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Antibiotic sensitivity Testing antimicrobial Susceptibility testing Antibiogram

It is an in vitro test of the sensitivity of a pathogen to one or more antibiotics . Its purpose is to guide the clinician in the choice of an antibiotic to treat the infection and to use the data for monitoring thel resistance to antibiotics and help find out which antibiotic will be the most effective .

Specimens could be blood , urin , stool , wound exudates , throat swap , CSF , sputum or milk.

Methods by which this test can be conducted

1. Disc Diffusion method (**Kirby Bauer method**)

   After identifying positive culture the first step is to standerize the bacterial suspension by using **0.5 % McFarland standard solution**, then the antibiotic discs should be implanted on **Mueller Hinton agar** by using the forceps or the dispenser machine to be incubated for 24 hrs and reading the results as the following according to the **diameter of the inhibition zone** which measured by a standardized ruler , **type of antibiotic and bacteria.**

   a. Sensitive (according to measures in the chart below)

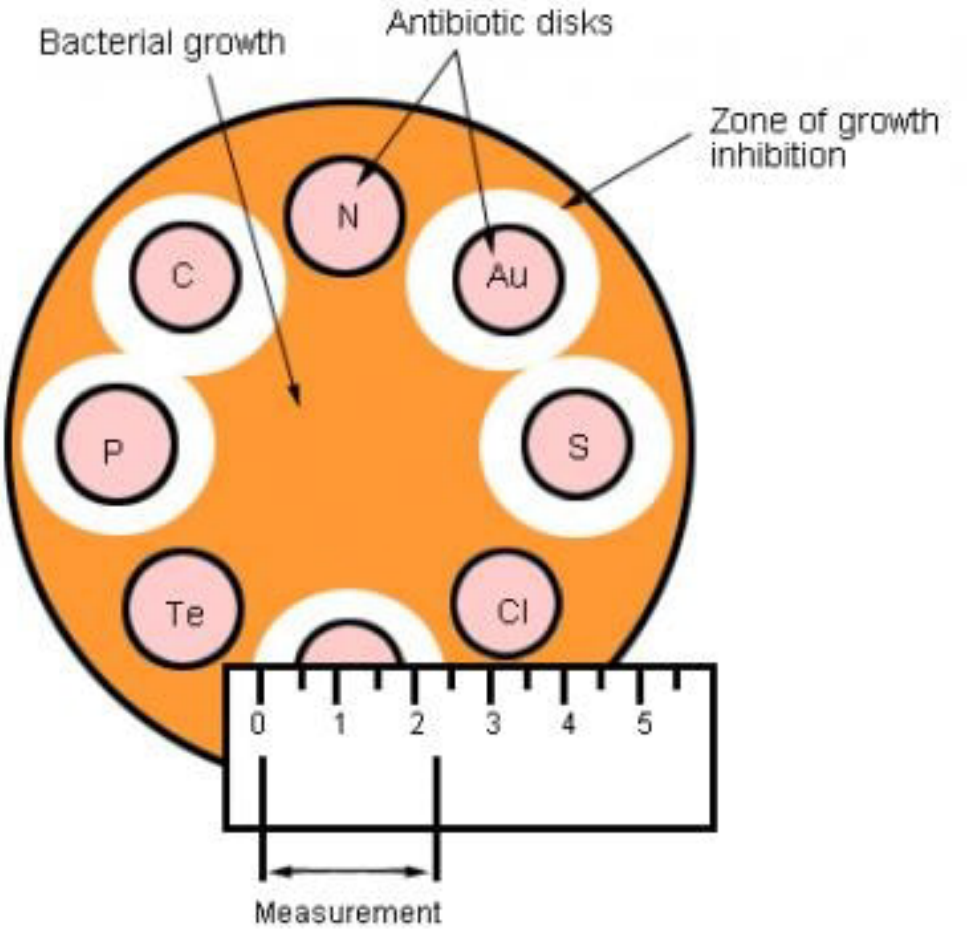
   b. Intermediate (higher dose of antibiotic is needed)

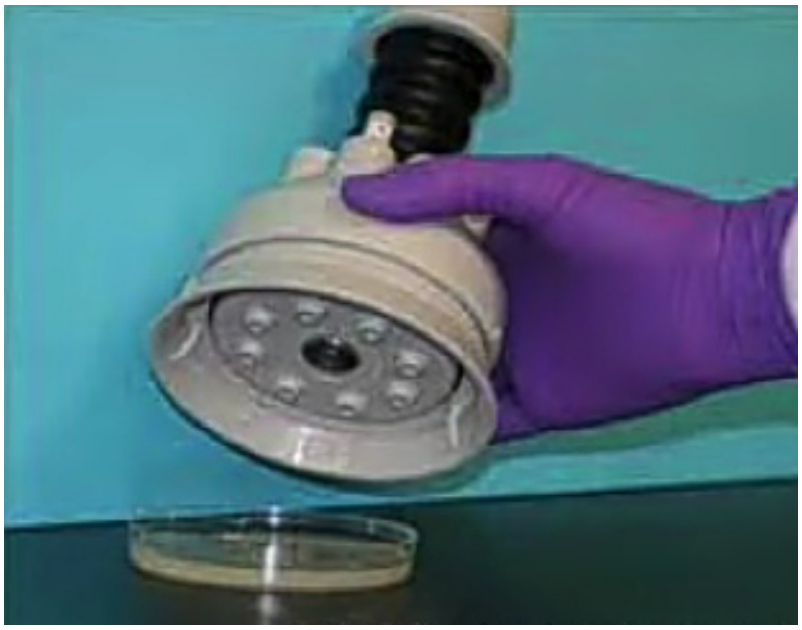
   c. Resistant (diameter of the inhibition zone measures zero)

I. Disk Diffusion Method

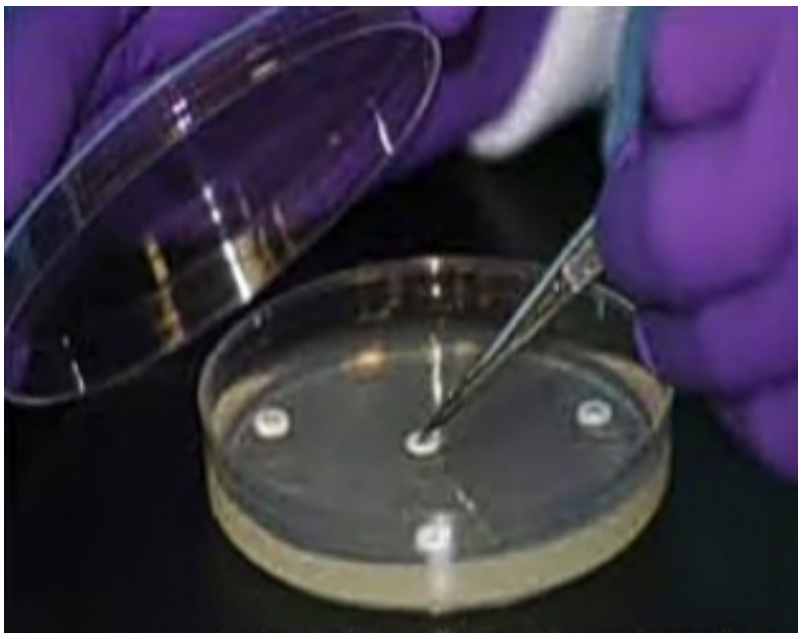
Antibiotic Name	Disc Concentration (µg)	Diameter of Zone of Inhibition		
		Resistant <or = nm	Intermediate nm	Susceptible = or>nm
1. Erythromycin	15	≤13	14-22	≥23
2. Penicillin	10	≤19	20-27	≥28
3. Vancomycin	30	≤14	15-16	≥17
4. Trimethoprim-sulfamethoxazole	25	≤10	11-15	≥16
5. Gentamicin	10	≤12	13-14	≥15
6. Oxacillin	1	≤10	11-12	≥13
7. Tetracycline	30	≤14	15-18	≥19
8. Chloramphenicol	30	≤12	13-17	≥18
9. Moxifloxacin	5	≤20	21-23	≥24
10. Norfloxacin	10	≤12	13-16	≥17
11. Nitrofurantoin	30	≤14	15-16	≥17
12. Ciprofloxacin	5	≤15	16-20	≥21
13. Rifampin	5	≤16	17-19	≥20
14. Doxycycline	30	≤12	13-15	≥16
15. Cefixime	5	≤15	16-18	≥19
16. Minocycline	30	≤14	15-18	≥19
17. Levofloxacin	5	≤15	16-18	≥19
18. Clindamycin	2	≤14	15-20	≥21

Reference standard chart to detect the diameter of each antibiotic.


Bacterial growth
Antibiotic disks
Zone of growth inhibition
N
C
Au
P
S
Te
Cl
0
1
2
3
4
5
Measurement

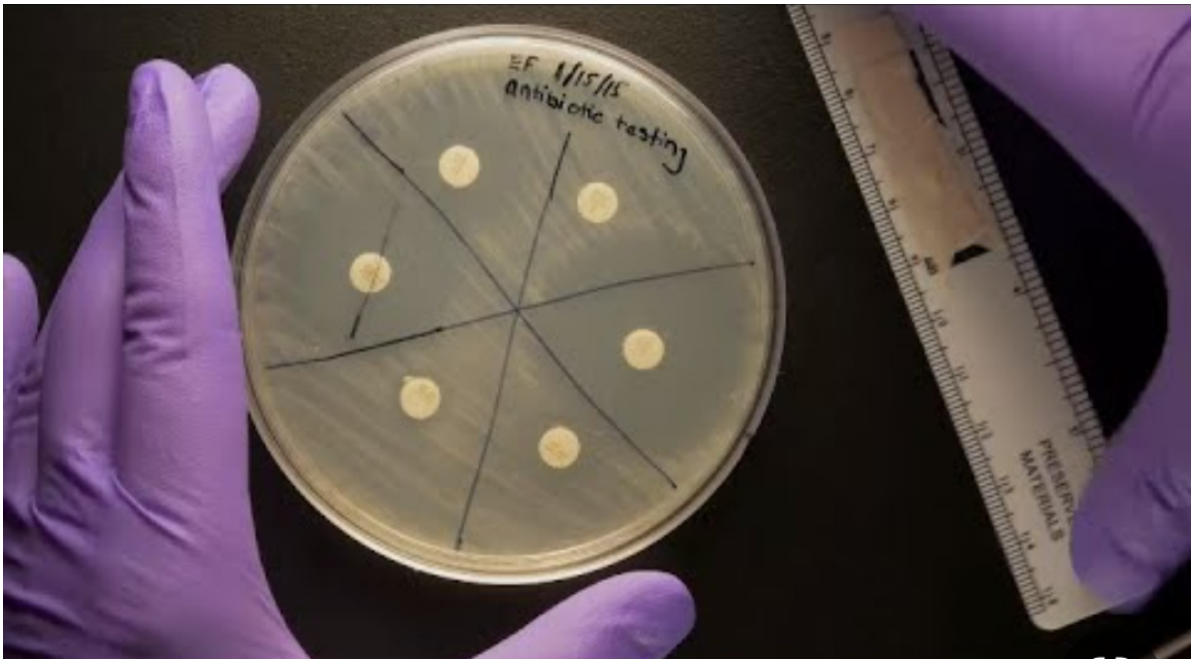


Disk dispensing machine



Implanting disc by the forceps

Different diameters of inhibition zone



Dividing the dish to allow equal spaces among discs

2. Broth dilution method (determination of MIC)