Welcome to eSessions

This session contains audio. Review the information on each slide before continuing.
TROUBLESHOOTING AND OPTIMIZING AUTOPBSC MONONUCLEAR CELL COLLECTION PROCEDURES

COBE® SPECTRA APHERESIS SYSTEM

Click here to begin
Getting Around

Click on these **TABS** to change the view of the left sidebar:

- **OUTLINE** shows links to each slide.
- **THUMBNAILS** shows a small image of each slide.
- **SEARCH** allows you to search the eSession by keyword(s).

This button toggles between **PLAY** and **PAUSE**. Click the **PLAY** button to continue.

Go to **PREVIOUS** screen.

Go to **NEXT** screen.

Click this icon to toggle between **FULL SCREEN** and **STANDARD** view.
Presentation Overview

- Presentation topics:
  - Functions of the CCM
  - Assisted mode
  - Dark spillover versus pink spillover
  - Harvest and Chase volume considerations
  - Extending the procedure
Presentation Objectives

Participants will be able to:

- List the three alarm conditions that place you in Assisted mode.
- Explain the operator’s actions in response to the “CCM CALIBRATION FAILURE.” alarm.
- Describe two circumstances when Assisted mode may be indicated.
- State the difference between a dark spillover and a pink spillover.
- Explain the steps necessary to extend a procedure.
- Describe two ways to increase the MNC yield during the procedure.
Functions of the CCM

The CCM detects:

- Spillovers during the Accumulation phase
- Cells exiting the centrifuge during a Harvest phase, which signal the CCM to open the collect valve
- Cells seen too soon during the Harvest phase
- Cells not seen when a Harvest phase should have occurred
Assisted Mode

A feature of AutoPBSC that can be used:

- During certain alarm conditions
- If the CCM is disabled
- If the operator chooses
Assisted mode is initiated if one of the following conditions occurs:

- Operator disables the CCM.
- “CCM CALIBRATION FAILURE.” alarm occurs.
- Persistent spillover during the Accumulation phase occurs.
- **YES** is pressed in response to the alarm “Cells not detected, not harvesting. Enter Assisted Mode?(Y/N).”
Assisted Mode (cont)

During Assisted mode, the operator:

- Performs the functions of the CCM
- Monitors for spillovers during the Accumulation phase
- Opens the collect valve during the Harvest phase when cells are seen in the collect line exiting the centrifuge
Assisted Mode (cont)

During Assisted mode:

- CCM is disabled.
- COBE Spectra system is still in Automatic mode.
- “PBSC” replaces “AutoPBSC” in the lower right hand corner of the COBE Spectra system screen.
Assisted Mode (cont)

Assisted Mode: Monitor Interface
Press 1 to Open Valve or 2 to Skip.

- The operator must monitor the interface during each Harvest phase and open the collect valve by pressing 1.
- **WARNING**: Do not immediately press 1. It is very important to wait until the cells start to come up the collect line and are observed at the CCM.
To Enter or Exit Assisted Mode

1. Press **MENU ON/OFF**.
2. Press **3** to select “CCM.”
   The following screen appears:

   Harvest/Spillover detector:  
   1=Enable  
   2=Disable*

3. Press **1** to re-enable the CCM and exit Assisted mode.
4. Press **2** to enter Assisted mode.
CCM Alarm Messages During Prime

- **CCM CALIBRATION FAILURE.**
  Press 1 to retry, or CLEAR to disable.

- If **CLEAR** is pressed, the following screen appears:
  
  **CCM not operational – this run only.**

- The procedure must be completed in Assisted mode.
CCM Alarm Messages During the Accumulation Phase

___.__. __.__.  __.__.  __.__ __.__ ___
Spillover Detected, Adjusting Interface.

SPILLOVER PERSISTS.
Entering Assisted Mode.  CLEAR
CCM Alarm Messages During the Harvest Phase

Cells not detected, not harvesting.
Enter Assisted Mode (Y/N)?
CCM Alarm Messages During the Harvest Phase

Cells seen too soon. Check patient data.  CLEAR
Dark Spillover

The RBC layer extends to the top of the dam, and a solid line of RBCs spills over the dam.

- Interface is distinct.
- Spillover is detected by the CCM.
- “Spillover Detected, Adjusting Interface.” alarm occurs.
Dark Spillover (cont)

Possible causes of a high interface:

- Incorrect hematocrit entered
- Patient hematological variables
- Blocked control tube
- Stopped centrifuge

Solutions:

- Increase the hematocrit by 3% up to 3 times.
- After a centrifuge stop, the system adjusts the collect and plasma flow rates to re-establish the interface.
Pink Spillover

The interface can be elevated.

- Clouds of RBCs flow over the dam and turn the plasma pink.
- Interface appears fuzzy and indistinct.
- Generally does not cause a “Spillover Detected, Adjusting Interface.” alarm.
Pink Spillover (cont)

Possible cause:
- Poor blood separation

Solution:
- Decrease the inlet flow rate.
Procedure Optimization
Procedure Optimization

Product considerations:
- MNC/CD34+ cell yield
- Cross-cellular contamination
- Volume

Patient consideration:
- Platelet loss

Procedure consideration:
- Time
Factors Affecting Product Yield

- Pre-CD34+ cell count/collection efficiency
- Data entered/actual cell pre-count
- Inlet volume processed
- Harvest volume
- Inlet:AC ratio: Presence of platelet aggregation
Factors Affecting Product Yield (cont)

- Access issues
- Missed Harvest phases
- “Cells not detected, not harvesting.” alarm
- Spillovers
- Power failure
Increasing MNC/CD34+ Cell Yield

Option:
- Increase the Harvest volume.

*Trade-off:*
- Decreased product purity

Option:
- Increase the Harvest phase frequency by 25%

*Trade-offs:*
- Increased product volume
- Decreased product purity
- Slightly longer procedure time
Factors Affecting Cross-Cellular Contamination

- Data entered/actual cell pre-count
- Harvest volume
- Number of Harvest phases
- Product hematocrit versus actual RBC product volume
Decreasing Cross-Cellular Contamination

Options:

- Select a Harvest volume of 3 mL.
- Select the system-calculated number of Harvest phases.

_Trade-offs:_

- Lower product yield
- Lower collection efficiency
Platelet Loss Considerations

- Platelet pre-count
- Chase volume
- Number of Harvest phases
Preventing Platelet Loss

Options:
- Decrease the Chase volume
- Decrease the collect volume
- Select the system-calculated number of Harvest phases

Trade-offs:
- Higher cell concentration
- Lower MNC yield
Product Volume Considerations

Increasing or decreasing the product volume

- Harvest volume
- Chase volume
- Number of Harvest phases
- Patient-related requirement
- Clumping
Larger Product Volume

Options:
- Increase the Chase volume
- Increase the product volume
- Dilute the product with concurrently collected plasma

Trade-offs:
- Increased platelet contamination if the Chase or collect volumes were increased
- Lower cell concentration
Smaller Product Volume

Options:
- Decrease the Chase volume
- Decrease the product volume

*Trade-off:*
- Higher cell concentration
Shorter Procedure Time

Options:

- Increase the inlet flow rate
- Increase the Inlet:AC ratio

Trade Offs:

- Increased possibility of citrate reactions
- Increased chance of access pressure low alarms
- Platelet aggregation/clotting
Adding Harvest Phases

To add a Harvest phase, you can:

- Increase the inlet volume processed
- Increase the frequency of Harvest phases
To add Harvest phases by increasing the inlet volume processed:

- Press **MENU ON/OFF**.
- Press 1 to select “Data Entry.”
- Press 3 to select “Run Results.”
- Press **NO**.
- Press 6 to select “Harvests,” and note the number of Harvest phases.
- Press **NO** and note the target inlet volume.
Adding Harvests

- Calculate a new target inlet volume (TIV):
  \[
  \text{TIV}_{\text{new}} = \text{TIV} + \text{TIV} = \text{new TIV}
  \]
  
  # of Harvest phases

  Example: \(15,000 + 15,000 = 15,750\)

  \[
  \frac{15,000}{20} + 15,000 = 15,750
  \]

- Press CLEAR, and then press 2 to select “Inlet Volume.”
- Enter the new inlet volume. Press ENTER.
- To exit and continue the procedure, press MENU ON/OFF.
Adding Harvests (cont)

To increase the target inlet volume for patients with low TBV:

- Press **TARGET VALUES**.
- Press **INLET below** the display.
- Increase the target inlet volume by 500 mL for every Harvest phase, plus an extra 100 mL to complete the last Harvest phase.
- Press **ENTER**.
- Press **TARGET VALUES** again.
Adding Harvests (cont)

To increase the frequency of Harvest phases:

- Press **MENU ON/OFF**.
- Press **1** to select “Data Entry.”
- Press **3** to select “Run Results.”
- Press **NO**.
- Press **6** to select “Harvests.”
- Increase the number of Harvest phases.
Optimization Checklist

- Enter accurate patient/donor data.
- Choose the appropriate:
  - Harvest volume
  - Chase volume
  - Number of Harvest phases
- Choose concurrent plasma collection instead of increasing the Chase volume or collect volume.
Optimization Checklist (cont)

- Process at least two times the TBV of the patient/donor:
  - Consider large volume leukapheresis.
- Provide adequate anticoagulation.
- Avoid access pressure low alarms.