TITLE MEDIA QUALITY CONTROL

PRINCIPLE/PURPOSE:

Microbiology is a science of observation and interpretive judgment of microbial growth; therefore, reliable and adequate culturing cannot be performed with defective media. For this reason, the laboratory obtains media prepared by a reputable manufacturer who performs extensive quality control on their media. The company states with each lot obtained, the media has been tested and that it meets Clinical and Laboratory Standards Institute (CLSI) as stated in CLSI Document M22-A3. Not only does this provide consistently reliable products for use, it decreases costs for retesting in this laboratory.

Even though all media used here are commercially prepared and tested products, some basic observations should be made in order to assure predictable media performance.

SCOPE: This procedure applies to the performance of quality checks on CLSI exempt and non-exempt media used in microbiology.

EQUIPMENT AND MATERIALS:

Equipment:

CO2 Incubator

Non-CO2 Incubator

Biological Safety Cabinet

Materials:

Sterile Inoculating loops

Flame Needle

ATCC organisms

Chocolate Agar

Modified Thayer Martin (MTM)

GBS Detect Agar

BHI with Vancomycin 6 µg/mL

Haemophilus ID Quad

Carrot Broth

Urea Agar

Motility Test Medium

Storage Requirements:

All plated media are stored at 2 - 8̊ C. All media must equilibrate to room temperature before use.

QUALITY CONTROL:

1. Exempt and Non-exempt Media

All media received in the laboratory is documented on the Media Shipment Log located in the Quality Control/Assurance Manual (behind the Media tab). The following items are documented with each type of media received:

* Date
* Tech initials receiving the media
* Type of media
* Lot number of the media received
* Expiration date
* Visual Inspection – all media received in the lab must be visually inspected for quality upon initial receipt for the following below: (Note: 10 plates/tubes of a specific medium from each batch/lot/shipment upon receipt should be examined and then again before inoculation with patient specimens)
* Change in expected color of media
* Hemolysis of blood containing media
* Agar detached from the plates
* Frozen or melted agar
* Unequal filling of plates
* Insufficient agar in the plates (<3 mm)
* Presence of precipitates
* Excessive moisture or dehydration
* Cracked or damaged plates
* Excessive bubbles or rough surfaces
* Obvious contamination

Any discrepancies in the media should be documented on the Media Variance Log located in the Quality Control/Assurance Manual with the date, media type affected, the media’s lot number and expiration date, issue noted (problem), and resolution. (Examples of resolutions may include throwing away a few cracked plates, contacting the manufacturer of a contamination issue, condensation noted so shipping is notified to see when it actually arrived, and etc…)

1. Non-exempt Media

This media requires an extra step to ensure quality control before the media is used. Follow the chart depending on the type of media received.

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| MEDIA | ATCC ORGANISM | DILUTION METHOD | INCUBATION CONDITIONS | EXPECTED RESULTS | FREQUENCY |
| Choc | *H.influenza* 10211 | B | 18-24/48 hr  35°C  CO2 | Good Growth | Per lot/ shipment |
|  | *Streptococcus pneumoniae* 6305 | B | 18-24/48 hr  35°C  CO2 | Good Growth |  |
| MTM | Neisseria gonorrhoeae 43069 | A | 18-24/48 hr  35°C  CO2 | Good Growth | Per lot/ shipment |
|  | Staphylococcus epidermidis 12228 | A | 18-24/48 hr  35°C  CO2 | Partial Inhibition |  |
| GBS Detect | Streptococcus agalactiae 13813 | A | 18-24 hr  35°C  Aerobic | Growth; beta-hemolysis | Per lot/ shipment |
|  | Streptococcus agalactiae 12386 | A | 18-24 hr  35°C  Aerobic | Growth; beta-hemolysis |  |
|  | Enterococcus faecalis 29212 | A | 18-24 hr  35°C  Aerobic | Partial to complete inhibition |  |
| Vanc | Enterococcus faecalis 51299 | C | 18-24 hr  35°C  Aerobic | Good Growth | Per plate of use |
|  | Enterococcus faecalis 29212 | C | 18-24 hr  35°C  Aerobic | No Growth |  |
| Quad | Haemophilus influenza 10211 | C; with Trypticase Soy Broth or deionized water | 18-24 hr  35°C  Aerobic | I. No Growth  II. No Growth  III.Growth  IV.No beta-hemolysis | Per lot/ shipment |
|  | Haemophilus parahaemolyticus 10014 | C; with Trypticase Soy Broth or deionized water | 18-24 hr  35°C  Aerobic | I.No Growth  II.Growth  III.Growth  IV.Beta-hemolysis |  |
| Carrot Broth | Streptococcus agalactiae 12386 | A | Cap tightened  18-24 hr  35°C  Aerobic | Growth; bright orange to red color | Per lot/ shipment |
|  | Streptococcus pyogenes 19615 | A | Cap tightened  18-24 hr  35°C  Aerobic | Growth; no color change |  |
| Urea  Agar | Cryptococcus neoformans 34877 | D | Cap loosened  2/6/24 hrs up to 6 days  33-37°C  Aerobic | Pink/Red color change | Per use |
|  | Proteus mirabilis 12453 | D | Cap loosened  2/6/24 hrs up to 6 days  33-37°C  Aerobic | Pink/Red color change |  |
|  | Escherichia coli 25922 | D | Cap loosened  2/6/24 hrs up to 6 days  33-37°C  Aerobic | No color change |  |
| Motility Media | Escherichia coli 25922 | E | Cap loosened  24 and48 hrs  35ºC  Aerobic | Growth and positive motility | Per use |
|  |  | E | Cap loosened  24 and 48 hrs  35ºC  Aerobic | Growth and negative motility |  |

PROCEDURE:

A heavy inoculum will not give a true determination of the nutritive or inhibitory capacity of the media being tested. For this reason, a standard inoculum is used for QC testing. Prepare a standard inoculum using the required method listed below. Inoculate media using 0.001/mL (green) calibrated loop, then streak for isolation (or stab if appropriate). Use an 18-24 hour culture of the quality control organism.

1. Prepare a cell suspension equivalent to a 0.5 McFarland Standard, then dilute 1:100 using 10 µL of Standard into 990 µL of saline.
2. Prepare a cell suspension equivalent to a 0.5 McFarland Standard, then dilute 1:10 using 10 µL of Standard into 90 µL of saline.
3. Prepare a cell suspension equivalent to a 0.5 McFarland Standard for inoculation. No dilution required.
4. Inoculate Urea agar with a heavy inoculum, streaking back and forth over the slant. Do not stab the butt because it serves as a color control.
5. Inoculate tubes with an inoculating needle by stabbing the medium to half its depth using growth from a Trypticase Soy Broth tube.

INTERPRETATION & REPORTING RESULTS:

Any medium not performing as expected will not be used for patient testing. Documentation of testing reactions is done on the Media QC logs located in the Daily Check Off Sheets notebook and is reviewed periodically by the section lead.

Any testing failures are called to the attention of the section lead and media will be labeled as unsatisfactory. Appropriate information will be documented on the Media Variance Log.

Manufacturer or vendor will be notified of QC failure so that replacements can be obtained. Media failing QC is discarded unless manufacturer requests that it be returned.

RELATED PROCEDURES:

Carrot Broth

GBS Detect Agar

Haem Quad

Vanc Screen Agar

Urea Agar

Motility Test Medium

REFERENCES:

CLSI Approved Standard; Quality Assurance for Commercially Prepared Microbiological Culture Media, Approved Standard- Third Edition- CLSI Document M22-A3, June 2004.

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HISTORY PAGE

SOP Number: MICRO-110

SOP Title: Media Quality Control

Written By: Leslie Benfield and Shaye Yarbrough

Manual in which Hard Copy of this SOP is located: Quality Control/Assurance Manual

Distribution: No other locations

Supersedes Procedure:

SOP CHANGE CONTROL

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