

BACTERIOLOGY PROFICIENCY TESTING PROGRAM

General Category

September 26, 2000

This report summarizes the results of the proficiency test administered September 26, 2000 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. Failure of 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 90% 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 guidelines as specified in the regulations of CLIA '88. One-half of our samples require identification of all organisms present. The other half require 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 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%.

SEPTEMBER 26, 2000 TEST EVENT

Number of Participating Laboratories
Receiving specimens **267**
Returning results **266** **(99.6%)**

Grade Distribution		
Score	Number	Percent
100	236	88.7
90 - 99	13	4.9
80 - 89	12	4.5
70 - 79	2	0.8
60 - 69	0	0.0
<60	3	1.1

BACTERIOLOGY - GENERAL
SEPTEMBER 26, 2000
ANSWER KEY

Specimen No. 1 - Stool (Pathogens Only)

Escherichia coli O157:H7

Specimen No. 2 - Cervix (Pathogens Only)

Neisseria gonorrhoeae

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

Clostridium perfringens

Staphylococcus aureus

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

Pseudomonas aeruginosa

Susceptibility of *P. aeruginosa* to: Ciprofloxacin - Susceptible
TMP/SMX - Resistant

Specimen No. 5 - Sputum (Pathogens Only)

Haemophilus influenzae

Direct Antigen Detection

A (Throat)

Positive for Group A *Streptococcus*

B (CSF)

Neisseria meningitidis C

REFEREE LABORATORY RESULTS

Specimen Number	Referee Laboratory Responses	Percent*
1	<i>Escherichia coli</i> O157	70
	<i>Escherichia coli</i> O157:H7	30
2	<i>Neisseria gonorrhoeae</i>	100
3	<i>Clostridium perfringens</i>	100
	<i>Staphylococcus aureus</i>	100
4	<i>Pseudomonas aeruginosa</i>	100
5	<i>Haemophilus influenzae</i>	100

* Based on responses of 10 referee laboratories

Specimen Number 1 - Stool (Pathogens Only)

This simulated stool specimen contained *Escherichia coli* O157:H7. This organism was detected by all referee laboratories and by greater than 98.7% of participating laboratories that screen stool specimens for *E. coli* O157:H7. Seventy percent of the referee laboratories and 60% of the participants reported *E. coli* O157 while 30% of the referee labs and 17% of the participants identified *E. coli* O157:H7. Other reports included “Sorbitol-negative *E. coli*” (9% of participants), Presumptive *E. coli* O157 (5% of participants), *E. coli* O157:(not H7) (4% of participants) and Presumptive *E. coli* O157:H7 (2% of participants). Only 1.2% of participating laboratories were unable to isolate *E. coli* O157:H7 from this specimen. Approximately 5% of laboratories which process stool specimens do not screen for *E. coli* O157:H7 and instead forward these specimens to reference laboratories.

Additional organisms included in this specimen were *Citrobacter freundii* and *Klebsiella oxytoca*.

Systems used for biochemical identification of *Escherichia coli* by labs reporting the following results:

***Escherichia coli* O157**

Vitek GNI	62
Dade MicroScan	23
bioMerieux API 20E	17
No system indicated	16
Two or more systems	12
Conventional biochemicals	8
BBL Enterotube II	2
BBL Crystal	1
Cathra Autoreader	1
Difco Pasco	1
TOTAL	143

***Escherichia coli* O157:H7**

Vitek GNI	15
Dade MicroScan	9
No system indicated	7
bioMerieux API 20E	6
Conventional biochemicals	3
TOTAL	40

Sorbitol-negative <i>Escherichia coli</i>	
Dade MicroScan	7
bioMerieux API 20E	6
Two or more systems	4
Vitek GNI	2
Conventional biochemicals	1
IDS RapID ONE	1
TOTAL	21
Specimens for <i>E. coli</i> O157:H7 sent to reference lab	15
Do not process stool specimens	12
Presumptive/Possible <i>E. coli</i> O157	
Dade MicroScan	5
Vitek GNI	5
BBL Crystal	1
Two or more systems	1
TOTAL	12
<i>E. coli</i> O157:(not H7)	
Dade MicroScan	5
Vitek GNI	3
Conventional biochemicals	1
TOTAL	9
Presumptive/Possible <i>E. coli</i> O157:H7	
bioMerieux API20E	3
Vitek GNI	2
TOTAL	5
No Enteric Pathogens	3
<i>Escherichia coli</i> (do not ID <i>E. coli</i> O157)	
bioMerieux API20E	2
<i>Escherichia coli</i>, positive for Shiga toxins	
Vitek GNI	1
Positive for Shiga toxins	1
Sorbitol-positive <i>Escherichia coli</i>	
Two or more systems	1
No Result Reported	1

Methods of serological identification used by labs reporting the following results:

***E. coli* O157**

Remel RIM <i>E. coli</i> O157:H7 Latex	48
No serological kit indicated	28
Pro-Lab Diagnostics Prolex <i>E. coli</i> O157	23
Oxoid <i>E. coli</i> O157	19
Difco Bacto <i>E. coli</i> O157	8
Murex Wellcolex <i>E. coli</i> O157	8
Meridian Diag Immunocard Stat <i>E. coli</i> O157	4
Orion Diagnostica E colex O157	2
BBL O157 typing sera	1
Becton-Dickinson Directigen Ec Latex	1
Two or more systems	1
TOTAL	143

***E. coli* O157:H7**

Remel RIM <i>E. coli</i> O157:H7 Latex	11
Pro-Lab Diagnostics Prolex <i>E. coli</i> O157 & H7	9
No serological kit indicated	9
Oxoid <i>E. coli</i> O157	5
Meridian Diag Immunocard Stat <i>E. coli</i> O157 Plus	2
Difco Bacto <i>E. coli</i> O157 & Difco H7	1
Orion Diagnostica E colex O157	1
Oxoid <i>E. coli</i> O157 & Remel H7	1
Remel RIM/Premier EHEC	1
TOTAL	40

Possible/Presumptive *E. coli* O157:H7/*E. coli* O157

No serology reported	11
Pro-Lab Diagnostics Prolex <i>E. coli</i> O157	3
Remel RIM <i>E. coli</i> O157:H7 Latex	2
Meridian Diag Immunocard Stat <i>E. coli</i> O157	1
TOTAL	17

***E. coli* O157:(not H7)**

Remel RIM <i>E. coli</i> O157:H7 Latex	6
Murex Wellcolex <i>E. coli</i> O157	1
No serological kit indicated	1
Two or more systems	1
TOTAL	9

Specimen No. 2 - Cervix (Pathogens Only)

This simulated cervical specimen contained *Neisseria gonorrhoeae*. This organism was identified by all referee laboratories and by 98% of participating laboratories which screen genital tract specimens for *N. gonorrhoeae*.

Neisseria sicca and *Staphylococcus warneri* were included as additional organisms in this specimen.

Methods of identification used by laboratories reporting:

Neisseria gonorrhoeae

Two or more systems	65
bioMerieux Vitek API Quad Ferm	61
IDS RapID NH	35
Conventional biochemicals	26
Dade MicroScan HNID	25
Vitek NHI	23
B-D Gonogen II	6
Gen-Probe AccuProbe	4
Remel Bactocard <i>Neisseria</i>	4
Boule Phadebact Monoclonal GC	3
E-Y Laboratories Gonocheck II	2
Abbott LCx	1
Dupont Gonocheck	1
Gen-Probe Pace 2	1
Remel <i>Neisseria</i> Enzyme Test (NET)	1
TOTAL	258

Other reports:

No Pathogens Isolated	3
Do not process genital tract specimens	3
Do not screen genital specimens for <i>N. gonorrhoeae</i>	2

Additional organisms reported in Specimen No. 2:

<i>Neisseria meningitidis</i>	2
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Specimen No. 3 - Wound - Aerobic/anaerobic (All Organisms)

This specimen contained *Clostridium perfringens* and *Staphylococcus aureus*. *Clostridium perfringens* was identified by all referee laboratories and by 96% of participating labs that perform anaerobic cultures. *Staphylococcus aureus* was identified by all referee laboratories. Of the participating laboratories which processed this specimen source, all identified this organism with 97% reporting *Staphylococcus aureus* and the remaining 3% reporting “Coagulase-positive *Staphylococcus*”.

Methods of identification used by laboratories reporting:

Clostridium perfringens

IDS RapID ANA II	93
bioMerieux API An-IDENT	53
Vitek ANI	39
bioMerieux API 20A	20
Conventional biochemicals	11
Dade MicroScan	11
Two or more systems	9
BBL Crystal	3
No information given	2
Becton-Dickinson Sceptor	1
TOTAL	242

Other responses:

Do not isolate anaerobes 12

Clostridium species

bioMerieux API An-IDENT	2
Conventional biochemicals	1
bioMerieux API 20A	1
Vitek ANI	1
TOTAL	5

Anaerobic gram positive rod/bacillus 3

Do not process wound specimens 2

Clostridium ramosum

Two or more systems 1

No *Bifidobacterium* isolated

Oxyrase media 1

Methods of identification used by laboratories reporting:

Staphylococcus aureus

Conventional biochemicals	77
Dade MicroScan	53
Murex Staphaurex	42
Two or more systems	29
Vitek GPI	22
BBL Staphyloslide Latex test	9
Remel Bacti Staph	6
bioMerieux Slidex Staph kit	4
bioMerieux Vitek API STAPH	3
Fisher Accu Staph	3
Pastorex-Sanofi Staph Plus	3
Wampole Staph Latex	2
Difco Pasco	1
Immunostics Color Staph ID	1
TOTAL	255

Coagulase-Positive *Staphylococcus*

Conventional biochemicals	3
Dade MicroScan	2
Murex Staphaurex	2
Fisher Accu Staph	1
Remel Bacti Staph	1
TOTAL	9

Other reports:

Do not process wound specimens	2
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Additional organisms reported in Specimen 3:

<i>Brevundimonas vesicularis</i>	1
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Specimen No. 4 - Urine (All Organisms) and Antibiotic Susceptibility

This was a simulated urine specimen that contained a pure culture of *Pseudomonas aeruginosa*. All referee laboratories identified *P. aeruginosa* as did 99.6% of participating laboratories which process urine cultures.

Antimicrobial susceptibility testing was also indicated for this specimen. This isolate was reported as susceptible for ciprofloxacin and resistant for trimethoprim/sulfamethoxazole. Results of susceptibility testing of *Pseudomonas aeruginosa* can be found on pages 13 and 14.

Methods of identification used by laboratories reporting:

Pseudomonas aeruginosa

Vitek GNI	88
Dade MicroScan	84
Two or more systems	33
bioMerieux API 20E	24
Conventional biochemicals	19
BBL Crystal	6
bioMerieux API 20NE	4
IDS RapID NF Plus	2
Cathra Autoreader	1
Difco Pasco	1
No system indicated	1
TOTAL	263

Other reports:

Do not process urine cultures 2

Pseudomonas species

Dade MicroScan 1

**Results of Antibiotic Susceptibility Testing of *Pseudomonas aeruginosa* with:
CIPROFLOXACIN**

Susceptible

Vitek	91
MicroScan	82
Kirby-Bauer	65
No information given	8
Agar dilution	1
Broth dilution	1
Cathra Autoreader	1
E-test	1
Pasco MIC	1
Sceptor	1
Sensititre MIC	1
TOTAL	253

Do not test ciprofloxacin 10

Do not process specimen source (urine) 2

No result given 1

TRIMETHOPRIM/SULFAMETHOXAZOLE

Resistant

Vitek	82
Kirby-Bauer	54
MicroScan	40
No information given	6
Agar dilution	1
Broth dilution	1
Pasco MIC	1
Sceptor	1
Sensititre MIC	1
TOTAL	187

Do not test Trimethoprim/Sulfamethoxazole 70

Intermediate

Kirby-Bauer 2

Susceptible

Kirby-Bauer	1
MicroScan	1
TOTAL	2

Do not process specimen source (urine) 2

Antibiotic Susceptibility Results - Participating & Referee Labs
Pseudomonas aeruginosa

Antibiotic	Susceptible		Intermediate		Resistant		Not Tested ¹		Do not process source ²		No result reported	
	R ^a	P ^b	R	P	R	P	R	P	R	P	R	P
Ciprofloxacin	10	243	0	0	0	0	0	10	0	2	0	1
TMP/SMX	0	2	0	2	7	180	3	70	0	2	0	0

^aReferee Laboratories (10 labs total)

^bOther Participating Laboratories (266 labs total)

¹Antibiotic not tested / reported for this organism

²Do not process specimen source

Specimen No. 5 - Sputum (Pathogens Only)

This specimen was a simulated sputum specimen containing *Haemophilus influenzae* as the pathogenic organism. All referee laboratories identified *H. influenzae* as did 98% of participating laboratories that processed this specimen. Additionally, approximately 5% of the laboratories reporting *H. influenzae* identified it as serotype b.

Staphylococcus hominis and *Streptococcus sanguis* were included as nonpathogenic flora in this specimen.

Methods of identification used by laboratories reporting:

Haemophilus influenzae/H. influenzae b

Conventional biochemicals	106
IDS RapID NH	36
Vitek NHI	35
Two or more systems	29
Dade MicroScan HNID	26
Remel Quad Plate	16
BBL Haemophilus ID Quad Plate	6
No system indicated	1
TOTAL	255

Other responses:

Do not process sputum cultures **6**

Haemophilus species

No system indicated	2
Conventional biochemicals	1
TOTAL	3

No Pathogens **1**

Pasteurella pneumotropica

bioMerieux API NFT	1
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Additional organisms reported in Specimen No. 5:

<i>Staphylococcus aureus</i>	4
Coagulase-Positive <i>Staphylococcus</i>	1

Direct Antigen Detection Specimen

All participating laboratories which perform direct antigen testing received either a throat swab to be tested for Group A Strep or a simulated CSF to be tested for bacterial antigens. 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*. Approximately 99% of the participating laboratories that tested this specimen reported it as positive.

Test kits used by laboratories reporting Specimen A as:

Positive for Group A *Streptococcus*

Becton-Dickinson Directigen 1-2-3 Grp A Strep	28
Abbott Signify Strep A	11
BioStar Acceava Strep A	5
No test kit indicated	5
BioStar Strep A OIA	4
DPC PathoDx Strep A	4
Lifesign Status AccuStrep A	3
Pacific Biotech Cards O.S. Strep A	3
Becton-Dickinson Link 2 Strep A	2
Gen-Probe Group A Strep Direct kit	2
Quidel QuickVue	2
Remel RIM ARC Strep A	2
Wampole Clearview Strep A	2
Abbott TestPack +Plus Strep A w/OBC II	1
Beckman-Coulter Icon Fx Strep A	1
Fisher Scientific Sure-View Strep A	1
Genzyme Contrast Strep A	1
Medicord Strep-Pak	1
Meridian ImmunoCard STAT Strep A	1
Murex Reveal Strep A	1
Wyntek OSOM	1
TOTAL	81

Negative for Group A *Streptococcus*

Quidel QuickVue	1
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Specimen B - Source: CSF

This specimen contained *Neisseria meningitidis* C. Approximately 97% of participating laboratories, which tested this specimen, were able to detect the presence of this antigen.

Test kits used by laboratories reporting Specimen B as positive for:

Neisseria meningitidis A,C,Y, W135
Murex-Wellcogen Bacterial Antigen kit 41

Neisseria meningitidis C/W135
B-D Directigen Meningitis Combo Test 17

Neisseria meningitidis
No test kit indicated 2

Other reports:

Haemophilus influenzae b
B-D Directigen Meningitis Combo Test 2

Note:

The inclusion of specimens for direct antigen testing does not reflect any endorsement by the New York State Department of Health of use of these tests in the clinical laboratory.

BACTERIAL IDENTIFICATION BY PARTICIPATING LABORATORIES

	<u>Number Reported</u>	<u>%</u>
SPECIMEN NUMBER 1		
<i>Escherichia coli</i> O157	143	53.8
<i>Escherichia coli</i> O157:H7	40	15.0
Sorbitol-negative <i>E. coli</i>	21	7.9
Reference lab for <i>E. coli</i> O157:H7	15	5.6
Do not process stool specimens	12	4.5
Presumptive <i>E. coli</i> O157	12	4.5
<i>E. coli</i> O157: (not H7)	9	3.4
Presumptive <i>E. coli</i> O157:H7	5	1.9
No Enteric Pathogens	3	1.1
<i>E. coli</i> (do not ID <i>E. coli</i> O157)	2	0.8
<i>E. coli</i> , positive for Shiga toxins	1	0.4
Positive for Shiga toxins	1	0.4
Sorbitol-positive <i>E. coli</i>	1	0.4
No result reported	1	0.4

SPECIMEN NUMBER 2		
<i>Neisseria gonorrhoeae</i>	258	97.0
No Pathogens Isolated	3	1.1
Do not process genital tract specimens	3	1.1
Do not screen genital specimens for <i>N. gonorrhoeae</i>	2	0.8

SPECIMEN NUMBER 3		
<i>Clostridium perfringens</i>	242	90.9
Do not isolate anaerobes	12	4.5
<i>Clostridium</i> species	5	1.9
Anaerobic gram pos rod/bacillus	3	1.1
Do not process wound specimens	2	0.8
<i>Clostridium ramosum</i>	1	0.4
No <i>Bifidobacterium</i> isolated	1	0.4
<i>Staphylococcus aureus</i>	255	95.9
Coagulase-positive <i>Staphylococcus</i>	9	3.4
Do not process wound specimens	2	0.8

SPECIMEN NUMBER 4

<i>Pseudomonas aeruginosa</i>	263	98.9
Do not process urine cultures	2	0.8
<i>Pseudomonas</i> species	1	0.4

SPECIMEN NUMBER 5

<i>Haemophilus influenzae</i> / <i>H. influenzae</i> b	255	95.9
Do not process sputum cultures	6	2.2
<i>Haemophilus</i> species	3	1.1
No Pathogens	1	0.4
<i>Pasteurella pneumotropica</i>	1	0.4

DIRECT ANTIGEN SPECIMEN

A. Positive for Group A <i>Streptococcus</i>	81	98.8
Negative for Group A <i>Streptococcus</i>	1	1.2
B. <i>Neisseria meningitidis</i> A, C, Y, W135	41	66.1
<i>Neisseria meningitidis</i> C/W135	17	27.4
<i>Neisseria meningitidis</i>	2	3.2
<i>Haemophilus influenzae</i> b	2	3.2