## Table 1A. Suggested Groupings of Antimicrobial Agents Approved by the US Food and Drug Administration for Clinical Use That Should Be Considered for Testing and Reporting on Nonfastidious Organisms by Microbiology Laboratories in the United States

| Group A: Includes antimicrobial agents considered appropriate for inclusion in a routine, primary testing panel, as well as for routine reporting of results for the specific organism group. | | | |
|---|---|---|---|
| Enterobacterales | *Pseudomonas aeruginosa* | *Staphylococcus* spp. | *Enterococcus* spp.[a] |
| Ampicillin[b] | Ceftazidime | Azithromycin[c] or clarithromycin[c] or erythromycin[c] | Ampicillin[d]<br>Penicillin[e] |
| Cefazolin[f] | Gentamicin<br>Tobramycin | | |
| Gentamicin[b]<br>Tobramycin[b] | Piperacillin-tazobactam | Clindamycin[c] | |
| | | Oxacillin[g,h,i,j,k]<br>Cefoxitin[g,h,j] (surrogate test for oxacillin) | |
| | | Penicillin[g] | |
| | | Trimethoprim-sulfamethoxazole | |
| **Group B: Includes antimicrobial agents that may warrant primary testing but may be reported only selectively, such as when the organism is resistant to agents of the same antimicrobial class in Group A.[l]** | | | |
| Amikacin[b] | Amikacin | Ceftaroline[m] | Daptomycin[i,n] |
| Amoxicillin-clavulanate<br>Ampicillin-sulbactam | Aztreonam | Daptomycin[i,n] | Linezolid<br>Tedizolid[o] |
| Azithromycin[p] | | | |
| Ceftazidime-avibactam | Cefepime | Linezolid<br>Tedizolid[m] | Vancomycin |
| Ceftolozane-tazobactam | Ceftazidime-avibactam | | |
| Imipenem-relebactam | Imipenem-relebactam | | |
| Meropenem-vaborbactam | Ceftolozane-tazobactam | | |
| Piperacillin-tazobactam | | | |
| Cefuroxime | Ciprofloxacin<br>Levofloxacin | Doxycycline<br>Minocycline[c]<br>Tetracycline[q] | |
| Cefepime | Doripenem<br>Imipenem<br>Meropenem | Lefamulin[m] | |
| Cefotetan<br>Cefoxitin | | Vancomycin[i] | |
| Cefotaxime[b,f] or Ceftriaxone[b,f] | | | |
| Cefiderocol | Cefiderocol | | |
| Ciprofloxacin[b]<br>Levofloxacin[b] | | Rifampin[r] | |
| Doripenem<br>Ertapenem<br>Imipenem<br>Meropenem | | | |
| Trimethoprim-sulfamethoxazole[b] | | | |

## Table 1A. (Continued)

| Group C: Includes alternative or supplemental antimicrobial agents that may require testing in institutions that harbor endemic or epidemic strains resistant to several of the primary drugs, for treatment of patients allergic to primary drugs, for treatment of unusual organisms, or for reporting to infection prevention as an epidemiological aid. | | | |
|---|---|---|---|
| **Enterobacterales** | ***Pseudomonas aeruginosa*** | ***Staphylococcus* spp.** | ***Enterococcus* spp.[a]** |
| Aztreonam<br>Ceftazidime | | Chloramphenicol[c] | Gentamicin (high-level resistance testing only) |
| Ceftaroline | | Ciprofloxacin or levofloxacin<br>Moxifloxacin | Streptomycin (high-level resistance testing only) |
| Chloramphenicol[b,c] | | | |
| Tetracycline[q] | | | Dalbavancin[i,s] |
| | | Gentamicin[t] | Oritavancin[i,s] |
| | | Dalbavancin[i,m] | Telavancin[i,s] |
| | | Oritavancin[i,m] | |
| | | Telavancin[i,m] | |
| **Group U: Includes antimicrobial agents that are used only or primarily for treating UTIs.** | | | |
| Cefazolin<br>(surrogate test for uncomplicated UTI)[u] | | Nitrofurantoin | Ciprofloxacin<br>Levofloxacin |
| Fosfomycin[v] | | Sulfisoxazole | |
| Nitrofurantoin | | Trimethoprim | Fosfomycin[v] |
| Sulfisoxazole | | | Nitrofurantoin |
| Trimethoprim | | | Tetracycline[q] |

## Table 1A. (Continued)

| Group A: Includes antimicrobial agents considered appropriate for inclusion in a routine, primary testing panel, as well as for routine reporting of results for the specific organism group. | | | |
|---|---|---|---|
| ***Acinetobacter* spp.** | ***Burkholderia cepacia* complex** | ***Stenotrophomonas maltophilia*** | **Other Non-Enterobacterales[j,w]** |
| Ampicillin-sulbactam | Levofloxacin[i] | Levofloxacin<br>Minocycline<br>Trimethoprim-sulfamethoxazole | Ceftazidime |
| Ceftazidime | Meropenem | | Gentamicin<br>Tobramycin |
| Ciprofloxacin<br>Levofloxacin | Trimethoprim-sulfamethoxazole | | |
| Doripenem<br>Imipenem<br>Meropenem | | | |
| Gentamicin<br>Tobramycin | | | |
| **Group B: Includes antimicrobial agents that may warrant primary testing but may be reported only selectively, such as when the organism is resistant to agents of the same antimicrobial class in Group A.[l]** | | | |
| Amikacin | Ceftazidime | Ceftazidime[i] | Amikacin |
| Piperacillin-tazobactam | Minocycline | | Aztreonam |
| Cefepime | | | Cefepime |
| Cefotaxime<br>Ceftriaxone | | | Ciprofloxacin<br>Levofloxacin |
| Cefiderocol | | Cefiderocol | |
| Doxycycline | | | Imipenem<br>Meropenem |
| Minocycline | | | |
| Trimethoprim-sulfamethoxazole | | | Piperacillin-tazobactam |
| | | | Trimethoprim-sulfamethoxazole |
| **Group C: Includes alternative or supplemental antimicrobial agents that may require testing in institutions that harbor endemic or epidemic strains resistant to several of the primary drugs, for treatment of patients allergic to primary drugs, for treatment of unusual organisms, or for reporting to infection prevention as an epidemiological aid.** | | | |
| | Chloramphenicol[c,i] | Chloramphenicol[c,i] | Cefotaxime<br>Ceftriaxone |
| | | | Chloramphenicol[c] |
| **Group U: Includes antimicrobial agents that are used only or primarily for treating UTIs.** | | | |
| Tetracycline[q] | | | Sulfisoxazole |
| | | | Tetracycline[q] |

Abbreviations: CSF, cerebrospinal fluid; MIC, minimal inhibitory concentration; UTI, urinary tract infection.

## Table 1A. (Continued)

**"Warning": Do not report the following antimicrobial agents for bacteria isolated from CSF. These are not the drugs of choice and may not be effective for treating CSF infections caused by the bacteria included in Tables 2A through 2J:**

- Agents administered by oral route only
- First- and second-generation cephalosporins and cephamycins
- Doripenem, ertapenem, and imipenem
- Clindamycin
- Lefamulin
- Macrolides
- Tetracyclines
- Fluoroquinolones

Refer to Glossary I for individual agents within the drug classes listed above.

**Footnotes**

a. **WARNING:** For *Enterococcus* spp., cephalosporins, aminoglycosides (except for high-level resistance testing), clindamycin, and trimethoprim-sulfamethoxazole may appear active *in vitro* but are not effective clinically and should not be reported as susceptible.

b. **WARNING:** For *Salmonella* spp. and *Shigella* spp., aminoglycosides, first- and second-generation cephalosporins, and cephamycins may appear active *in vitro* but are not effective clinically and should not be reported as susceptible.

Routine susceptibility testing is not indicated for nontyphoidal *Salmonella* spp. isolated from intestinal sources. In contrast, susceptibility testing is indicated for all *Shigella* isolates.

When fecal isolates of *Salmonella* and *Shigella* spp. are tested, only ampicillin, a fluoroquinolone, and trimethoprim-sulfamethoxazole should be reported routinely. In addition, for extraintestinal isolates of *Salmonella* spp., a third-generation cephalosporin should be tested and reported, and if requested, chloramphenicol and azithromycin may be tested and reported. Susceptibility testing is indicated for typhoidal *Salmonella* (*S. enterica* ser. Typhi and *Salmonella enterica* ser. Paratyphi A–C) isolated from extraintestinal and intestinal sources.

c. Not routinely reported on organisms isolated from the urinary tract.

d. The results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin. Ampicillin results may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non–β-lactamase-producing enterococci. Ampicillin susceptibility can be used to predict imipenem susceptibility, providing the species is confirmed to be *Enterococcus faecalis*.

## Table 1A. (Continued)

e. Enterococci susceptible to penicillin are predictably susceptible to ampicillin, amoxicillin, ampicillin-sulbactam, amoxicillin-clavulanate, and piperacillin-tazobactam for non-ß-lactamase-producing enterococci. However, enterococci susceptible to ampicillin cannot be assumed to be susceptible to penicillin. If penicillin results are needed, penicillin testing is required. ***Rx:*** Combination therapy with ampicillin, penicillin, or vancomycin (for susceptible strains) plus an aminoglycoside is usually indicated for serious enterococcal infections, such as endocarditis, unless high-level resistance to both gentamicin and streptomycin is documented; such combinations are predicted to result in synergistic killing of *Enterococcus*. For strains with low-level penicillin or ampicillin resistance when combination therapy with a ß-lactam is being considered, see additional testing and reporting information in Table 3L.[1]

f. Cefotaxime or ceftriaxone should be tested and reported on isolates from CSF in place of cefazolin.

g. Penicillin-susceptible staphylococci are also susceptible to other ß-lactam agents with established clinical efficacy for staphylococcal infections. Penicillin-resistant staphylococci are resistant to penicillinase-labile penicillins. Methicillin (oxacillin)-resistant staphylococci are resistant to all currently available ß-lactam antimicrobial agents, with the exception of ceftaroline. Thus, susceptibility or resistance to a wide array of ß-lactam antimicrobial agents may be deduced from testing only penicillin and either cefoxitin or oxacillin. Routine testing of other ß-lactam agents, except ceftaroline, is not advised.

h. If a penicillinase-stable penicillin is tested, oxacillin is the preferred agent, and results can be applied to the other penicillinase-stable penicillins (refer to Glossary I). Detection of methicillin (oxacillin) resistance in staphylococci is achieved by using specific methods as described in Tables 2C and 3H.

i. MIC testing only; disk diffusion test is unreliable.

j. See oxacillin and cefoxitin comments in Table 2C for using cefoxitin as a surrogate test for oxacillin.

k. For *S. aureus, S. lugdunensis,* and other *Staphylococcus* spp. (except *S. epidermidis, S. pseudintermedius,* and *S. schleiferi*), only MIC testing, not disk diffusion testing, is acceptable; see exceptions in Table 2C.

l. Section I, C.2. in the Instructions for Use of Tables lists additional examples of when a Group B agent might be reported.

m. For *S. aureus* only, including methicillin (oxacillin)-resistant *S. aureus* (MRSA).

n. Daptomycin should not be reported for isolates from the respiratory tract.

o. For testing and reporting of *E. faecalis* only.

## Table 1A. (Continued)

p. For reporting against *Salmonella enterica* ser. Typhi and *Shigella* spp. only.

q. Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline. However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

r. ***Rx:*** Rifampin should not be used alone for antimicrobial therapy.

s. For testing and reporting of vancomycin-susceptible *E. faecalis* only.

t. For staphylococci that test susceptible, gentamicin is used only in combination with other active agents that test susceptible.

u. See cefazolin comments in Table 2A-1 for using cefazolin as a surrogate test for oral cephalosporins and for reporting cefazolin when used for therapy in uncomplicated UTIs.

v. For testing and reporting of *E. coli* and *E. faecalis* urinary tract isolates only.

w. Other non-Enterobacterales include *Pseudomonas* spp. and other nonfastidious, glucose-nonfermenting, gram-negative bacilli but exclude *P. aeruginosa, Acinetobacter* spp., *B. cepacia* complex, and *S. maltophilia*. Refer to each respective organism column for suggested antimicrobial agents to test and report. Recommendations for testing and reporting *Aeromonas* spp., *Burkholderia mallei, Burkholderia pseudomallei,* and *Vibrio* spp. (including *V. cholerae*) are found in CLSI document M45.[2]

**NOTE 1:** For information about the selection of appropriate antimicrobial agents; explanation of test/report groups A, B, C, and U; and explanation of the listing of agents within boxes, including the meaning of "or" between agents, refer to the Instructions for Use of Tables that precede Table 1A.

**NOTE 2:** Information in boldface type is new or modified since the previous edition.

**References for Table 1A**

1 Murray BE, Arias CA, Nannini EC. Glycopeptides (vancomycin and teicoplanin) and lipoglycopeptides (telavancin, oritavancin, and dalbavancin). In: Bennett JE, Dolin R, Blaser MJ. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 9th ed. Elsevier; 2019: Chapter 30.

2 CLSI. *Methods for Antimicrobial Dilution and Disk Susceptibility Testing of Infrequently Isolated or Fastidious Bacteria*. 3rd ed. CLSI guideline M45. Clinical and Laboratory Standards Institute; 2016.

## Table 1B. Suggested Groupings of Antimicrobial Agents Approved by the US Food and Drug Administration for Clinical Use That Should Be Considered for Testing and Reporting on Fastidious Organisms by Microbiology Laboratories in the United States

| Group A: Includes antimicrobial agents considered appropriate for inclusion in a routine, primary testing panel, as well as for routine reporting of results for the specific organism group. | | | | |
|---|---|---|---|---|
| ***Haemophilus influenzae***[a] **and** ***Haemophilus parainfluenzae*** | ***Neisseria gonorrhoeae***[b] | ***Streptococcus pneumoniae***[c] | ***Streptococcus* spp. β-Hemolytic Group**[d] | ***Streptococcus* spp. Viridans Group**[d] |
| Ampicillin[a,e] | Azithromycin[f,g] | Erythromycin[h,i] | Clindamycin[i,j] | Ampicillin[f,k]<br>Penicillin[f,k] |
| | Ceftriaxone[g]<br>Cefixime[g] | | | |
| | Ciprofloxacin[g] | Penicillin[l] (oxacillin disk) | Erythromycin[h,i,j] | |
| | Tetracycline[g] | | Penicillin[g,m] or ampicillin[g,m] | |
| | | Trimethoprim-sulfamethoxazole | | |
| **Group B: Includes antimicrobial agents that may warrant primary testing but may be reported only selectively, such as when the organism is resistant to agents of the same antimicrobial class, as in Group A.**[n] | | | | |
| Ampicillin-sulbactam | | Cefepime[f]<br>Cefotaxime[f,l]<br>Ceftriaxone[f,l] | Cefepime or cefotaxime or ceftriaxone | Cefepime<br>Cefotaxime<br>Ceftriaxone |
| Cefotaxime[a] or ceftazidime[a] or ceftriaxone[a] | | Clindamycin[i] | Vancomycin | Vancomycin |
| Ciprofloxacin or levofloxacin or moxifloxacin | | Doxycycline | | |
| | | Lefamulin | | |
| | | Levofloxacin[c]<br>Moxifloxacin[c] | | |
| Meropenem[a] | | Meropenem[f,l] | | |
| | | Tetracycline[o] | | |
| | | Vancomycin[l] | | |

## Table 1B. (Continued)

| Group C: Includes alternative or supplemental antimicrobial agents that may require testing in institutions that harbor endemic or epidemic strains resistant to several of the primary drugs, for treatment of patients allergic to primary drugs, for treatment of unusual organisms, or for reporting to infection prevention as an epidemiological aid. | | | | |
|---|---|---|---|---|
| *Haemophilus influenzae*[a] and *Haemophilus parainfluenzae* | *Neisseria gonorrhoeae*[b] | *Streptococcus pneumoniae*[c] | *Streptococcus* spp. β-Hemolytic Group[d] | *Streptococcus* spp. Viridans Group[d] |
| Azithromycin[p]<br>Clarithromycin[p] | | Amoxicillin[f]<br>Amoxicillin-clavulanate[f] | Ceftaroline | Ceftolozane-tazobactam |
| Aztreonam | | Cefuroxime[f] | Chloramphenicol[i] | Chloramphenicol[i] |
| Amoxicillin-clavulanate[p] | | Ceftaroline | Daptomycin[f,q] | Clindamycin[i] |
| Cefaclor[p]<br>Cefprozil[p] | | Chloramphenicol[i] | Levofloxacin | Erythromycin[h,i] |
| Cefdinir[p] or<br>cefixime[p] or<br>cefpodoxime[p] | | Ertapenem[f]<br>Imipenem[f] | Linezolid<br>Tedizolid[r] | Linezolid<br>Tedizolid[s] |
| | | Linezolid | Dalbavancin[f,t]<br>Oritavancin[f]<br>Telavancin[f] | Dalbavancin[f,t]<br>Oritavancin[f]<br>Telavancin[f] |
| Ceftaroline[u] | | Rifampin[v] | | |
| Cefuroxime[p] | | | | |
| Chloramphenicol[i] | | | | |
| Ceftolozane-tazobactam[u] | | | | |
| Ertapenem or<br>imipenem | | | | |
| Lefamulin[u] | | | | |
| Rifampin[w] | | | | |
| Tetracycline[o] | | | | |
| Trimethoprim-sulfamethoxazole | | | | |

Abbreviations: CSF, cerebrospinal fluid; MIC, minimal inhibitory concentration.

## Table 1B. (Continued)

**"Warning": Do not report the following antimicrobial agents for bacteria isolated from CSF. These are not the drugs of choice and may not be effective for treating CSF infections caused by the bacteria included in Tables 2A through 2J:**

- Agents administered by oral route only
- First- and second-generation cephalosporins and cephamycins
- Doripenem, ertapenem, and imipenem
- Clindamycin
- Lefamulin
- Macrolides
- Tetracyclines
- Fluoroquinolones

Refer to Glossary I for individual agents within the drug classes listed above.

**Footnotes**

a. For isolates of *H. influenzae* from CSF, only results of testing with ampicillin, any of the third-generation cephalosporins listed, and meropenem are appropriate to report.

b. Culture and susceptibility testing of *N. gonorrhoeae* should be considered in cases of treatment failure. Antimicrobial agents recommended for testing include, at a minimum, the agents listed in group A. The most current guidelines for treatment and testing are available from the Centers for Disease Control and Prevention at https://www.cdc.gov/std/gonorrhea/stdfact-gonorrhea.htm.

c. *S. pneumoniae* isolates susceptible to levofloxacin are predictably susceptible to gemifloxacin and moxifloxacin. However, *S. pneumoniae* susceptible to gemifloxacin or moxifloxacin cannot be assumed to be susceptible to levofloxacin.

d. For this table, the ß-hemolytic group includes the large colony–forming pyogenic strains of streptococci with group A (*Streptococcus pyogenes*), C, or G antigens and strains with group B (*Streptococcus agalactiae*) antigen. Small colony–forming ß-hemolytic strains with group A, C, F, or G antigens (*Streptococcus anginosus* group, previously *Streptococcus milleri*) are considered part of the viridans group, and breakpoints for the viridans group should be used.

e. The results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin. The majority of *H. influenzae* isolates that are resistant to ampicillin and amoxicillin produce a TEM-type ß-lactamase. In most cases, a direct ß-lactamase test can provide a rapid means of detecting ampicillin and amoxicillin resistance.

f. MIC testing only; disk diffusion test is unreliable.

## Table 1B. (Continued)

g. Routine testing is not necessary.

h. Susceptibility and resistance to azithromycin, clarithromycin, and dirithromycin can be predicted by testing erythromycin.

i. Not routinely reported for organisms isolated from the urinary tract.

j. ***Rx:*** Recommendations for intrapartum prophylaxis for group B streptococci are penicillin or ampicillin. Although cefazolin is recommended for penicillin-allergic women at low risk for anaphylaxis, those at high risk for anaphylaxis may receive clindamycin. Group B streptococci are susceptible to ampicillin, penicillin, and cefazolin but may be resistant to erythromycin and clindamycin. When group B Streptococcus is isolated from a pregnant woman with severe penicillin allergy (high risk for anaphylaxis), erythromycin and clindamycin (including inducible clindamycin resistance [ICR]) should be tested, and only clindamycin should be reported. Erythromycin, even when tested for determination of ICR, should not be reported. See Table 3J.

k. ***Rx:*** Penicillin- or ampicillin-intermediate isolates may necessitate combined therapy with an aminoglycoside for bactericidal action.

l. Penicillin and cefotaxime, ceftriaxone, or meropenem should be tested by a reliable MIC method (such as that described in M07[1]) and reported routinely with CSF isolates of *S. pneumoniae*. Such isolates can also be tested against vancomycin using the MIC or disk diffusion method. With isolates from other sites, the oxacillin disk test may be used. If the oxacillin zone size is ≤ 19 mm, penicillin, cefotaxime, ceftriaxone, or meropenem MICs should be determined.

m. Penicillin and ampicillin are drugs of choice for treating β-hemolytic streptococcal infections. Susceptibility testing of penicillins and other β-lactams approved by the US Food and Drug Administration for treating β-hemolytic streptococcal infections does not need to be performed routinely, because nonsusceptible isolates (ie, penicillin MICs > 0.12 and ampicillin MICs > 0.25 µg/mL) are extremely rare in any β-hemolytic streptococci and have not been reported for *S. pyogenes*. If testing is performed, any β-hemolytic streptococcal isolate found to be nonsusceptible should be re-identified, retested, and, if confirmed, submitted to a public health laboratory (see Appendix A for additional instructions).

n. Section I, C.2. in the Instructions for Use of Tables lists additional examples of when a Group B agent might be reported.

## Table 1B. (Continued)

o. Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline.

p. Amoxicillin-clavulanate, azithromycin, cefaclor, cefdinir, cefixime, cefpodoxime, cefprozil, cefuroxime, and clarithromycin are used as empiric therapy for respiratory tract infections due to *Haemophilus* spp. The results of susceptibility tests with these antimicrobial agents are often not necessary for managing individual patients.

q. Daptomycin should not be reported for isolates from the respiratory tract.

r. For reporting against *S. pyogenes* and *S. agalactiae* only.

s. For reporting against *S. anginosus* group (includes *S. anginosus, Streptococcus intermedius,* and *Streptococcus constellatus*) only.

t. For reporting against *S. pyogenes, S. agalactiae, Streptococcus dysgalactiae,* and *S. anginosus* group.

u. For reporting against *H. influenzae* only.

v. ***Rx:*** Rifampin should not be used alone for antimicrobial therapy.

w. May be appropriate only for prophylaxis of case contacts. Refer to Table 2E.

**NOTE:** For information about the selection of appropriate antimicrobial agents; explanation of test/report groups A, B, C, and U; and explanation of the listing of agents within boxes, including the meaning of "or" between agents, refer to the Instructions for Use of Tables that precede Table 1A.

**Reference for Table 1B**

[1] CLSI. *Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria That Grow Aerobically*. 11th ed. CLSI standard M07. Clinical and Laboratory Standards Institute; 2018.

## Table 1C. Suggested Groupings of Antimicrobial Agents Approved by the US Food and Drug Administration for Clinical Use That Should Be Considered for Testing and Reporting on Anaerobic Organisms by Microbiology Laboratories in the United States

| **Group A: Includes antimicrobial agents considered to be appropriate for inclusion in a routine, primary testing panel, as well as for routine reporting of results for the specific organism group.** | |
|---|---|
| **Gram-Negative Anaerobes** | **Gram-Positive Anaerobes[a]** |
| Amoxicillin-clavulanate<br>Ampicillin-sulbactam<br>Piperacillin-tazobactam | Ampicillin[b]<br>Penicillin[b] |
| | Amoxicillin-clavulanate<br>Ampicillin-sulbactam<br>Piperacillin-tazobactam |
| Clindamycin | Clindamycin |
| Doripenem<br>Ertapenem<br>Imipenem<br>Imipenem-relebactam<br>Meropenem | Doripenem<br>Ertapenem<br>Imipenem<br>Imipenem-relebactam<br>Meropenem |
| Metronidazole | Metronidazole |
| **Group C: Includes alternative or supplemental antimicrobial agents that may require testing in institutions that harbor endemic or epidemic strains resistant to several of the primary drugs, for treatment of patients allergic to primary drugs, for treatment of unusual organisms, or for reporting to infection prevention as an epidemiological aid.** | |
| **Gram-Negative Anaerobes** | **Gram-Positive Anaerobes[a]** |
| Penicillin[b]<br>Ampicillin[b] | Cefotetan<br>Cefoxitin |
| Cefotetan<br>Cefoxitin | |
| Ceftizoxime<br>Ceftriaxone | Ceftizoxime<br>Ceftriaxone |
| Chloramphenicol | |
| Moxifloxacin | Moxifloxacin |
| | Tetracycline |

**Footnotes**

a. Many non–spore-forming, gram-positive anaerobic rods are resistant to metronidazole (see Appendix D).

b. If ß-lactamase positive, report as resistant to penicillin and ampicillin. Be aware that ß-lactamase-negative isolates may be resistant to penicillin and ampicillin by other mechanisms.

## Table 1C. (Continued)

**NOTE 1:** For information about the selection of appropriate antimicrobial agents; explanation of test/report groups A and C; and explanation of the listing of agents within boxes, refer to the Instructions for Use of Tables that precede Table 1A.

**NOTE 2:** Most anaerobic infections are polymicrobial, including both β-lactamase-positive and β-lactamase-negative strains. Testing may not be necessary for isolates associated with polymicrobial anaerobic infections. However, if susceptibility testing is requested, only the organism most likely to be resistant (eg, *Bacteroides* spp. and *Parabacteroides* spp.) should be tested and results reported (see Appendix D).

**NOTE 3:** Specific *Clostridium* spp. (eg, *Clostridium septicum, Clostridium sordellii*) may be the singular cause of infection and are typically susceptible to penicillin and ampicillin. Penicillin and clindamycin resistance have been reported in *Clostridium perfringens*. Agents in group A of Table 1C should be tested and reported for *Clostridium* spp.