


The antibiotic sensitivity discs

IVD For *in-vitro* diagnostic and professional use only

 Store at (-20 to +8 °C)

INTENDED USE

For the Measurement of the Resistance and Sensitivity of the major microbial species to the antibiotic/chemotherapeutic agents.

INTRODUCTION

Resistance to antimicrobial agents (AMR) has resulted in morbidity and mortality from treatment failures and increased health care costs. Although defining the precise public health risk and estimating the increase in costs is not a simple undertaking, there is little doubt that emergent antibiotic resistance is a serious global problem.

Appropriate antimicrobial drug use has unquestionable benefit, but physicians and the public frequently use these agents inappropriately. Inappropriate use results from physicians providing antimicrobial drugs to treat viral infections, using inadequate criteria for diagnosis of infections that potentially have a bacterial aetiology, unnecessarily prescribing expensive, broad-spectrum agents, and not following established recommendations for using chemo prophylaxis. The availability of antibiotics over the counter, despite regulations to the contrary, also fuel inappropriate usage of antimicrobial drugs. The easy availability of antimicrobial drugs leads to their incorporation into herbal or "folk" remedies, which also increases inappropriate use of these agents.

Widespread antibiotic usage exerts a selective pressure that acts as a driving force in the development of antibiotic resistance. The association between increased rates of antimicrobial use and resistance has been documented for nosocomial infections as well as for resistant community acquired infections. As resistance develops to "first-line" antibiotics, therapy with new, broader spectrum, more expensive antibiotics increases, but is followed by development of resistance to the new class of drugs.

Resistance factors, particularly those carried on mobile elements, can spread rapidly within human and animal populations. Multidrug-resistant pathogens travel not only locally but also globally, with newly introduced pathogens spreading rapidly in susceptible hosts. Antibiotic resistance patterns may vary locally and regionally, so surveillance data needs to be collected from selected sentinel sources. Patterns can change rapidly and they need to be monitored closely because of their implications for public health and as an indicator of appropriate or inappropriate antibiotic usage by physicians in that area. The results of *in-vitro* antibiotic susceptibility testing, guide clinicians in the appropriate selection of initial empiric regimens and, drugs used for individual patients in specific situations. The selection of an antibiotic panel for susceptibility testing is based on the commonly observed susceptibility patterns, and is revised periodically.

PRINCIPLE

The discs-diffusion test is based on the fact that for a given antibiotic, the size of the zone inhibition is inversely related to MIC (determined by dilution method) of the strain being tested when the test conditions are held constant. Antimicrobial susceptibility testing with discs is a simple and rapid method and provides a reproducible means of testing bacterial sensitivity to various antibiotics and chemotherapeutic agents.

MATERIALS PROVIDED

- Antibiotic discs.
- Dispenser.

MATERIALS REQUIRED BUT NOT PROVIDED

- Trypticase Soy Broth, 5 ml (or any other suitable broth).
- Mueller Hinton Agar, (MHA) Ph 7.3 ±0.1.
- Sterile Saline or Broth.

STORAGE AND STABILITY

All the sensitivity discs are stable at -20 °C to +8 °C till the expiry date mentioned on individual label.

PRECAUTIONS

1. Allow the vials to come to room temperature before opening, to avoid condensation of moisture.
2. As soon as the application is over, tightly stopper and promptly transfer the vials to the refrigerator.
3. Test materials should be discarded properly in a biohazard container.
4. Protective clothing should be worn when handling the reagents.
5. Wash hands and the test table top with water and soap once the testing is done.

TEST PROCEDURE

1. Preparation of plates

Sterile Muller Hinton Agar, (pH 7.3 ±0.1) is poured into plates (petridishes) kept on a leveled surface. The depth of the medium should be approximately 4 mm. After the medium has solidified, dry the plates for 30 minutes in an incubator (35-37 °C) to remove excess moisture from the surface. While pouring into plates, 5% defibrinated sterile sheep blood should be aseptically added to MHA for testing Streptococci and other fastidious organisms.

2. Preparation of inoculum

- a) Use only pure culture for sensitivity testing. Perform Gram staining before preparing an inoculum.
- b) Select 4 to 5 similar colonies and transfer them into tube containing 5 ml of Trypticase Soy Broth (or similar broth) with the help of a wire loop.
- c) Incubate the broth culture at 35-37 °C for 2 to 5 hours to obtain moderate turbidity.
- d) Dilute the broth culture of actively growing organisms with sterile broth or saline to obtain a turbidity equivalent to that of Barium Sulphate Standard (equivalent to half the density of McFarland Standard No.1) which prepared by adding 0.5 ml of 1.175% BaCl₂·2H₂O solution to 99.5 ml of 0.36N H₂SO₄. Overnight cultures of aerobes/non-fastidious organisms generally have too much growth to be used undiluted. When time does not permit for the development of a sufficiently turbid broth culture, colonies can be suspended directly into a small volume of saline or broth which is then further up to the turbidity equivalent to half that of McFarland Standard No.1. In order to prevent further growth the diluted and standardized inoculums should not be allowed to stand longer than 15 to 20 minutes before the plates are inoculated.

3. Inoculation :

- a) Dip a sterile cotton swab into the appropriately diluted culture inoculum and rotate it while pressing against the upper inside wall of the tube, above the fluid level to remove excess inoculum.
- b) Streak the agar surface of the plate in three directions, turning the plate by 60 between each streaking.
- c) Replace the lid of the Petri dish and keep it at room temperature for 5 to 10 minutes, but no longer than 15 minutes to dry the inoculum. Confluent growth is desirable for accurate results.

4. Application of sensitivity-discs

Remove one sensitivity disc from the cartridge with the help of a flamed forceps and carefully place it on the surface of the medium.

Finally, press it tightly with the forceps to make complete contact with the surface of the medium. Allow the plate to stand at room temperature for 30 minutes (pre-diffusion time) before proceeding for next step.

5. Incubation

Incubate the plates at 35-37 °C for 16 to 18 hours.

6. Reading the zones

Measure the diameter of the zone of inhibition at the end of the incubation period. If plates are showing proper growth, they may be read after 6 to 8 hours in clinically urgent situations. Measure only those zones that are showing complete inhibition and record the zone diameter to the nearest millimeter. If only isolated colonies grow instead of confluent growth, the inoculum is too light and the test should be repeated.

INTERPRETATION OF RESULTS

Although there is some correlation between the size of the zone of inhibition and susceptibility of the organisms to the antibiotic, the former is a function of many variables e.g. density of the inoculum, depth of the medium, diffusibility of antibiotic etc.

The size of the inhibition zone at which organisms is considered Resistant; intermediate or sensitive is given in the zone size interpretative chart as a part of this literature.

Zone diameters Interpretive Chart

Serial No.	Antimicrobial Agent	Code	Disc Content	Test organisms	Zone Diameter Nearest Whole mm		
					Resistance mm ≤	Intermediate	Sensitive mm ≥
1.	Amikacin	AK	30 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> <i>Acinetobacter</i> spp. <i>Staphylococci</i> spp	14	15-16	17
2.	Amoxicillin	AX	10 µg	All organisms	13	14-17	18
3.	Amoxicillin/ Clavulanate	AMC	20/10 µg	<i>Enterobacteriaceae</i>	13	14-17	18
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	19	-----	20
4.	Ampicillin	AMP	10 µg	<i>Enterobacteriaceae</i>	13	14-16	17
				<i>Enterococcus</i> spp.	16	-----	17
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	18	19-21	22
				<i>Streptococcus</i> spp. β hemolytic Group	-----	-----	24
5.	Ampicillin/ Sulbactam	A/S	10/10 µg	<i>Enterobacteriaceae</i> <i>Acinetobacter</i> spp.	11	12-14	15
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	19	---	20
6.	Azithromycin	AZM	15 µg	<i>Enterobacteriaceae</i>	12	---	13
				<i>Staphylococci</i> spp.	13	14-17	18
				<i>S.pneumoniae</i>	13	14-17	18
				<i>Streptococcus</i> spp. β hemolytic Group	13	14-17	18
				<i>Streptococcus</i> spp. <i>Viridans</i> Group	13	14-17	18
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	----	----	12
7.	Aztreonam	AT	30 µg	<i>Enterobacteriaceae</i>	17	18-20	21
				<i>Pseudomonas aeruginosa</i>	15	16-21	22
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	----	----	26
8.	Carbenicillin	CB	100 µg	---	---	---	
9.	Cefaclor	CF	30 µg	<i>Enterobacteriaceae</i>	14	15-17	18
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	16	17-19	20
10.	Cefadroxil	CD	30 µg	All organisms	14	15-17	18
11.	Cefazolin	CZ	30 µg	<i>Enterobacteriaceae</i>	19	20-22	23(P)
					14	15-17	18(O)
12.	Cefdinir	CDR	5 µg	<i>Enterobacteriaceae</i>	16	17-19	20
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	20
13.	Cefepime	CPM	30 µg	<i>Enterobacteriaceae</i>	18	---	25
				<i>Acinetobacter</i> spp.	14	15-17	18
				<i>Pseudomonas aeruginosa</i>	14	15-17	18
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	26
				<i>N.gonorrhoeae</i>	---	---	31
				<i>Streptococcus</i> spp. β hemolytic Group	---	---	24
14.	Cefixime	CFM	5 µg	<i>Streptococcus</i> spp. <i>Viridans</i> Group	21	22-23	24
				<i>Enterobacteriaceae</i>	15	16-18	19
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	21
				<i>N.gonorrhoeae</i>	---	---	31
15.	Cefoperazone	CPZ	75 µg	<i>Enterobacteriaceae</i>	15	16-20	21
16.	Cefoperazone /sulbactam	CS	75+30 µg	<i>Pseudomonas aeruginosa.</i> <i>Acinetobacter</i> spp. <i>Staphylococcus</i> spp.	15	16-20	21
					15	16-20	21
17.	Cefotaxime	CTX	30 µg	<i>Enterobacteriaceae</i>	22	23-25	26
				<i>Acinetobacter</i> spp.	14	15-22	23
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	26
				<i>N. gonorrhoeae.</i>	---	---	31
				<i>Streptococcus</i> spp. <i>Viridans</i> Group	25	26-27	28
				<i>Streptococcus</i> spp. β hemolytic Group	---	---	24
	<i>N .meningitides</i>	---	---	34			

18.	Cefoxitin	CX	30 µg	<i>Enterobacteriaceae</i>	14	15-17	18
				<i>N.gonorrhoeae</i>	23	24-27	28
19.	Cefpirome	CE	30 µg	<i>Enterobacteriaceae</i>	24	26-27	28
				<i>Acinetobacter</i> spp. <i>Pseudomonas aeruginosa.</i>	20	21-23	24
20.	Cefpodoxime	CPD	10 µg	<i>Enterobacteriaceae</i> <i>N.gonorrhoeae</i>	17 ---	18-20 ---	21 29
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	----	---	21
21.	Cefprozil	CPR	30 µg	<i>Enterobacteriaceae</i> <i>Haemophilus influenza & Haemophilus parainfluenzae</i>	14	15-17	18
22.	Ceftazidime	CAZ	30 µg	<i>Enterobacteriaceae</i>	17	18-20	21
				<i>Pseudomonas aeruginosa.</i>	14	15-17	18
				<i>Acinetobacter</i> spp.	14	15-17	18
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	---	---	26
				<i>Burkholderia cepacia complex</i>	17	18-20	21
23.	Ceftizoxime	CZX	30 µg	<i>N. gonorrhoeae.</i>	---	---	31
23.	Ceftizoxime	CZX	30 µg	<i>Enterobacteriaceae</i>	21	22-24	25
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	---	---	26
				<i>N. gonorrhoeae.</i>	---	---	38
24.	Ceftriaxone	CTR	30 µg	<i>Enterobacteriaceae</i>	19	20-22	23
				<i>Acinetobacter</i> spp.	13	14-20	21
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	---	---	26
				<i>N. gonorrhoeae.</i>	---	---	35
				<i>Streptococcus</i> spp. <i>Viridans Group</i>	24	25-26	27
				<i>Streptococcus</i> spp. β hemolytic Group	---	---	24
				<i>N. meningitidis</i>	---	---	34
25.	Ceftriaxone	CTR	10 µg	<i>Escherichia coli</i>	28	29-35	36
				<i>Staphylococcus aureus</i>	21	22-28	29
				<i>Pseudomonas aeruginosa</i>	16	17-23	24
26.	Cefuroxime	CXM	30 µg	<i>Enterobacteriaceae</i>	14	15-17	18(P)
					14	15-22	23(O)
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	16	17-19	20(P)
					16	17-19	20(O)
				<i>N. gonorrhoeae.</i>	25	26-30	31
27.	Cephalothin	CEP	30 µg	<i>Enterobacteriaceae</i>	14	15-17	18
28.	Chloramphenicol	C	30 µg	<i>Enterobacteriaceae</i>	12	13-17	18
				<i>Staphylococci</i> spp	12	13-17	18
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	25	26-28	29
				<i>S.pneumoniae</i>	20	---	21
				<i>Streptococcus</i> spp. β hemolytic Group	17	18-20	21
				<i>Streptococcus</i> spp. <i>Viridans Group</i>	17	18-20	21
				<i>Enterococcus</i> spp.	12	13-17	18
				<i>N. meningitidis</i>	19	20-25	26
29.	Ciprofloxacin	CIP	5 µg	<i>Enterobacteriaceae</i>	15	16-20	21
				<i>Acinetobacter</i> spp.	15	16-20	21
				<i>Staphylococci</i> spp.	15	16-20	21
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	---	---	21
				<i>N. gonorrhoeae</i>	27	28-40	41
				<i>N. meningitidis</i>	32	33-34	35
				<i>Enterococcus</i> spp.	15	16-20	21
				<i>Pseudomonas aeruginosa.</i>	15	16-20	21
				<i>Salmonella</i> spp.	20	21-30	31
30.	Cephalexin (Cefalexin)	CN	30 µg	All Organisms	14	15-17	18
31.	Cephaloridine	CH	30 µg	All Organisms	11	12-15	16
32.	Clarithromycin	CLR	15 µg	<i>Staphylococci</i> spp.	13	14-17	18
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	10	11-12	13
				<i>S.pneumoniae</i>	16	17-20	21
				<i>Streptococcus</i> spp. β hemolytic Group	16	17-20	21
				<i>Streptococcus</i> spp. <i>Viridans Group</i>	16	17-20	21
33.	Clindamycin	CD	2 µg	<i>Staphylococci</i> spp.	14	15-20	21
				<i>Streptococcus</i> spp. β hemolytic Group	15	16-18	19
				<i>S.pneumoniae</i>	15	16-18	19
				<i>Streptococcus</i> spp. <i>Viridans Group</i>	15	16-18	19
34.	Cloxacillin	COX	5 µg	All organisms	11	12-13	14
35.	Colistin	CL	10 µg	<i>Pseudomonas aeruginosa</i>	10	---	11
36.	Doripenem	DOR	10 µg	<i>Enterobacteriaceae</i>	19	20-22	23
				<i>Acinetobacter</i> spp.	14	15-17	18
				<i>P. aeruginosa.</i>	15	16-18	19
				<i>Staphylococci</i> spp.	---	---	30
				<i>Haemophilus influenza & Haemophilus parainfluenzae</i>	---	---	16
37.	Doxycycline	DOX	30 µg	<i>Enterobacteriaceae</i>	10	11-13	14
				<i>Acinetobacter</i> spp.	9	10-12	13
				<i>S.pneumoniae</i>	24	25-27	28
				<i>Staphylococci</i> spp.	12	13-15	16

				<i>Enterococcus</i> spp.	12	13-15	16
38.	Ertapenem	ETP	10 µg	<i>Enterobacteriaceae</i> <i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	18 ---	19-21 ---	22 19
39.	Erythromycin	E	15 µg	<i>Staphylococci</i> spp.	13	14-17	23
				<i>Enterococcus</i> spp.			
				<i>S.pneumoniae</i>	15	16-20	21
				<i>Streptococcus</i> spp. β hemolytic Group	15	16-20	21
				<i>Streptococcus</i> spp. Viridans Group	15	16-20	21
40.	Furazolidone	FZ	100 µg	All organisms	14	15-16	17
41.	Faropenem	FAR	5 µg	---	---	---	---
42.	Fosfomycin	FO	200 µg	<i>Enterobacteriaceae</i>	12	13-15	16
				<i>Enterococcus</i> spp.	12	13-15	16
43.	Gatifloxacin	GAT	5 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> . <i>Acinetobacter</i> spp. <i>Enterococcus</i> spp.	14	15-17	18
				<i>Staphylococci</i> spp.	19	20-22	23
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	18
				<i>S.pneumoniae</i> <i>Streptococcus</i> spp. β hemolytic Group	17	18-20	21
				<i>Streptococcus</i> spp. Viridans Group			
44.	Gemifloxacin	GEM	5 µg	<i>Enterobacteriaceae</i>	15	16-19	20
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	18
				<i>S.pneumoniae</i>	19	20-22	23
45.	Gentamicin	GEN	10 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> . <i>Acinetobacter</i> spp. <i>Staphylococci</i> spp.	12	13-14	15
46.	Imipenem	IPM	10 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> . <i>Acinetobacter</i> spp.	19 15 18	20-22 16-18 19-21	23 19 22
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	16
47.	Kanamycin	K	30 µg	<i>Enterobacteriaceae</i> <i>Staphylococci</i> spp.	13	14-17	18
48.	Levofloxacin	LE	5 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> . <i>Acinetobacter</i> spp. <i>Enterococcus</i> spp. <i>Streptococcus</i> spp. Viridans Group <i>Streptococcus</i> spp. β hemolytic Group	13	14-16	17
				<i>S.pneumoniae</i> <i>Stenotrophomonas maltophilia</i> .			
				<i>Staphylococci</i> spp.	15	16-18	19
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	17
49.	Lincomycin	LN	15 µg	All organisms	13	14-17	18
50.	Linezolid	LZ	30 µg	<i>Staphylococci</i> spp.	20	---	21
				<i>Enterococcus</i> spp.	20	21-22	23
				<i>Streptococcus</i> spp. Viridans Group <i>Streptococcus</i> spp. β hemolytic Group	---	---	21
				<i>S.pneumoniae</i>			
51.	Lomefloxacin	LOM	10 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> , <i>Staphylococci</i> spp.	18	19-21	22
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	22
				<i>N. gonorrhoeae</i>	26	27-37	38
52.	Meropenem	MRP	10 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> <i>Acinetobacter</i> spp.	19 15 14	20-22 16-18 15-17	23 19 18
				<i>Burkholderia cepacia</i> complex	15	16-19	20
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	---	---	20
				<i>N. meningitidis</i>	---	---	30
53.	Minocycline	MI	30 µg	<i>Enterobacteriaceae</i> <i>Acinetobacter</i> spp.	12	13-15	16
				<i>Staphylococci</i> spp. <i>Enterococcus</i> spp. <i>Burkholderia cepacia</i> complex <i>Stenotrophomonas maltophilia</i> .	14	15-18	19
				<i>N.meningitidis</i>	---	---	26
54.	Mezlocillin	MZ	75 µg	<i>Acinetobacter</i> spp.	17	18-20	21
55.	Moxifloxacin	MXF	5 µg	<i>Staphylococci</i> spp.	20	21-23	24
				<i>S.pneumoniae</i> <i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	14 ---	15-17 ---	18 18
56.	Nalidixic acid	NA	30 µg	<i>Enterobacteriaceae</i>	13	14-18	19
57.	Netilmicin	NET	30 µg	<i>Enterobacteriaceae</i> <i>Pseudomonas aeruginosa</i> <i>Staphylococci</i> spp.	12	13-14	17

58.	Nitrofurantoin	NIT	300 µg	Enterobacteriaceae Staphylococci spp. Enterococcus spp.	14	15-16	17
59.	Norfloxacin	NX	10 µg	Enterobacteriaceae Pseudomonas aeruginosa. Staphylococci spp. Enterococcus spp.	12	13-16	17
60.	Ofloxacin	OF	5 µg	Enterobacteriaceae Pseudomonas aeruginosa. Streptococcus spp. β hemolytic Group Streptococcus spp. Viridans Group S.pneumoniae	12	13-15	16
				Staphylococci spp.	14	15-17	18
				Haemophilus influenza & Haemophilus parainfluenzae	---	---	16
				N.gonorrhoeae.	24	25-30	31
61.	Oxacillin	OX	1 µg	---	---	---	---
62.	Pefloxacin	PF	5 µg	---	---	---	---
63.	Penicillin	P	10 units	Staphylococci spp.	28	---	29
				Enterococcus spp.	14	---	15
				N. gonorrhoeae.	26	27-46	47
				Streptococcus spp. β hemolytic Group	---	---	24
64.	Piperacillin	PI	100 µg	Enterobacteriaceae	17	18-20	21
				Acinetobacter spp.	17	18-20	21
				Pseudomonas aeruginosa	14	15-20	21
65.	Piperacillin/ Tazobactam	PTZ	100/10 µg	Enterobacteriaceae Acinetobacter spp.	17	18-20	21
				Pseudomonas aeruginosa. Haemophilus influenza & Haemophilus parainfluenzae	14	15-20	21
				---	---	21	
66.	Polymyxin B	PB	300 units	Pseudomonas aeruginosa	11	---	12
67.	Prulifloxacin (Ulifloxacin)	PRU	5 µg	---	---	---	---
68.	Rifampin	RIF	5 µg	Staphylococci spp. Enterococcus spp. Haemophilus influenza & Haemophilus parainfluenzae	16	17-19	20
				S. pneumoniae	16	17-18	19
				N. meningitides.	19	20-24	25
				All organisms	9	10-20	21
69.	Roxithromycin	RO	30 µg	All organisms	9	10-20	21
70.	Sparfloxacin	SPX	5 µg	Staphylococci spp. S.pneumoniae	15	16-18	19
71.	Spectinomycin	SPT	100 µg	N.gonorrhoeae	14	15-17	18
72.	Streptomycin	S	10 µg	Enterobacteriaceae	11	12-14	15
73.	Sulfadiazine	SD	300 µg	Entrobacteriaceae. Staphylococcus spp. Vibrio cholera.	12	13-16	17
74.	Teicoplanin	TEI	30 µg	Staphylococci spp. Enterococcus spp.	10	11-13	14
75.	Tetracycline	TE	30 µg	Enterobacteriaceae Acinetobacter spp.	11	12-14	15
				Staphylococci spp. Enterococcus spp.	14	15-18	19
				Haemophilus influenza & Haemophilus parainfluenzae	25	26-28	29
				N.gonorrhoeae S.pneumoniae	30 24	31-37 25-27	38 28
				Streptococcus spp. β hemolytic Group Streptococcus spp. Viridans Group	18	19-22	23
				Enterobacteriaceae Acinetobacter spp.	14	15-19	20
				Pseudomonas aeruginosa	15	16-23	24
77.	Ticarcillin/ Clavulanate	TCC	75/10 µg	Enterobacteriaceae Acinetobacter spp. Pseudomonas aeruginosa.	14 14 15	15-19 15-19 16-23	20 20 24
				---	---	---	---
				---	---	---	---
78.	Tigecycline	TGC	15 µg	---	---	---	---
79.	Tobramycin	TOB	10 µg	Enterobacteriaceae Acinetobacter spp. Pseudomonas aeruginosa Staphylococci spp.	12	13-14	15
80.	Trimethoprim/Sulfa methoxazole	COT	1.25/23.75 µg	Enterobacteriaceae mcg Acinetobacter spp. Burkholderia cepacia complex Stenotrophomonas maltophilia Staphylococci spp. Haemophilus influenza & Haemophilus parainfluenzae	10	11-15	16
				S. pneumoniae	15	16-18	19
				N. meningitidis	25	26-29	30
				Enterobacteriaceae. Staphylococci spp.	10	11-15	16
81.	Trimethoprim	TR	5 µg	Enterobacteriaceae. Staphylococci spp.	10	11-15	16
				Enterococcus spp.	14	15-16	17
82.	Vancomycin	VA	30 µg	Streptococcus spp. β hemolytic Group Streptococcus spp. Viridans Group S.pneumoniae	---	---	17

83.	Refampicin	RIF	30 µg	<i>Escherichia coli</i>	9	---	12
				<i>Staphylococcus aureus</i>	32	---	40
84.	Novobiocin	NV	5 µg	<i>Staphylococcus aureus</i>	22	---	31
85.	Bacitracin	B	10 unit	<i>Staphylococcus aureus</i>	18	---	24

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	Catalogue Number		Temperature limit
	In Vitro diagnostic medical device		Caution
	Contains sufficient for <n> tests and Relative size		Consult instructions for use (IFU)
	Batch code		Manufacturer
	Fragile, handle with care		Use-by date
	Manufacturer fax number		Do not use if package is damaged
	Manufacturer telephone number		Date of Manufacture
	Keep away from sunlight		Keep dry