Welcome to eSessions

This session contains audio.
Review the information on each slide before continuing.
OPERATIONAL PRINCIPLES OF MNC PROCEDURES

COBE® SPECTRA APHERESIS SYSTEM
306670726

Click here to begin
Getting Around

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- **This button toggles between PLAY and PAUSE. Click the PLAY button to continue.**
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- **Go to NEXT screen.**
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Presentation Overview

- Separating blood components
- Customizing run parameters
- Calculating fluid balance
- Using a procedure optimization checklist
Presentation Objectives

Participants will be able to:

- Describe MNC single-stage channel separation.
- Explain the function of Quick Start.
- List the four steps required to achieve and maintain interface stability.
- Name three factors to consider when optimizing the procedure.
## Separating Blood Components

<table>
<thead>
<tr>
<th>Cell Type</th>
<th>Average Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelets</td>
<td>1.048*</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>1.071</td>
</tr>
<tr>
<td>Monocytes</td>
<td>1.065*</td>
</tr>
<tr>
<td>Granulocytes</td>
<td>1.085*</td>
</tr>
</tbody>
</table>

*Average specific gravity of cell type shown
Effects of G-Force On Separation

![Diagram showing different G-force levels affecting separation](image-url)
COBE Spectra System Channel Separation
Separation Factor*

Separation factor is a function of channel dwell time and centrifugal force.

G-FORCE
(CENTRIFUGE SPEED)

INLET FLOW

*Separation factor for MNC procedures is 500.
Single-Stage Channel Separation
Customizing Run Parameters

- Process volume
- AC infusion rate
- Inlet:AC ratio
- Collect pump flow rate
- Plasma pump flow rate
Process Volume

- The volume processed for the procedure is determined by the configured value.

  MNC endpoint: Run time = {0}
  Inlet Volume = 0 or 2.0 x TBV

- The configured value will then influence the endpoint of the procedure.

  Inlet Volume=_____; inlet flow=____, Time=___ min, collect=____. OK (YES/NO)?
AC Infusion Rate

- You may configure the starting rate.
  - -0.8 to 1.1 mL/min/L TBV
- Maximum AC infusion rate the system allows is 1.2 mL/min/L TBV.
Inlet: AC Ratio

- Default ratio is 12:1.
- For normal-to-high Hct and platelet count, use low ratio (down to 9:1).
- For low Hct and platelet count, use high ratio (up to 15:1).
Collect Pump Flow Rate

- Operator’s manual: Use rate of 0.8 to 1.5 mL/min.
- Can use MNC calculation tool to obtain rate.*

*Using a collect flow rate below 0.8 mL/min is not recommended.
Plasma Pump Flow Rate

- Interface control
  - Using Quick Start
  - Adjusting the interface
- Plasma collection
  - Collecting plasma during an MNC procedure
Using Quick Start

- Using Quick Start:
  - Automatically establishes the interface.
  - Automatically changes the plasma pump flow rate to position the interface.
  - Requires pre-procedure Hct for best performance.
Using Quick Start (cont)

- Changing the collect pump flow rate during Quick Start is not allowed in COBE Spectra versions 5.0, 6.1, and 7.0.
- Changing the plasma pump flow rate will end Quick Start.
- Processing 200 mL of RBCs is necessary to complete Quick Start.

Quick Start completed: 
Monitor collect line. Press CLEAR.
Adjusting the Interface

To refine the position of the interface at the end of Quick Start, or to maintain the interface once it is established, complete the following steps:

1. Monitor the interface.
Adjusting the Interface (cont)

2. Monitor the collect line below the four-lumen connector where the line exits the centrifuge cover.

3. Establish a color in the collect line that corresponds to the desired Hct represented on the WBC Colorgram.
Adjusting the Interface (cont)

4. Make incremental changes to the plasma pump flow rate. Allow 3 to 5 minutes between changes.

- Make larger changes (~1 mL/min) if the interface is either too low or too high.
- Make smaller changes (~0.3 to 0.5 mL/min) if the interface is almost on target.
Adjusting the Interface (cont)

- Interface too dark:
  - Collecting too deep in the RBC layer
    - \(\downarrow\) plasma pump rate.
- Interface too light:
  - Not collecting deep enough in the RBC layer
    - \(\uparrow\) plasma pump flow rate.
Adjusting the Interface (cont)
Adjusting the Interface (cont)
Adjusting the Interface (cont)
Adjusting the Interface (cont)
Adjusting the Interface (cont)
Adjusting the Interface (cont)
Collecting Plasma

To use the COBE Spectra system to collect plasma during an MNC procedure, perform the following steps:

1. Add an accessory bag to the plasma line.
2. Set plasma volume by using the target values.
3. Allow enough time to collect the plasma.
Calculating Fluid Balance

End-of-Procedure Calculations:

<table>
<thead>
<tr>
<th>IN</th>
<th>OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 600 mL</td>
<td>Collect 280 mL</td>
</tr>
<tr>
<td>Net saline 263 mL</td>
<td></td>
</tr>
<tr>
<td>863 mL</td>
<td>Volume surplus = 583 mL</td>
</tr>
</tbody>
</table>
Using a Procedure Optimization Checklist

- Enter actual patient Hct to speed interface establishment.
- Achieve and maintain interface stability to collect from the correct cell layer at all times.
- Monitor collect line Hct.

<table>
<thead>
<tr>
<th>Lighter color (1% - 3%):</th>
<th>Darker color (4% - 5%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼ RBC contamination</td>
<td>▲ RBC contamination</td>
</tr>
<tr>
<td>▼ MNC yield</td>
<td>▲ MNC yield</td>
</tr>
<tr>
<td>▲ Platelet contamination*</td>
<td>▼ Platelet contamination</td>
</tr>
</tbody>
</table>

Collect line Hct of 2% to 8% has little effect on granulocyte contamination of the collected product.

*Collect line Hct has only a small effect on platelet contamination of the collected product.
Using a Procedure Optimization Checklist

- Choose the appropriate collect flow rate:
  - Range: 0.8 to 1.5 mL/min or higher when the inlet flow rate and the MNC count are very high (based on calculation).
- Provide enough anticoagulation to prevent platelet aggregation, which can interfere with the stability of the interface and product quality.
- Process at least two times the TBV of the patient/donor.
  - Consider large volume leukapheresis.