 1
Lactobacillus species 1
Peptostreptococcus anaerobius 1

Results of Antimicrobial Susceptibility Testing – *K. pneumoniae* with Ciprofloxacin

Result	Method	MIC - µg/ml	Zone - mm	
Susceptible (206)	BioMerieux Vitek (87)	<0.25 (3)		
		<0.5 (2)		
		≤0.25 (11)		
		≤0.5 (17)		
		0.25 (20)		
		0.5 (32)		
		1 (1)		
		Not given (1)		
	Microscan (76)	≤1 (22)		
		<1 (5)		
		<4 (1)		
		0.5 (1)		
		1 (43)		
		2 (1)		
		Not given (3)		
	Disk Diffusion (33)			21 (1)
				22 (2)
				23 (1)
				24 (5)
				25 (6)
				26 (2)
				28 (7)
				29 (1)
				30 (6)
				31 (1)
				35 (1)
	A-B Biodisk E-test (2)		0.125 (1)	
		0.19 (1)		
Phoenix (2)		≤0.5 (2)		
Sensititre (1)		≤0.25 (1)		
Trek (1)		≤0.5 (1)		
Broth dilution (1)		Not given (1)		
MIC frozen in house (1)		0.5 (1)		
V2C AST 14 (1)		1 (1)		
Agar Dilution (1)		1 (1)		
Intermediate (2)	Disk Diffusion (2)		19 (1)	
			20 (1)	
Ciprofloxacin not tested (14)				
No response (2)				
Specimen source (urine) not tested (1)				

Number of laboratories reporting each result indicated in ()

Results of Antimicrobial Susceptibility Testing – *K. pneumoniae* with Imipenem

Result	Method	MIC - µg/ml	Zone - mm	
Susceptible (192)	BioMerieux Vitek (83)	≤1 (12)		
		≤2 (1)		
		≤4 (16)		
		<1 (1)		
		<4 (1)		
		0.4 (1)		
		1 (20)		
		4 (29)		
		Not given (2)		
	Microscan (70)	≤1 (2)		
		≤4 (20)		
		<1 (1)		
		<4 (4)		
		1 (4)		
		4 (36)		
		Not given (3)		
	Disk Diffusion (28)			22 (1)
				23 (1)
				24 (1)
				25 (5)
				26 (2)
				27 (4)
				28 (2)
				29 (7)
				30 (3)
				31 (1)
		37 (1)		
	A-B Biodisk E-test (2)			0.12 (1)
				0.19 (1)
	Phoenix (2)	≤1 (2)		
	Agar dilution (1)	4 (1)		
	Broth Microdilution (1)	Not given (1)		
Sensititre (1)	≤0.25 (1)			
Trek (1)	≤2 (1)			
V2C AST 14 (1)	0.25 (1)			
MIC frozen in house (1)	1 (1)			
Not given (1)	4 (1)			
Resistant (1)	Microscan (1)	4 (1)		
Imipenem not tested (29)				
No response (2)				
Specimen source (urine) not tested (1)				

Number of laboratories reporting each result indicated in ()

Antibiotic Susceptibility Results - Participating & Referee Labs <i>Klebsiella pneumoniae</i>				
	Ciprofloxacin		Imipenem	
	Referee ^a	Participant ^b	Referee ^a	Participant ^b
Susceptible	10	196	10	182
Intermediate	0	2	0	0
Resistant	0	0	0	1
Not Tested ^c	0	14	0	29
Do not process source ^d	0	1	0	1
No result reported	0	2	0	2

^aReferee Laboratories (10 labs total)

^bOther Participating Laboratories (215 labs total)

^cAntibiotic not tested / reported for this organism

^dDo not process specimen source

Specimen No. 5 – Blood (All Organisms)

This simulated blood culture sample contained *Plesiomonas shigelloides*. All referee laboratories correctly identified this organism as did 96% of the participating laboratories that process blood cultures.

Methods of identification used by participating laboratories reporting:

Plesiomonas shigelloides

bioMerieux Vitek GNI +	89
Dade Behring MicroScan Gram Neg ID	77
bioMerieux API 20E	22
bioMerieux API 20NE	6
Conventional biochemicals	4
BD BBL Crystal Enteric/Nonfermenter	4
Phoenix	3
bioMerieux Vitek ANI	1
bioMerieux Vitek 2 Compact	1
Biolog MicroLog Gram Negative	1
BD BBL Oxi/Ferm II	1
TOTAL	209

Specimen source (blood) not tested 7

Gram negative bacillus 3

Plesiomonas species

bioMerieux API 20E	1
Dade Behring MicroScan Gram Neg ID	1
bioMerieux Vitek GNI +	1
TOTAL	3

Klebsiella oxytoca

Dade Behring MicroScan Gram Neg ID	1
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Pseudomonas aeruginosa

bioMerieux Vitek GNI +	1
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Vibrio fluvialis/fumissii

Remel RapID NF Plus	1
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Additional organisms reported in Specimen 5:

<i>Enterococcus faecalis</i>	1
<i>Staphylococcus auricularis</i>	1

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, 112 of 225 participating laboratories (50%) perform direct detection testing for *Chlamydia*.

This sample was positive for *Chlamydia* and was reported as such by all 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	47
Gen-Probe Aptima Combo 2	19
BD ProbeTec ET CT or CT/GC	17
Roche Diagnostics COBAS AMPLICOR CT/NG	10
bioMerieux VIDAS	6
Roche Diagnostics AMPLICOR CT/NG	3
Beckman Coulter Access Chlamydia EIA	2
BioRad Chlamydia EIA plate	1
BioStar Chlamydia OIA	1
Digene Hybrid Capture hc2 CT/GC	1
Gen-Probe (not specified)	1
Real-time PCR	1
Test method not indicated	1
TOTAL	110

No report 2

Direct Antigen Detection

All participating laboratories which perform direct antigen testing received either a simulated throat swab to be tested for Group A *Streptococcus* or a genital swab to be tested for Group B *Streptococcus*. Information provided in the Bacteriology Questionnaire was used to determine which type of specimen to send to each laboratory.

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

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

Test kits used by laboratories reporting Specimen A as:

Positive for Group A *Streptococcus*:

BD Directigen EZ Strep	16
BioStar Aceava Strep A	15
Genzyme OSOM Ultra Strep A	9
Quidel QuickVue + Strep A	8
Abbott Signify Strep A Dipstick	7
BD Chek Strep A	5
BioStar Strep A OIA Max	4
Cardinal Health SP Brand Strep A Cassette	3
Fisher Sure-Vue Strep A Lateral Flow Test	3
Fisher Sureview SELECT	3
Meridian Bioscience ImmunoCard STAT Strep A	3
Quidel QuickVue Inline Strep A	3
Wampole Clearview Strep A Extract	3
Abbott Signify Strep A Cassette	2
Gen-Probe Group A Strep	2
LifeSign Status Accustrep A	2
Remel PathoDx Strep A	2
Remel RIM A.R.C. Strep A	2
Applied Biotech SureStep Strep A	1
Beckman Coulter Icon SC Strep A	1
Mainline Confirms Strep A	1
Polymedco Poly Stat Strep A	1
Quidel QuickVue Dipstick Strep A	1
Sacks Medical Corp RefuAH Strep A	1
Test method not indicated / unknown	1
TOTAL	99

Specimen C – Source: Genital for Group B *Streptococcus*

This specimen was negative for Group B *Streptococcus*. All laboratories that tested this sample reported it as negative.

Test kits used by laboratories reporting Specimen C as:

Negative for Group B *Streptococcus*

BioStar Strep B OIA	2
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BACTERIAL IDENTIFICATION BY PARTICIPATING LABORATORIES

	<u>Number Reported</u>	<u>%</u>
SPECIMEN NUMBER 1		
<i>Yersinia enterocolitica</i>	199	88.4
<i>Yersinia</i> species	10	4.4
Specimen source (stool) not tested	10	4.4
No enteric pathogens isolated	3	1.3
No <i>Salmonella</i> , <i>Shigella</i> or <i>Campylobacter</i>	2	0.9
No <i>Salmonella</i> , <i>Shigella</i> or <i>E. coli</i> O157:H7	1	0.4

SPECIMEN NUMBER 2		
Beta-hemolytic <i>Streptococcus</i> group A	222	98.7
Specimen source (throat) not tested	3	1.3

SPECIMEN NUMBER 3		
<i>Peptostreptococcus anaerobius</i>	173	76.9
<i>Peptostreptococcus</i> species	24	10.7
Anaerobic gram positive cocci	9	4.0
Do not process anaerobic cultures	7	3.1
No report	4	1.8
Specimen source (abscess) not tested	4	1.8
No <i>Bifidobacterium</i> isolated	2	0.9
<i>Eubacterium limosum</i>	1	0.4
No anaerobic organisms	1	0.4
<i>Pseudomonas aeruginosa</i>	218	96.9
Specimen source (abscess) not tested	4	1.8
<i>Klebsiella pneumoniae</i>	1	0.4
<i>Plesiomonas shigelloides</i>	1	0.4
<i>Pseudomonas</i> species	1	0.4

SPECIMEN NUMBER 4		
<i>Klebsiella pneumoniae</i>	221	98.2
<i>Klebsiella</i> species	1	0.4
<i>Pseudomonas aeruginosa</i>	1	0.4
<i>Serratia rubidaea</i>	1	0.4
Specimen source (urine) not tested	1	0.4

SPECIMEN NUMBER 5		
<i>Plesiomonas shigelloides</i>	209	92.9
Specimen source (blood) not tested	7	3.1
Gram negative bacillus	3	1.3
<i>Plesiomonas</i> species	3	1.3

<i>Klebsiella oxytoca</i>	1	0.4
<i>Pseudomonas aeruginosa</i>	1	0.4
<i>Vibrio fluvialis / fumissii</i>	1	0.4

CHLAMYDIA SPECIMEN

Positive for <i>Chlamydia trachomatis</i>	110	98.2
No report	2	1.8

DIRECT ANTIGEN SPECIMENS

A. Positive for Group A <i>Streptococcus</i>	99	100.0
C. Negative for Group B <i>Streptococcus</i>	2	100.0