

## **PERIOPERATIVE AUTOLOGOUS BLOOD COLLECTION AND ADMINISTRATION SEMINAR OVERVIEW**

The COBE Cardiovascular, Inc. Perioperative Autologous Blood Collection and Administration Seminar is designed to provide the system operator with the advanced instruction necessary to both safely and effectively operate the BRAT 2 (Baylor Rapid Autologous Transfusion System) or the Dideco Blood Processing (Compact Advanced Advanced or Electa Essential) Systems. It is vital that an operator learn not only the mechanics of the system itself, but also has knowledge of blood components and transfusion therapy and understands the principles of the technology of perioperative red blood cell recovery. There is much more to this procedure than "just pushing buttons" and the truly qualified operator will have a thorough knowledge not only of the equipment, but also of the many variables that will influence the actual procedure and will possess the knowledge to establish an effective perioperative autologous transfusion program. Seminars materials are designed to aid the participant during the seminar as well as serve as a reference source once the seminar is completed. These goals are accomplished by providing the participant with information in therapy, applications, and equipment operation in a classroom and laboratory setting.

The seminar is targeted toward registered nurses, perfusionists, technicians and other allied health professionals with experience in the operating room, critical care, perfusion, blood banking, or apheresis. Proficiency in medical terminology, human anatomy and physiology, surgical procedures and principles of sterile technique is necessary to accomplish the objectives within the specified time. In order to maximize the educational goals of this seminar, the targeted health care professional must also meet the following criteria:

- 1. Previous participation in a BRAT 2 System, Electa Essential or Compact Advanced System inservice and clinical observation of the systems, or;**
- 2. Previous clinical experience with the BRAT 2, Electa Essential or Compact Advanced System, or;**
- 3. Previous experience with other cell processing systems and participation in a BRAT 2 System, Electa Essential or Compact Advanced System inservice;**
- 4. Review of the detailed BRAT 2/ Electa Essential or Compact Advanced System Operators Manual**

During the seminar participants receive virtual individual training because the seminars are restricted to a maximum of fifteen people per session. This appears to be an ideal class size for several reasons. Each participant has the opportunity and the incentive to participate actively and, because participants may come from institutions not only in this country but overseas as well, the ability to discuss different procedures and techniques is invaluable.

During the days of laboratory or hands-on training, there is a maximum of two participants per machine, which gives the participant unlimited use of the equipment and the ability to work with a partner. This co-operative effort becomes important when participants are challenged to perform trouble-shooting and problem-solving situations.

Training begins with an overview of support services, clinical and technical, that is available to the operator. A general overview of the system then follows. This brief session reviews some of the necessary components of a blood recovery device and how the BRAT 2, Electa Essential or Compact Advanced incorporates these features. This brief introduction is then followed by a series of lecture presentations and laboratory simulations.

Basic hematology is reviewed with an emphasis on the normal function of blood components and the changes that these components undergo when blood is outside the vascular space, exposed to the surgical wound, and then maintained in an extracorporeal circuit. A brief overview of hemostasis examines normal clotting and the effect of inhibitors that are used in blood recovery. Transfusion therapy is reviewed through indications for blood transfusions, appropriate components for transfusions and properties of stored blood. An introduction to autologous transfusion covers methods of autologous transfusion, indications for perioperative blood recovery, properties of recovered blood, and advantages and disadvantages of perioperative blood recovery. The participant gains immediate exposure to the BRAT 2, Electa Essential or Compact Advanced System on the afternoon of the first day through set-up and programming exercises.

Day two begins with the continuation of the introduction to autologous transfusion. We follow with an examination of the basic principles of perioperative blood recovery. Centrifugation technology is reviewed with an emphasis on how this technology is used in cell processing of recovered blood with either the Baylor or Latham style centrifuge bowl. Each step in the recovery process is identified with accompanying explanations of the process and cautions relating to patient and equipment safety. The afternoon laboratory sessions allow participants to begin basic processing using the devices.

Day three begins with a lecture session on equipment troubleshooting and continues with laboratory simulations. We conclude the afternoon with a lecture designed to assist the participant in organizing a blood recovery program with an emphasis on department organization, policies and procedures, documentation, quality control, and utilization review.

A session on autologous component therapy begins at the end of day three. Part one of this session is designed to allow those clinician's involved in the perioperative retrieval of autologous plasma and platelets with a **blood recovery** system to become familiar with the issues involved in this new therapy, including potential benefits of autologous plasma/platelet sequestration for transfusion, AABB Standards for perioperatively obtained non-red cell products and how those standards relate to plasma/platelet sequestration, and cautions for the use of these techniques. The participant becomes familiar with the plasma/platelet sequestration procedure through laboratory simulations on the BRAT 2<sup>®</sup> or Electa Essential/Compact Advanced Systems Blood Processing Systems.

On day four, the participant gains more detailed information into the therapeutic use of perioperatively obtained platelets for topical application. The session will give the participant a background in the basic science and clinical applications surrounding this use of perioperatively obtained non-red cell autologous components and identify the features of the Angel Whole Blood Processing system that allow preparation of this product. Topics to be covered during this session include:

Preparation and Use of A Non-Red Cell  
Autologous Component Product (Platelet Rich Plasma)

- I. Basic Science
  - A. Platelet Physiology
    - i. growth factor physiology
    - ii. mesenchymal stem cells and their relationship to growth factors
  - B. The Biology of PRP
    - i. what the product is and is not
    - ii. setting realistic clinical goals
    - iii. the four phases of the healing cascade
    - iv. tissue regeneration
    - v. scientific and clinical evidence that supports the therapy
- II. Applications- Clinical goals
  - A. Cardiac Surgery
  - B. Orthopedic/Neuro Surgery
  - C. Plastic Surgery
- III. Techniques for the Use of PRP
  - A. Clinical Issues
    - i. blood draw in the perioperative area (the how to, why, and degrees of good.)
    - ii. the flow of events in the OR
    - iii. application techniques (the micromedics applicator, creating a bone log, creating a membrane, and the differences in the use of the spray tip and dual tip cannulae)
- IV. Whole Blood Separation techniques using the Angel Whole Blood Separation System
  - A. Set up and disposables
  - B. Creating custom protocols
  - C. Processing techniques
  - D. Evaluation of product quality
  - E. Platelet counts and how to get the most accurate results

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Continuing education credits are allowed for this seminar and a certificate acknowledging attendance at the COBE Cardiovascular Comprehensive Perioperative Autologous Blood Collection and Administration Seminar will be awarded.

**Application of skills learned during this seminar should be used within the participant's existing scope of practice. Attendance at this seminar does not authorize or certify the participant to add this skill to their practice if this function is not included in their current scope of practice. COBE Cardiovascular, Inc. does not certify or credential participants in perioperative blood collection and administration.**