Body Fluid Analysis

Principle

A wide variety of diseases and pathological processes cause abnormal accumulation of fluid within the body. To identify the underlying cause of this accumulation, physicians commonly localize and remove the fluid, send fluid samples to the clinical laboratory for analysis, and offer insight at key points throughout the testing process as part of the diagnostic and prognostic evaluation.

Policy

Body fluid counts must be completed as soon as possible or within 1 hour of being received in the laboratory.

Safety

All specimens, reagents and controls should be handled as though capable of transmitting infectious diseases. Wear appropriate personal protective equipment when running patient samples or performing scheduled maintenance. Refer to: Policy and Procedures Safety Manual Infection Control and Procedures 11-085-01.

Materials and Reagents

Microscope
Sterile Transfer Pipet
Disposable C-Chip hemocytometer
Cytology Funnel and Caps
Cytospin Centrifuge
Cytology Clips

Specimen

The following types of specimen are considered to be body fluids: Pleural, Peritoneal, Gastric, Pericardial, and Synovial fluid.

Note: See Hematology P&P HEM.03-0130 for Spinal Fluid Cell Count.

Specimen Collection

Fluid specimens can be collected in sterile tubes containing anticoagulants for cell counts (EDTA is anticoagulant of choice), or large sterile containers. The large containers must be well mixed and a small portion (5 ml) aseptically removed and placed in a 5 ml EDTA tube for a cell count. Always use sterile technique when handling body fluid specimens.

Note: Observe specimen for fibrin clots and pellicle formation. If small fibrin clots are detected, perform test as usual and include a comment in the report stating that results may not be accurate due to fibrin clot formation. If specimen is completely clotted, do not perform the cell count. Notify the nursing staff or provider that the specimen is clotted.

Procedure **GROSS EXAMINATION**

Step	Action
1	Note the physical appearance and check for fibrin clots. Appearance can be reported as: clear, bloody, clotted, cloudy, hazy and slightly hazy. **Report the appearance as**: bloody, clear, cloudy, clotted, hazy or slightly hazy.

COMPLETING CELL COUNT

Step	Action
1	Load both sides of hemocytometer chambers with an undiluted well mixed body fluid specimen. **Note**: On high counts a dilution may be necessary. Disposable C-Chip hemocytometer is for single use only, should be clean and free of scratches.
2	Using 40x magnifications, count the RBC's and WBC's in the appropriate number of large squares in both chambers.
3	The counts from each chamber must agree within 10% or the count must be repeated. Use the average of the two sides for the calculation.
4	Use the following formula to calculate number of cells/mm3: $\frac{\text{Number of cells counted x depth (10) x dilution}}{\text{Number of large squares counted}} = \text{cells/mm3}$ **NOTE**: Cell counts and calculation of cell counts can be difficult. It is imperative that counts be calculated correctly so when in doubt consult with your co-worker or supervisor

Preparing Slide

If the specimen contains White Blood Cells, make a slide of the specimen by following the directions in Cytospin Slide Preparation procedure, Hematology P&P HEM.03-0110.

Performing Differential

Follow the steps below to complete the differential count on body fluids:

Step	Action
1	Count 100 WBC's, differentiating between neutrophil, lymphocyte, monocyte, eosinophil and basophil.
2	If blasts, atypical cells or unidentifiable cells are present, refer smear to Pathologists for review. Refer to Hematology Procedure 03-0250 (Smear for Pathology Review) for procedural specifics.
3	The slides will be saved for a month.

NOTE: Cell and parasite identification can be difficult. If you have any doubt of the correct identification, you may consult your co-worker, supervisor, or pathologist for assistance.

Result Reporting

Follow the steps below to complete the reporting of body fluid counts:

Step	Action
1	Results to be entered are: • Total Volume (mL) • Xanthochromia: Yes or No • Color: Colorless, Yellow, Pink, Red • Appearance: Bloody, Clear, Cloudy, Clotted, Hazy or Slightly Hazy • RBC Total • WBC Total • WBC Differential: Perform 5 part differential; enter result percent Neutrophils, Lymphoytes, Monocytes, Eosinophils, Basophils. Report unidentifiable and immature cells under comments. • Comments: Unidentifiable cells and Immature cells • CSF Macrophage & Mesothelial (if applicable): Report as Occasional, Few, Moderate, and Many
2	Results are manually entered in Cerner under the Accession Result Entry (ARE) mode. For detailed instructions of entering results, please refer to Laboratory Informatics – Cerner Genlab Policies & Procedures Manual, "*Resulting in Cerner GenLab: Manual Entry*" LIS.SCPMG.041 document.

Reference Range

Appearance: Clear
Red Blood Cells: None
White Blood Cells: 0-8 Cells

Reference

Todd-Sanford. Clinical Diagnosis of Laboratory Methods 18th Edition. Davidson and Henry, M.D.
Brays Clinical Laboratory Methods 7th Edition. p. 512.

Document History Page

Change type: New, Major, Minor etc.	Changes Made to SOP – describe	Name of responsible person/date	Med. Dir. Reviewed/ Date	Lab Manager reviewed/ date	Date change Implemented
Minor	Updated format and revised index number.	Julius Salomon, 7/1/17			