TABLE OF CONTENTS

CEREBROSPINAL FLUIDS .............................................................................................................. 2
OTHER STERILE FLUIDS .............................................................................................................. 5
  Pleural (Thoracentesis/ Empyema) Fluids .................................................................................. 5
  Peritoneal and Ascites Fluids ................................................................................................. 5
  Synovial (Joint) & Pericardial Fluids ...................................................................................... 5
  Amniotic Fluids ...................................................................................................................... 5
  Other Fluids ........................................................................................................................... 5
PERITONEAL DIALYSIS EFFLUENT .............................................................................................. 9
PREDIALYSIS FLUID .................................................................................................................. 12
BONE MARROW (ASPIRATES OR BIOPSIES) ............................................................................. 15
BLOOD, PLATELETS, & OTHER TRANSFUSION PRODUCTS ..................................................... 18
"Cryptococcal Antigen" .............................................................................................................. 21
Record of Edited Revisions .................................................................................................... 22
CEREBROSPINAL FLUIDS

Introduction

Bacterial meningitis is the result of infection of the meninges (lining around the brain). This section includes central nervous system shunt fluid, fluid from Omaya reservoirs, external ventricular drainage fluid as well as routine CSF. The examination of CSF from patients suspected of having meningitis is always considered to be a STAT procedure.

Specimen Collection and Transport

See Pre-analytical Procedure - Specimen Collection QPCMI02001

Reagents / Materials / Media

See Analytical Process - Bacteriology Reagents/Materials/Media List QPCMI10001

Procedure

A. Processing of Specimens:

See Specimen Processing Procedure

a) Direct Examination:
   - Gram stain: Spun or Unspun; 2 smears if the specimen is grossly bloody.

b) Culture:

<table>
<thead>
<tr>
<th>Media</th>
<th>Incubation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Agar (BA)</td>
<td>CO₂, 35°C x 48 hours</td>
</tr>
<tr>
<td>Chocolate Agar (CHOC)</td>
<td>CO₂, 35°C x 48 hours</td>
</tr>
<tr>
<td>Fastidious Anaerobic Broth (THIO)</td>
<td>O₂, 35°C x 5 days</td>
</tr>
<tr>
<td>If fungus or Cryptococcus is requested, add:</td>
<td></td>
</tr>
<tr>
<td>Inhibitory Mould Agar (IMA)¹</td>
<td>O₂, 28°C x 4 weeks</td>
</tr>
<tr>
<td>Esculin Base Medium (EBM)¹</td>
<td>O₂, 28°C x 4 weeks</td>
</tr>
<tr>
<td>Brain Heart Infusion Agar with 5% Sheep Blood, Gentamicin, Chloramphenicol, Cyclohexamide (BHIM)¹</td>
<td>O₂, 28°C x 4 weeks</td>
</tr>
</tbody>
</table>

¹Forward inoculated fungal media to Mycology section for incubation and work-up.
B. Interpretation of Cultures:

Examine aerobic plates after 24 and 48 hours incubation and anaerobic plates after 48 hours. Examine THIO daily for 5 days for any growth. If no growth on the culture plates but evidence of growth in THIO, perform Gram stain and sub-culture onto Chocolate Agar, Brucella Agar & other media as appropriate and process as above.

Any growth of *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa* and yeasts are significant; work up. Other organisms will be worked up only if there are ≤3 different bacterial types. Otherwise (>3 types), simply list the species/morphotypes.

C. Susceptibility Testing:

Refer to [Susceptibility Testing Manual](#).

**Reporting**

a) **Gram stain:** Report the presence or absence of organisms and WBCs. Do not quantitate.

b) **Culture:**

   Negative Report: “No growth”.

   Positive Report:

   - **Significant isolates:** *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa*, yeasts or other organisms if ≤3 different bacterial types. Report all significant isolates with appropriate susceptibilities. Do not quantitate except if it is growth from the fluid medium only – add ISOLATE Comment FLDM “From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely”

   - **>3 types non-significant isolates**
     Report as TEST COMMENT – “Mixed growth of ……list species/morphotypes.”
'Refer to Technical Manual for reporting.

Report results ASAP by telephone to the ward/ordering physician for the following:
- All positive and STAT Gram stains
- All Gram stain results for CAMH and Toronto Grace patients
- Positive cryptococcal antigen test
- All positive culture results (not seen on direct gram stain)
- Notify ICP also for all positive gram and culture. Isolate Notification Table

References


3. QMP-LS Practice Guidelines – Cerebral Spinal Fluid
OTHER STERILE FLUIDS

Introduction

Pleural (Thoracentesis/ Empyema) Fluids:
Infection of the pleural space may result in severe morbidity and mortality. Therefore rapid and accurate microbiological assessment is required. Any organism found in pleural fluid must be considered significant (although specimen contamination may occur during collection).

Peritoneal and Ascites Fluids:
Peritonitis may be classified as primary (spontaneous), secondary or tertiary. Primary peritonitis usually occurs in someone with pre-existing ascites (e.g. patients with chronic liver disease) in which there has been no entry into the abdominal cavity. Secondary and tertiary peritonitis occur after surgery or trauma to the abdomen. Although enteric Gram negative organisms are the most common isolates associated with these types of infections, polymicrobial infection is common with a mixture of both Gram positives and negatives including anaerobes.

Synovial (Joint) & Pericardial Fluids:
These are normally sterile fluids. Infection of these fluids may be due to a variety of different organisms as a result of direct infection, contamination at the time of surgery/trauma or hematogenous spread.

Amniotic Fluids:
Amniotic fluid is that fluid which surrounds the developing fetus in utero. As with other normally sterile fluids, infection of the amniotic fluid may result in severe morbidity and mortality to the mother and fetus. Any organism isolated must be considered significant (although contamination may occur during collection).

Other Fluids:
Infection of normally sterile body fluids may result in severe morbidity and mortality. Any organism isolated must be considered significant (although specimen contamination may occur during collection). Specimens include tympanocentesis fluid, intraocular fluid, hydrocele fluid, cyst fluid, etc.
Specimen Collection and Transport

See Pre-analytical Procedure - Specimen Collection QPCMI02001

Reagents / Materials / Media

See Analytical Process - Bacteriology Reagents/Materials/Media List QPCMI10001

Procedure

A. Processing of Specimens:

See Specimen Processing Procedure

a) Direct Examination:

Gram stain: Spun or Unspun

Fungi-fluor stain: If fungus is requested - with sediment of the spun specimen

b) Culture:

<table>
<thead>
<tr>
<th>Media</th>
<th>Incubation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Agar (BA)</td>
<td>CO₂, 35°C x 2 days</td>
</tr>
<tr>
<td>Chocolate Agar (CHOC)</td>
<td>CO₂, 35°C x 2 days</td>
</tr>
<tr>
<td>Fastidious Anaerobic Agar (BRUC)</td>
<td>AnaO₂, 35°C x 48 hours</td>
</tr>
<tr>
<td>Kanamycin/Vancomycin Agar (KV)</td>
<td>AnaO₂, 35°C x 48 hours</td>
</tr>
</tbody>
</table>

For sterile fluids other than Peritoneal (Ascites) fluid:

Fastidious Anaerobic Broth (THIO)           | O₂, 35°C x 5 days   |

For Peritoneal and Ascites fluid:

Blood Culture bottles (FA and FN)          | BacT/Alert 35°C x 5 days |

If fungus is requested, add:

Inhibitory Mould Agar (IMA)                  | O₂, 28°C x 3 weeks   |
| Esculin Base Medium (EBM)                   | O₂, 28°C x 3 weeks   |
B. Interpretation of Cultures:

Examine aerobic plates after 24 and 48 hours incubation and anaerobic plates after 48 hours. Examine THIO daily for 5 days for any growth. If no growth on the culture plates but evidence of growth in THIO, perform Gram stain and sub-culture onto Chocolate Agar, Brucella Agar & other media as appropriate and process as above.

Any growth of *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa* and yeasts are significant; work up. Other organisms will be worked up only if there are ≤3 different bacterial types. Otherwise (>3 types), simply list the species/morphotypes.

For Peritoneal (Ascites) Fluid in blood culture bottles, follow Blood Culture Manual instructions.

C. Susceptibility Testing:

Refer to Susceptibility Testing Manual.

Reporting

a) Direct Examination:

   Gram stain: Report the presence or absence of organisms and WBCs. Do not quantitate.

   Fungi-fluor Stain: Refer to

b) Culture:

   Negative Report: "No growth".

   Positive Report:

   Forward inoculated fungal media to the Mycology section for incubation and work-up.

2 Not required for any Eye fluids or Tympanocentesis specimens
• **Significant isolates** - *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa*, yeasts or other organisms ≤3 different bacterial types
  Report all isolates with appropriate susceptibilities.
  Do not quantitate except if it is growth from the fluid medium only – add ISOLATE Comment FLDM “From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely”

• For bone and joint fluids specimens, report organisms to the species level. If not identified in lab, send to PHOL for species ID.

• **>3 types non-significant isolates**
  Report as TEST COMMENT – “Mixed growth of ……list species/morphotypes.”

Telephone results of a positive Gram stain and all positive cultures to the ward / ordering physician.

**References**


PERITONEAL DIALYSIS EFFLUENT

Introduction

Dialysis solution is infused into the patient’s abdominal cavity through a permanently implanted tube. The solution remains there for several hours, picking up waste from the blood stream. The dialysis solution may become infected while in the patient’s abdomen or from external contamination due to the tubing which enters the patient’s abdominal cavity. A variety of both Gram negative and positive organisms may infect the dialysis solution.

Specimen Collection and Transport

See Pre-analytical Procedure - Specimen Collection QPCMI02001

Reagents / Materials / Media

See Analytical Process - Bacteriology Reagents/Materials/Media List QPCMI10001

Procedure

A. Processing of Specimens:

See Specimen Processing Procedure

NB: No more than one dialysis fluid per patient should be processed every other day. If a bag of cloudy fluid is received after a clean one is processed, culture and sensitivity is always done.

a) Direct Examination:

If specimen is cloudy: Gram stain
If specimen is clear: No Gram stain is needed

b) Culture:

<table>
<thead>
<tr>
<th>Media</th>
<th>Incubation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>If specimen is clear:</td>
<td></td>
</tr>
</tbody>
</table>

UNIVERSITY HEALTH NETWORK/MOUNT SINAI HOSPITAL, DEPARTMENT OF MICROBIOLOGY

NOTE: This document is Uncontrolled When Printed.
Any documents appearing in paper form that do not state “CONTROLLED COPY” in red print are not controlled and should be checked against the document (titled as above) on the server prior to use.
Bact/Alert bottles* Processed as per Blood Culture protocol

<table>
<thead>
<tr>
<th>Media</th>
<th>Incubation</th>
</tr>
</thead>
<tbody>
<tr>
<td>If specimen is cloudy:</td>
<td></td>
</tr>
<tr>
<td>Blood Agar (BA)</td>
<td>CO₂, 35°C x 2 days</td>
</tr>
<tr>
<td>Chocolate Agar (CHOC)</td>
<td>CO₂, 35°C x 2 days</td>
</tr>
<tr>
<td>MacConkey Agar (MAC)</td>
<td>CO₂, 35°C x 2 days</td>
</tr>
<tr>
<td>BacT/Alert bottles</td>
<td>Processed as per Blood Culture protocol</td>
</tr>
</tbody>
</table>

B. Interpretation of Cultures:

Examine aerobic plates for growth after 24 and 48 hours incubation.

For Dialysis fluid in blood culture bottles, follow the Blood Culture Manual.

Any growth of *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa* and yeasts are significant; work up. Other organisms will be worked up only if there are ≤3 different bacterial types. Otherwise (>3 types), simply list the species/morphotypes.

C. Susceptibility Testing:

Refer to Susceptibility Testing Manual.

**Reporting**

a) Direct Examination:

Gram stain: Report the presence or absence of organisms and WBCs. Do not quantitate.

b) Culture:

Negative Report: “No growth”
Positive Report:

- **Significant isolates** - *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa*, yeasts or other organisms ≤3 different bacterial types
  Report all isolates with appropriate susceptibilities.
  Do not quantitate except if it is from the fluid medium only – add ISOLATE Comment "From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely"

- **>3 types non-significant isolates** – Report as TEST COMMENT
  – “Mixed growth of ……list species/morphotypes.”

Telephone all positive Gram stain and culture results to ward/ordering physician.

When out-patient units are closed, page the Nephrology Fellow/Resident with the Gram stain and/or culture results.

References


PREDIALYSIS FLUID

Introduction

This is fluid collected prior to dialysis and should normally be sterile.

Specimen Collection and Transport

See Pre-analytical Procedure - Specimen Collection QPCMI02001

Reagents / Materials / Media

See Analytical Process - Bacteriology Reagents/Materials/Media List QPCMI10001

Procedure

A. Processing of Specimens:

See Specimen Processing Procedure

a) Direct Examination:

If specimen is cloudy: Gram stain
If specimen is clear: No Gram stain is needed.

b) Culture:

<table>
<thead>
<tr>
<th>Media</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Fastidious Anaerobic Broth (THIO)</td>
<td>O₂, 35°C x 5 days</td>
</tr>
<tr>
<td>Blood Agar (BA)</td>
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A. Interpretation of Cultures:

Examine aerobic plates after 24 and 48 hours incubation. Examine THIO daily for 5 days for any growth. If no growth on the culture plates but evidence of growth in THIO, perform Gram stain and sub-culture onto Chocolate Agar, Brucella Agar & other media as appropriate and process as above.

Any growth of *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa* and yeasts are significant; work up. Other organisms will be worked up only if there are \( \leq 3 \) different bacterial types. Otherwise (>3 types), simply list the species/morphotypes.

C. Susceptibility Testing:

Refer to [Susceptibility Testing Manual](#)

**Reporting**

a) Direct Examination:

Gram stain: Report the presence or absence of organisms. Do not quantitate.

b) Culture:

Negative report: “No growth”

Positive report:

- **Significant isolates** - *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa*, yeasts or other organisms \( \leq 3 \) different bacterial types
  
  Report all isolates with appropriate susceptibilities.

  Do not quantitate except if it is from the fluid medium only – add ISOLATE Comment \( \text{FLDM} \) “From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely”
• >3 types non-significant isolates – Report as TEST COMMENT
  – “Mixed growth of …..list species/morphotypes.”

Telephone all positive Gram stain and culture results to ward/ordering physician.

When outpatient units are closed, page the Nephrology Fellow/Resident with the Gram stain and/or culture results.

References


BONE MARROW (ASPIRATES OR BIOPSIES)

Introduction

Infection of bone marrow is uncommon. However, it may be a site of infection with fungus or tuberculosis in patients with disseminated disease.

Specimen Collection and Transport

See Pre-analytical Procedure - Specimen Collection QPCMI02001

Reagents / Materials / Media

See Analytical Process - Bacteriology Reagents/Materials/Media List QPCMI10001

Procedure

A. Processing of Specimens:

See Specimen Processing Procedure

a) Direct Examination:

Gram stain: Direct
Fungi-fluor stain: If fungus is requested

b) Culture:

<table>
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<tr>
<td>Fastidious Anaerobic Broth (THIO)</td>
<td>O₂, 35°C x 5 days</td>
</tr>
<tr>
<td>Inhibitory Mould Agar (IMA)₁</td>
<td>O₂, 28°C x 4 weeks</td>
</tr>
<tr>
<td>Esculin Base Medium (EBM)₁</td>
<td>O₂, 28°C x 4 weeks</td>
</tr>
</tbody>
</table>
Blood Egg Albumin Agar (BEAA)\textsuperscript{1} \quad O_{2}, \quad 28^\circ C \times 4 \text{ weeks}

\textsuperscript{1}Forward inoculated fungal media to the Mycology Section for incubation and work-up. If bone marrow received in BacT/Alert bottle(s), process as a routine blood culture. Do \textbf{NOT} inoculate BacT/Alert bottle(s) in the lab. (Refer to the Blood Culture Manual).

A. Processing of Cultures:

Examine aerobic plates after 24 and 48 hours incubation and anaerobic plates after 48 hours. Examine THIO daily for 5 days for any growth. If no growth on the culture plates but evidence of growth in THIO, perform Gram stain and sub-culture onto Chocolate Agar, Brucella Agar & other media as appropriate and process as above.

If bone marrow received in BacT/Alert bottle(s), process as per Blood Culture Manual.

Any growth of \textit{S. aureus}, \textit{\beta}-haemolytic streptococci, \textit{Streptococcus anginosus} group, \textit{Pseudomonas aeruginosa} and yeasts are significant; work up. Other organisms will be worked up only if there are \leq 3 different bacterial types. Otherwise (>3 types), simply list the species/morphotypes.

B. Susceptibility Testing:

Refer to Susceptibility Testing Manual

\textbf{Reporting}

\begin{itemize}
  \item [a)] Direct Examination
    \begin{itemize}
      \item Gram stain: Report the presence or absence of organisms.
      \item Fungi-fluor Stain: Refer to
    \end{itemize}
  \item [b)] Culture:
    \begin{itemize}
      \item Negative Report: "No growth"
      \item Positive Report:
    \end{itemize}
\end{itemize}
• **Significant isolates** - *S. aureus*, β-haemolytic streptococci, *Streptococcus anginosus* group, *Pseudomonas aeruginosa*, yeasts or other organisms ≤3 different bacterial types
  Report all organisms ≤3 different bacterial types
  Do not quantitate except if it is from the fluid medium only – add ISOLATE Comment \FLDM “From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely”

• **>3 types non-significant isolates** – Report as TEST COMMENT
  – “Mixed growth of ……list species/morphotypes.”

Call all positive Gram stains and cultures to ward/ordering physician.

**References**


**BLOOD, PLATELETS, & OTHER TRANSFUSION PRODUCTS**

**Introduction**

Occasionally blood, platelets and other transfusion products may become infected at the time of collection from donors, during processing or at the time of infusion into patients. Any organism isolated must be considered significant.

**Specimen Collection and Transport**

See Pre-analytical Procedure - Specimen Collection QPCMI02001

**Reagents / Materials / Media**

See Analytical Process - Bacteriology Reagents/Materials/Media List QPCMI10001

**Procedure**

A. Processing of Specimens:

See Specimen Processing Procedure

a) Direct Examination:

Gram Stain: Direct

b) Culture:

<table>
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<tr>
<td>Blood Agar (BA)</td>
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<td>Chocolate Agar (CHOC)</td>
<td>CO₂, 35°C x 2 days</td>
</tr>
<tr>
<td>FAN Aerobic Blood Culture bottle (FO2)</td>
<td>in BacT/Alert 35°C x 5 days</td>
</tr>
<tr>
<td>FAN Anaerobic Blood Culture bottle (FN)</td>
<td>in BacT/Alert 35°C x 5 days</td>
</tr>
</tbody>
</table>
A. Processing of Cultures:

Examine aerobic plates after 24 and 48 hours incubation.

If bone marrow received in BacT/Alert bottle(s), process as per Blood Culture Manual.

Any growth of S. aureus, β-haemolytic streptococci, Streptococcus anginosus group, Pseudomonas aeruginosa and yeasts are significant; work up. Other organisms will be worked up only if there are ≤3 different bacterial types. Otherwise (>3 types), simply list the species/morphotypes.

B. Susceptibility Testing:

Refer to

**Reporting**

a) Direct Examination

Gram stain: Report the presence or absence of organisms.

b) Culture:

Negative Report: No growth

Positive Report:

- **Significant isolates** - S. aureus, β-haemolytic streptococci, Streptococcus anginosus group, Pseudomonas aeruginosa, yeasts or other organisms ≤3 different bacterial types
  Report all isolates with appropriate susceptibilities.
  Do not quantitate except if it is from the fluid medium only – add ISOLATE Comment \FLDM “From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely”

- **>3 types non-significant isolates** – Report as TEST COMMENT – “Mixed growth of ……list species/morphotypes.”
Telephone results of all positive Gram stains and cultures to ward / ordering physician and Blood Bank
UHN Blood Bank (TG, TW, PMH) call 14-3440
MSH Blood Bank call ext 4502
For other hospitals, please call the respective main information for the telephone number.

I. References


3. CCDR Guidelines for Investigation of Suspected Transfusion Transmitted Bacterial Contamination.pdf
For Cryptococcal Antigen procedure see:

"Cryptococcal Antigen"
## Record of Edited Revisions

**Manual Section Name: Sterile Fluids Culture Manual**

<table>
<thead>
<tr>
<th>Page Number / Item</th>
<th>Date of Revision</th>
<th>Signature of Approval</th>
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</thead>
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<td>Annual Review</td>
<td>May 12, 2003</td>
<td>Dr. T. Mazzulli</td>
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<td>Annual Review</td>
<td>May 26, 2004</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Specimen Collection moved to Pre-analytical Procedure - Specimen Collection QPCM102001</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Reagents/Materials moved to Analytical Process - Bacteriology Reagents/Materials/Media List QPCM110001</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Specimen processing moved to Specimen Processing Procedure QPCM106003 – clarification on processing.</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<td>Cryptococcal Antigen moved to Technical Manual Cryptococcal Antigen</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Page 3 MacConkey reomoved from CSF</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Page 3 Modify qualifier for Isolate Comment “from fluid medium only”.</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<td>Handling of swabs received for sterile body fluids in Specimen Processing Procedure QPCM106003</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Aerobic plates and THIO incubation – change to up to 4 days</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Annual Review</td>
<td>April 6, 2005</td>
<td>Dr. T. Mazzulli</td>
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<td>Annual Review</td>
<td>July 23, 2006</td>
<td>Dr. T. Mazzulli</td>
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<td>Annual Review</td>
<td>August 13, 2007</td>
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<td>August 15, 2008</td>
<td>Dr. T. Mazzulli</td>
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<td>THIO incubation – change to up to 5 days</td>
<td>July 27, 2009</td>
<td>Dr. T. Mazzulli</td>
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<td>Annual Review</td>
<td>July 27, 2010</td>
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<td>July 27, 2011</td>
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<tr>
<td>Added phoning to Blood Bank for all positives platelets and transfusion products</td>
<td>January 18, 2012</td>
<td>Dr. T. Mazzulli</td>
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<tr>
<td>Removed culturing blood product segments</td>
<td>January 18, 2012</td>
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<td>January 18, 2012</td>
<td>Dr. T. Mazzulli</td>
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<td>Added mixed growth comments</td>
<td>September 24, 2012</td>
<td>Dr. T. Mazzulli</td>
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<td>Change aerobic plate incubation from 4 days to 2 days</td>
<td>September 24, 2012</td>
<td>Dr. T. Mazzulli</td>
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<td>May 31, 2013</td>
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<td>Peritoneal/Ascites Fluid – change THIO to blood culture bottles</td>
<td>April 16, 2014</td>
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<td>April 16, 2014</td>
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<td>Proper Header and Footer formatting</td>
<td>July 24, 2014</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Update media for CSF (Add BHIM)</td>
<td>March 5, 2015</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Remove TRI and Bridgepoint from calling gram results (not positives) p. 3</td>
<td>April 30, 2015</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Added examine KV on 48hrs p.7 “other sterile fluids”</td>
<td>April 30, 2015</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Remove MAC/BRUC/KV from Pre dialysis fluids p. 13</td>
<td>April 30, 2015</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Annual Review</td>
<td>April 30, 2015</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Updated Procedure section for Direct examination and Culturing of Blood, Platelets, &amp; Other Transfusion Products</td>
<td>May 26, 2015</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Joint fluid section: added in report “For bone and joint fluids specimens, report organisms to the species level. If not identified in lab, send to PHOL.”</td>
<td>January 7, 2016</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Annual Review</td>
<td>April 25, 2017</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Replaced Calcuflour stain for fungus with Fungi-fluor stain (if fungus is requested) - with sediment of the spun specimen</td>
<td>April 25, 2017</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Updated MSH logo in header Formatting changes For (&gt;3 types), simply list the morphotypes, changed to species/morphotypes</td>
<td>April 25, 2017</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Isolate broth comment modified from “From broth culture only, indicative of small numbers or contamination. To “FLDM “From broth culture only, indicative of small numbers or contamination. Repeat positive results from more than one specimen suggest contamination is unlikely</td>
<td>October 3, 2017</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Annual Review</td>
<td>April 25, 2018</td>
<td>Dr. T. Mazzulli</td>
</tr>
<tr>
<td>Minor format change</td>
<td>September 14, 2018</td>
<td>Dr. T. Mazzulli</td>
</tr>
</tbody>
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