



Optochin

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Kettering Health Network (KHN) Organization-Wide Policy

KHN adopts this policy for Kettering Medical Center, Sycamore Medical Center, Grandview Hospital and Medical Center/Southview Hospital, Greene Memorial Hospital, Inc., Soin Medical Center, Fort Hamilton Hospital, Troy Hospital, Kettering Physician Network, all hospital off-sites, and KHN Support Services.

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I. PRINCIPLE

Taxo P Discs are impregnated with ethylhydrocupreine hydrochloride (optochin), a drug used for pneumonia therapy before sulfonamides became available. The growth of pneumococci, but not of other streptococci, is markedly inhibited by this chemical. Therefore, the Taxo P Disc on a blood agar plate can be used for the rapid presumptive identification of pneumococci by observing zones of inhibition and hemolytic reactions.

II. SPECIMEN COLLECTION, TRANSPORT, AND HANDLING

A. Specimens

1. Colonies on solid media.
 - a. This procedure is not to be used directly with clinical specimens or other sources containing mixed microbial flora. The bacteria to be tested must first be isolated as separate colonies by streaking the specimen onto appropriate culture media.
2. Broth from blood cultures inoculated onto solid media.
 - a. Blood cultures are the only acceptable clinical specimen that may be used for this testing.

III. MATERIALS

A. Reagents

1. 5 µg optochin discs (6 mm) – BBL “Taxo P” disc

B. Other Supplies

1. Trypticase Soy Agar Plates with 5% sheep blood (BAP)
2. Sterile disposable inoculating loop
3. Forceps
4. Millimeter ruler or caliper

C. Equipment

1. CO₂ incubator at 35-37°C

IV. QUALITY CONTROL

- A. The quality control should be tested in the same manner as patient samples. Refer to Section V for the procedure steps.
- B. **Control cultures should be run with each new lot and each new shipment of optochin cartridges.** See table below for expected results:

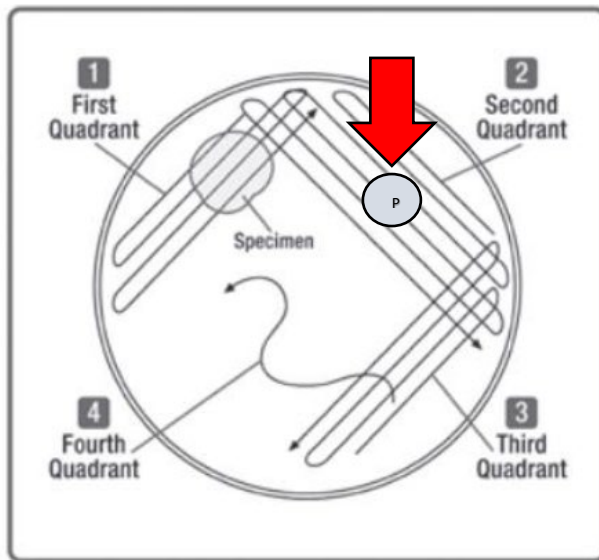
Test Strain	Expected Result
<i>Streptococcus pneumoniae</i> ATCC 6305	>=14mm
<i>Streptococcus pyogenes</i> ATCC 12384	<=6mm

V. PROCEDURE

- A. Using a sterile inoculating loop, streak 1-3 suspect colonies onto a blood agar plate. Streak the entire area for isolation (4 Quadrant Streak).
- B. Aseptically (with forceps) place the optochin disc in the center of the second quadrant, as shown below:

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- C. Incubate 18-24 hours at 34-37°C in a CO₂ incubator.
- D. Remove plate from incubator and measure zone of inhibition using ruler or caliper.

VI. INTERPRETATION

- A. Zones of inhibition are interpreted as follows:

Zone Size	Identification
$\geq 14\text{mm}$	<i>Streptococcus pneumoniae</i>
6-14 mm	Questionable for pneumococci
$\leq 6\text{ mm}$	Not <i>Streptococcus pneumoniae</i>

1. Zone of 6-14mm
 - a. If organism resembles *Streptococcus pneumoniae* confirm identification by testing organism using a Microscan panel or a remel RapID STR system.
 - b. If organism resembles Viridans Strep Group test catalase and pyr, and report accordingly.

VII. REPORTING RESULTS

- A. Resulting in Epic Beaker
 1. Select result entry and enter the specimen number.
 - a. Verify patient information matches patient information of the organism being tested.
 2. Click on "Edit"
 3. Select the "Workup" tab
 4. Click on the "Component" tab
 5. Type in "Op". Press Enter. The Optochin test will auto populate.

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Add Component

To add components on all isolates or plates in workup, select the 'All isolates in workup' or 'All plates in workup' option when specifying isolates or plates.

Workcard	Component	Isolate	Plate
1	OPTOCHIN P DISC	ISO1	
2			

6. Fill out the information corresponding to the appropriate isolate number and plate. Click Accept.
7. Enter the zone size under the correct date of testing.
 - a. If zone is ≥ 14 mm, then report out *Streptococcus pneumoniae* and add Presumptive Identification in the isolate comments box as shown below.

The screenshot shows the 'Add Component' dialog box with the following data:

Workcard	Component	Isolate	Plate
1	OPTOCHIN P DISC	ISO1	
2			

The 'Category Select' dialog box shows the following results:

Title	Number
<6mm = NOT <i>S. pneumoniae</i>	23
>14mm = <i>S. pneumoniae</i>	25
6-14mm = Questionable for pneumococci	24

The screenshot shows the 'Blood Culture' results for isolate ISO1:

Status	Isolate	Plate	Component	Use Type	Latest Value	(#1) 06/06/19
1	ISO1		ORGANISM			
2			OPTOCHIN P DISC	Use	>14mm = <i>S. pneumoniae</i>	>14mm = <i>S. pneumoniae</i>

The 'Category Select' dialog box shows the following results:

Title	Number
Awaiting Pathology Review	25
Beta-lactamase negative	11
Beta-lactamase positive	12
Call Lab if workup is desired.	1
ESBL1	21
ESBL2	22
ID and Sensitivity to Follow	4
ID to Follow	6
Insufficient growth for detection of enterohemorrhagic <i>E. coli</i> infection	15
Lactose Fermenter	18
Methicillin resistant <i>Staph aureus</i> , patient may be an isolation risk.	2
Negative for inducible clindamycin resistance	9
Negative-colony count is insufficient to associate the catheter with a dev...	14
No Further Work Up	23
Non-Lactose Fermenter	19
Organism is nonviable on susceptibility testing	16
Patient treated, provider not called.	3
Positive for inducible clindamycin resistance (presumed resistant)	8
Positive-colony count indicates possible device related infection	13
Possible carbapenemase producer	10
Presumptive Identification	20
Refer to previous MIC	17
Sensitivity to Follow	5
Susceptible to the penicillin class of drugs by oxacillin screening test	24
The presence of yeast in this quantity may be inhibitory to growth to N...	7
25 categories loaded.	

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Prelim Verify

! 19KH-157M0068: Blood Culture

Instrument ID: 1022937115

Test, Unknown

RQ126596 submitted by Kettering Training

Blood, Blood, Venous

Collected 6/6/2019 1058 by Non Staff

Containers: 2 BLOOD CULTURE VIALS...
Draw type: Collection

Blood Culture

Streptococcus pneumoniae !
Presumptive Identification

Resulting Lab: KH LAB Test method: KHN MICRO AUTO VERIFY Status: Resulted

8. Prelim or final verify results as appropriate.

VIII. CRITICAL DETERMINANTS

- Colonies selected for testing must be pure.
- Incubation in a CO₂-enriched atmosphere will enhance growth but reduce zone size.
- Taxo P Disc tests are presumptive. Positive results should be followed with more specific tests.
- Occasional strains of pneumococci not inhibited by optochin have been reported.
- Strains of alpha streptococci have been reported to form zones of approximately 10 to 12 mm when lightly inoculated.
- Unusual results should be brought to the attention of the Microbiology Supervisor and/or Medical Director.

IX. REFERENCES

- Jorgensen, J. H., Pfaller, M. A., Carroll, K. C., Landry, M. L., Funke, G., Richter, S. S., et al. (2015). *Manual of Clinical Microbiology 11th Edition American Society for Microbiology*. Washington: ASM Press.
- Weber, A. L. (2016). *Clinical Microbiology Procedures Handbook 4th Edition American Society for Microbiology*. Washington: ASM Press.
- BD BBL Taxo P Discs: for Differentiation of Pneumococci. Product Insert.

X. FORMS ASSOCIATED WITH PROCEDURE

- MB.30.060.FA Optochin Quality Control Form

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