

BACTERIOLOGY PROFICIENCY TESTING PROGRAM

General Category

September 18, 2007

This report summarizes the results of the proficiency test administered September 18, 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

FREE PODCAST: "Community Associated MRSA and the Clinical Laboratory"

Participate in an audio podcast on the subject of Community Associated MRSA (CA-MRSA) and the Clinical Laboratory, presented by Janet Hindler. After listening to the podcast, you will participate in an online Virtual Unknown Exercise, which will display a bacteriology report and ask several antimicrobial susceptibility testing and reporting questions. A follow-up podcast will discuss the results of the Virtual Unknown. A computer with Internet access and sound is the only requirement to participate in this FREE program. After completing the program, you should be able to discuss CA-MRSA issues affecting antimicrobial susceptibility testing. To register, visit

www.aphlnet.org/eweb/Dynamicpage.aspx?webcode=EventInfot&evt_key=5f1b7d25-b06e-470b-9e66-4da99bf134d8. Hurry, because this program is only available until December 31, 2007!

For a listing of all of NLTN's upcoming courses, log on to <http://www.nltn.org/courses>.

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 on the questionnaire.**

SEPTEMBER 18, 2007 TEST EVENT

Number of Participating Laboratories:

Receiving specimens **221**
Returning results **220** **(99.5%)**

Grade Distribution		
Score	Number	Percent
100%	196	89.1
90 – 99%	12	5.5
80 – 89%	7	3.2
70 – 79%	4	1.8
< 70%	1	0.5

BACTERIOLOGY - GENERAL
SEPTEMBER 18, 2007
ANSWER KEY

Specimen No. 1 - Stool (Pathogens Only)

No enteric pathogens

Specimen No. 2 – Eye (Pathogens Only)

Moraxella catarrhalis

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

Bacteroides fragilis

Group B *Streptococcus*

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

Morganella morganii

Susceptibility of *M. morganii* to: Ciprofloxacin - Susceptible
Nitrofurantoin – No consensus

Specimen No. 5 – Blood (All Organisms)

Corynebacterium jeikeium

***Chlamydia* Specimen**

Negative for *Chlamydia trachomatis*

Direct Antigen Detection

A (Throat)

Negative for Group A *Streptococcus*

C (Genital)

Positive for Group B *Streptococcus*

REFEREE LABORATORY RESULTS

Specimen Number	Referee Laboratory Responses	Percent*
1	No enteric pathogens	100
2	<i>Moraxella catarrhalis</i>	100
3	<i>Bacteroides fragilis</i>	100
	Group B <i>Streptococcus</i>	100
4	<i>Morganella morganii</i>	100
5	<i>Corynebacterium jeikeium</i>	100

* Based on responses of 10 referee laboratories

Specimen Number 1 - Stool (Pathogens Only)

This simulated stool specimen was negative for enteric pathogens. All referee and participating laboratories that processed this sample reported that it did not contain any enteric pathogens.

Organisms included in this sample were *Escherichia coli*, *Citrobacter freundii* and *Morganella morganii*.

Reports by participating laboratories:	
No enteric pathogens	210
Specimen source (stool) not processed	10

Specimen No. 2 – Eye (Pathogens Only)

This simulated eye specimen contained *Moraxella catarrhalis*. This organism was correctly identified by all referee laboratories and by 97% of the participating laboratories that process eye cultures.

Methods of identification used by laboratories reporting:

Moraxella (Branhamella) catarrhalis

Remel RapID NH	71
bioMerieux API NH	37
Conventional biochemicals	27
Dade Behring MicroScan HNID	25
bioMerieux Vitek 1 NHI	22
bioMerieux Vitek 2 NH	7
Test method not indicated	4
Catarrhalis disk	4
Remel BactiCard <i>Neisseria</i>	3
BD BBL Crystal <i>Neisseria/Haemophilus</i>	2
BD Phoenix Gram Negative ID	1
bioMerieux API Rapid ID 32A	1
PML MCAT Confirma	1
Remel RapID CB Plus	1
TOTAL	206

Specimen source (eye) not tested **8**

Moraxella species

bioMerieux Vitek 1 NHI	2
bioMerieux Vitek 2 GN	1
bioMerieux API NH	1
Conventional biochemicals	1
TOTAL	5

Staphylococcus aureus

Conventional biochemicals	1
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Specimen No. 3 – Abscess - Aerobic/Anaerobic (All Organisms)

This simulated tissue specimen contained *Bacteroides fragilis* and Group B *Streptococcus*.

Bacteroides fragilis was reported by all of the referee laboratories. Of the participating laboratories that perform anaerobic cultures on abscess specimens, 82% identified this organism. Additional reports included *Bacteroides fragilis* group (5.4%) and *Bacteroides* species (4.9%).

Group B *Streptococcus* was identified by all of the referee laboratories and by all participants that processed this sample.

Methods of identification used by laboratories reporting:

Bacteroides fragilis

Remel RapID ANA II	85
bioMerieux Vitek 1 ANI	29
bioMerieux API 20A	24
Dade Behring MicroScan Rapid Anaerobe	16
bioMerieux API Rapid ID 32A	6
BD BBL Crystal Anaerobe	3
Test method not indicated	2
16s rDNA sequencing	2
Conventional biochemicals	1
TOTAL	168

Do not culture for anaerobes 12

***Bacteroides fragilis* group**

Remel RapID ANA II	9
Conventional biochemicals	2
TOTAL	11

***Bacteroides* species**

Remel RapID ANA II	6
bioMerieux API 20A	1
Dade Behring MicroScan Rapid Anaerobe	1
bioMerieux Vitek 1 ANI	1
Conventional biochemicals	1
TOTAL	10

Bacteroides caccae

Remel RapID ANA II	6
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Prevotella melaninogenica

bioMerieux Vitek 1 ANI	1
Remel RapID ANA II	1
TOTAL	2

Anaerobic gram negative bacilli	2
No <i>Bifidobacterium</i> isolated	2
Specimen source (abscess) not tested	2
<i>Bacteroides distasonis</i>	
Dade Behring MicroScan Rapid Anaerobe	1
<i>Prevotella</i> species	
Remel RapID ANA II	1
No anaerobic organisms	1
Anaerobe not tested in this source	1
Presence of anaerobes	1
Group B <i>Streptococcus</i>	
BD BBL Streptocard	55
Murex Streptex	33
DPC PathoDX Strep Grouping	24
bioMerieux Vitek 1 GPI	21
Dade Behring MicroScan Gram Pos ID	15
bioMerieux Vitek 2 GP	13
Conventional biochemicals	12
ProLab Prolex Streptococcal Grouping	6
Remel Streptex	6
bioMerieux API 20 Strep	5
PathoDx Strep B typing	5
Remel BactiCard Strep	5
Boule Diagnostics Phadebact Streptococcus	4
Hardy Diagnostics Strep Pro Kit	4
BD Phoenix Gram Positive ID	2
Test method not indicated	2
bioMerieux Vitek Slidex Strepto	1
bioMerieux API 20A	1
Meridian Diagnostics Meritec Strep	1
Oxoid Streptococcal Grouping	1
Remel RapID STR	1
The Binding Site Strep grouping kit	1
TOTAL	218
Specimen source (abscess) not tested	2

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

This simulated urine specimen contained *Morganella morganii*. This organism was correctly identified by all referee laboratories and by all participating laboratories that processed this sample.

Antimicrobial susceptibility testing was indicated with ciprofloxacin and nitrofurantoin. This isolate was reported as susceptible to ciprofloxacin by all referee laboratories and by 99% of participating laboratories that tested this antibiotic. However, there was no consensus regarding susceptibility to nitrofurantoin so credit was given for all responses. It is important to note that several laboratories reported interpretations that are incorrect for their reported MIC's or zone diameters. These discrepant values are highlighted in the table on page 13. For example, a large number of laboratories reported an MIC of 64µg/ml as Resistant when the correct interpretation is Intermediate. Please review the most recent CLSI guidelines to ensure that accurate interpretations are being reported. The table below summarizes the information in the 2007 CLSI guidelines.

Nitrofurantoin – interpretations when testing Enterobacteriaceae			
	Resistant	Intermediate	Susceptible
MIC (µg/ml)	≥128	64	≤32
Disk diffusion (mm)	≤14	15 – 16	≥17

Clinical and Laboratory Standards Institute. 2007. Performance standards for antimicrobial susceptibility testing; seventeenth informational supplement, M100-S17. Clinical and Laboratory Standards Institute, Wayne, PA.

Methods of identification used by laboratories reporting:

Morganella morganii

Dade Behring MicroScan Gram Neg ID	81
bioMerieux Vitek 1 GNI +	51
bioMerieux API 20E	29
bioMerieux Vitek 2 GN	26
BD Phoenix Gram Negative ID	4
BD BBL Crystal Enteric/Nonfermenter	3
BD BBL Enterotube II	2
Test method not indicated	1
bioMerieux Vitek 1 GPI	1
Phoenix	1
Dade Rapid Urine Combo	1
TOTAL	200

Morganella morganii ss. morganii

bioMerieux Vitek 2 GN	17
Conventional biochemicals	1
Test method not indicated	1
TOTAL	19

Specimen source (urine) not tested **1**

Results of Antimicrobial Susceptibility Testing – *M. morganii* with ciprofloxacin

Result	System/Method	Zone	MIC	Number
Susceptible (203)	MicroScan (74)		NG	3
			<1	10
			1	1
			≤1	54
			<1.0	1
			≤1.0	4
			<1	1
	bioMerieux Vitek 1 (43)		NG	1
			<0.5	2
			≤0.5	39
			≤0.25	1
	bioMerieux Vitek 2 (42)		NG	1
			<0.25	3
			>0.25	1
			≤0.25	37
	BD Phoenix (4)		≤0.5	4
	AB Biodisk E-test (3)		.008	1
			.012	3
	Trek Sensititre (1)		≤0.5	1
	In house prepared frozen MIC (1)		.015	1
	Agar dilution (1)		≤1	1
	Disk diffusion (34)		22	1
			25	2
28		1		
29		1		
30		4		
32		2		
32		1		
33		1		
34		5		
35		4		
36		1		
37		2		
38		3		
39		2		
40		3		
42		1		
Intermediate (1)	Microscan		64	1
Ciprofloxacin not tested (11)				
Susceptibility testing not performed on organism (2)				
Specimen source not tested (1)				
Do not perform susceptibility testing (2)				

Number of laboratories reporting each result indicated in ()

Results of Antimicrobial Susceptibility Testing – *M. morganii* with nitrofurantoin

Result	System/Method	Zone	MIC	Number	
Intermediate (90)	MicroScan (68)		Not given	3	
			64	66	
			64	9	
			64	4	
			64	1	
			64	1	
			64	1	
	Disk diffusion (6)	15		5	
	16		1		
Resistant (77)	bioMerieux Vitek 2 (35)		Not given	1	
			64	31	
			128	2	
			≥17	1	
			>64	4	
			64	2	
			32	1	
	bioMerieux Vitek 1 (3)			64	1
				<32	1
				≥128	1
	Broth Microdilution (1)		128	1	
	Disk diffusion (31)			6	1
				8	2
				10	1
				11	2
				12	9
				13	7
14				7	
15				1	
17				1	
Susceptible (39)				bioMerieux Vitek 1 (31)	
	<32	2			
	<32	28			
	MicroScan (4)			≤1	1
				<32	3
	bioMerieux Vitek 2 (1)			<32	1
	In house prepared frozen MIC (1)			32	1
Disk diffusion (2)			18	1	
			20	1	
Nitrofurantoin not tested (9)					
Susceptibility testing not performed on organism (2)					
Do not perform susceptibility testing (2)					
Specimen source not tested (1)					

Values in red are incorrect for reported interpretation

Antibiotic Susceptibility Results - Participating & Referee Labs <i>M. morganii</i>				
	Ciprofloxacin		Nitrofurantoin	
	Referee ^a	Participant ^b	Referee ^a	Participant ^b
Susceptible	10	193	2	37
Intermediate	0	1	3	87
Resistant	0	0	3	74
Antibiotic not tested ^c	0	11	2	7
Do not process source ^d	0	1	0	1
Susceptibility testing not performed	0	4	0	4
No result reported	0	0	0	0

^aReferee Laboratories (10 labs)

^bOther Participating Laboratories (210 labs)

^cAntibiotic not tested / reported for this organism

^dDo not process specimen source

Specimen No. 5 – Blood (All Organisms)

This simulated blood culture contained *Corynebacterium jeikeium*. This organism was identified by all referee laboratories and by 71% of participating laboratories that processed this specimen source. An additional 22% provided a report of ‘*Corynebacterium* species’ with no further identification of the organism.

C. jeikeium is one of the most clinically important species of *Corynebacterium*. This organism colonizes the skin flora of hospital patients and is most often found in the areas of the axilla, groin and rectum. *Corynebacterium jeikeium* is an opportunistic pathogen in patients with prosthetic materials such as cardiac valves, catheters and joint replacements as well as in neutropenic patients. Predisposing factors to infection with this organism include hospitalization (including outpatient procedures), neutropenia, exposure to multiple antibiotics and disruption of the skin resulting from either surgery or the presence of an indwelling catheter. Cases of endocarditis caused by *Corynebacterium jeikeium* have been reported in both patients with native valves and those with prosthetic valves. A recent review of the literature cites the mortality rate in cases of endocarditis to be 33%. *Corynebacterium jeikeium* is often resistant to many of the antibiotics commonly used to treat gram-positive infections including penicillin and gentamicin, so vancomycin is the treatment of choice. Removal of the infected prosthetic device may also be necessary to completely eradicate the infection. For these reasons, identification of this organism is clinically important. Laboratories unable to identify *Corynebacterium* to the species level should forward isolates from patients with any of the aforementioned risk factors to a reference lab for full identification.

Brown, A.E. 2000. Other *Corynebacteria* and *Rhodococcus*. pp. 2198-2207. In Mandell, G.L., Bennett, J.E., Dolin, R. (eds.) *Mandell, Douglas and Bennett's Principles and Practices of Infectious Diseases*, 5th Edition. Churchill Livingstone, Philadelphia.

Mookadam, F. et al. 2006. *Corynebacterium jeikeium* endocarditis: a systematic overview spanning four decades. *Eur J Clin Microbiol Infect Dis*. 25: 349-353.

Tleyjeh, I.M. et al. 2005. *Corynebacterium jeikeium* prosthetic joint infection: Case report and literature review. *Scand J Infect Dis*, 37(2): 151-153.

Methods of identification used by participating laboratories reporting:

Corynebacterium jeikeium

bioMerieux API Coryne	60
Conventional biochemicals	37
Remel RapID CB Plus	34
bioMerieux Vitek 1 ANI	9
BD Phoenix Gram Positive ID	3
BD BBL Crystal Gram Positive	2
Not given	2
16s rDNA sequencing	2
API Coryne Strip	1
bioMerieux API NH	1
Remel RapID NF Plus	1
bioMerieux Vitek GPI	1
TOTAL	153

<i>Corynebacterium</i> species	
Conventional biochemicals	39
bioMerieux API Coryne	5
Remel RapID CB Plus	2
Dade Behring MicroScan Gram Pos ID	1
Not given	1
TOTAL	48
Specimen source (blood) not tested	6
Gram positive bacillus	5
<i>Staphylococcus, coagulase negative</i>	
BD BBL Staphyloslide	1
Conventional biochemicals	1
TOTAL	2
<i>Corynebacterium</i> species, unable to rule out <i>jeikeium</i>	
Not given	1
<i>Staphylococcus, not aureus</i>	
Remel BactiStaph	1
<i>Micrococcus</i> species	
bioMerieux Vitek 2 GP	1
Gram positive coccus	1
Diphtheroids	
Conventional biochemicals	1
<i>Corynebacterium</i> species, not <i>diphtheriae</i>	
Conventional biochemicals	1
Additional organisms reported in Specimen 5:	
<i>Staphylococcus aureus</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, 108 of 220 participating laboratories (49%) perform direct detection testing for *Chlamydia*.

This sample was negative 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:

Negative for *Chlamydia trachomatis*

Gen-Probe PACE 2 CT or CT/GC	45
Gen-Probe Aptima Combo 2	23
BD ProbeTec ET CT or CT/GC	17
Roche Diagnostics COBAS AMPLICOR CT/NG	10
bioMerieux VIDAS	5
Roche Diagnostics AMPLICOR CT/NG	2
Behring (Syva) MicroTrak Chlamydia EIA	1
BioRad Chlamydia Microplate EIA	1
BioStar Chlamydia OIA	1
Digene Hybrid Capture hc2 CT/GC	1
Real time PCR	1
TOTAL	107

Positive for *Chlamydia trachomatis*

bioMerieux VIDAS	1
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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 negative for Group A *Streptococcus*. All of the participating laboratories that processed this specimen reported it as negative.

Test kits used by laboratories reporting Specimen A as:

Negative for Group A *Streptococcus*

Genzyme OSOM Ultra Strep A	16
BD Directigen EZ Strep A	15
BioStar Acceava Strep A	13
Abbott Signify Strep A Dipstick	7
BD Chek Strep A	7
Quidel QuickVue + Strep A	7
Fisher Sure-Vue Strep A Lateral Flow Test	4
BioStar Strep A OIA Max	3
GenProbe Group A Strep	3
Fisher Sure-Vue SELECT Strep A	3
Meridian Bioscience ImmunoCard STAT Strep A	3
Quidel QuickVue Inline Strep A	3
Abbott Signify Strep A Cassette	2
Cardinal Health SP Brand Strep A Cassette	2
Quidel QuickVue Dipstick Strep A	2
Remel PathoDx Strep A	2
Wampole Clearview Strep A Extract	2
Beckman Coulter Icon SC Strep A	1
Inverness Medical TestPack+Plus Strep A	1
LifeSign Status Accustrep A	1
Mainline Confirms Strep A	1
Murex Reveal Colour Strep A	1
Polymedco Poly Stat Strep A	1
Remel RIM A.R.C. Strep A	1
Sacks Medical Corp RefuAH Strep A	1
TOTAL	102

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

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

Test kits used by laboratories reporting Specimen C as:

Positive 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		
No enteric pathogens	210	95.5
Specimen source (stool) not tested	10	4.5

SPECIMEN NUMBER 2		
<i>Moraxella (Branhamella) catarrhalis</i>	206	93.6
Specimen source (eye) not tested	8	3.6
<i>Moraxella</i> species	5	2.3
<i>Staphylococcus aureus</i>	1	0.5

SPECIMEN NUMBER 3		
<i>Bacteroides fragilis</i>	168	76.4
Do not culture for anaerobes	12	5.5
<i>Bacteroides fragilis</i> group	11	5.0
<i>Bacteroides</i> species	10	4.5
<i>Bacteroides caccae</i>	6	2.7
<i>Prevotella melaninogenica</i>	2	0.9
Anaerobic gram negative bacilli	2	0.9
No <i>Bifidobacterium</i> isolated	2	0.9
Specimen source (abscess) not tested	2	0.9
<i>Bacteroides distasonis</i>	1	0.5
<i>Prevotella</i> species	1	0.5
No anaerobic organisms	1	0.5
Anaerobe not tested in this source	1	0.5
Presence of anaerobes	1	0.5

Group B <i>Streptococcus</i>	218	99.1
Specimen source (abscess) not tested	2	0.9

SPECIMEN NUMBER 4		
<i>Morganella morganii</i>	200	90.9
<i>Morganella morganii</i> ss. <i>morganii</i>	19	8.6
Specimen source (urine) not tested	1	0.5

SPECIMEN NUMBER 5		
<i>Corynebacterium jeikeium</i>	153	69.5
<i>Corynebacterium</i> species	48	21.8
Specimen source (blood) not tested	6	2.7
Gram positive bacillus	5	2.3
<i>Staphylococcus</i> , coagulase negative	2	0.9

<i>Corynebacterium</i> species, unable to rule out <i>jeikeium</i>	1	0.5
<i>Staphylococcus</i> , not aureus	1	0.5
<i>Micrococcus</i> species	1	0.5
Gram positive coccus	1	0.5
Diphtheroids	1	0.5
<i>Corynebacterium</i> species, not <i>diphtheriae</i>	1	0.5

CHLAMYDIA SPECIMEN

Negative for <i>Chlamydia trachomatis</i>	107	99.1
Positive for <i>Chlamydia trachomatis</i>	1	0.9

DIRECT ANTIGEN SPECIMENS

A. Negative for Group A <i>Streptococcus</i>	102	100
C. Positive for Group B <i>Streptococcus</i>	2	100