

BIOSPECIMEN PROCESSING**TABLE OF CONTENTS**

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1. Background and rationale

This year of the Health ABC study involves the collection of at most approximately 23 mL of blood from participants. The blood is collected in two types of tubes for specialized processing of different blood components. Specimens will be sent to LCBR and local laboratory for analysis and Pittsburgh for storage.

2. Equipment and supplies

Necessary processing supplies include:

- Centrifuges capable of spinning at 30000 g-minutes
- -80° Freezer space is required
- Refrigerator space
- Dry Ice
- Pipets and tips: 0.5 mL volume
- Lab coat and gloves
- Biohazardous waste disposal container
- Balance tubes for the centrifuge
- Lab mat
- 10% bleach solution
- Freezer racks
- Rubber bands

2.1 Sample ID Labels

You will be supplied with sheets of sample ID barcode labels to use for labeling forms, draw tubes, and cryovials. A sample sheet of barcode labels can be found in Appendix 1. All labels on each sheet have the same 6-digit sample ID number (the first digit identifies the clinic: Memphis = 1, Pittsburgh = 2).

Each cryovial label also has a 2-digit extension (01 to 10) that serves as a unique identifier for each cryovial within a sample ID. The label for one of the collection tubes that goes to LCBR also has a bar code. See Appendix 2 for proper orientation of the barcode label.

Beneath the human-readable ID number, cryovial labels also have one to three lines of text. The first line consists of a letter, a word, and a number. This line of text is intended to increase accuracy in labeling and filling the cryovials. Abbreviation codes can be found at the bottom of the Laboratory Processing form. The letter refers to the color of the cryovial cap, e.g., O, orange, R= red. The word corresponds to the type of sample to be stored in the cryovial, e.g., Serum for serum). **The number refers to the cryovial volume (.5 mL), not the volume aliquoted.**

There are also 6 labels containing the ID number with no extension. Two are to be used for pre-labeling 2 draw tubes, with 2 extra for back-up vacutainers. Of these labels, the Draw Tube #2 label has a barcode. They all have 1-3 lines of text indicating which specimen container they are intended for, including the stopper color and volume, if applicable. The EDTA tube (#3) will have a label from the field center's local laboratory.

There are 2 barcoded labels with the ID number, one with the words "Phlebotomy Form," which is placed on the Phlebotomy Form (see Blood Collection chapter), and the other with the words "Laboratory Processing Form," which is placed on the Laboratory Processing Form (Appendix 3). *This process of matching the participant-specific Health ABC Enrollment ID# (**already on the form brought to the lab by the participant**) to the sample-specific ID barcode is crucial to being able to use the data collected from laboratory tests.*

3. Safety issues and exclusions

3.1 Precautions for handling blood specimens

In accordance with the OSHA regulations on blood borne pathogens (see copy on file in laboratory), the study recommends the following laboratory safety protocol for the field center laboratories:

- Non-permeable lab coats, latex gloves, and face shields should be used when handling any blood in any situation where splashes, spray, spatter, or droplets of blood may be generated and eye, nose, or mouth contamination can be reasonably anticipated.
- 'Universal Precautions' should be followed when handling any blood products.
- Contaminated needles and sharps shall be immediately placed in a puncture-resistant, leakproof container. Never recap or break needles.
- Hepatitis B vaccine should be offered to all unvaccinated technicians handling blood and documentation of vaccination or technician's declining to be vaccinated should be kept.

4. Participant and exam room preparation

4.1 Preparation for processing

All items on the Sample Processing Checklist (Appendix 4) should be on hand before beginning processing.

Aliquot racks will be set up to correspond to each blood collection tube rack. Rack setup is completed the previous day. All tubes and vials are labeled with sample ID bar codes (see Label Orientation diagram in Appendix 2) and arranged in appropriate working order. After labeling

draw tubes and cryovials, there will be 4 labels left: 2 “Backup” labels, 1 “Phlebotomy Form,” and 1 “Laboratory Processing Form” label. These can be separated into 2 mini-sheets: The “Backup Vacutainers,” “Phlebotomy Form” and “Laboratory Processing Form” labels should be clipped to the corresponding blood collection tray.

5. Detailed procedures

5.1 Processing

5.1.1 General

Tube #1 should be held at room temperature for 40 minutes (up to 90 minutes). Tubes #2 and #3 should be mixed (for about 30 seconds) and immediately placed on ice. Tube #2 will be stored in a refrigerator (no freezing) until shipped to LCBR. Tube #3 (if required) will be sent to local laboratory for CBC analysis.

It is possible that not all tubes will be collected due to problems with phlebotomy. During processing, work in the order specified and make as many aliquots as possible while meeting the volume requirement of each cryovial. On the Laboratory Processing form, fill the Y bubble next to each cryovial that is filled, whether partially or totally. If the sample is hemolyzed, fill the bubble marked H. If the tube is only partially filled, fill the bubble marked P. If the tube is both hemolyzed and partially filled, fill the bubble marked B. If the tube is not filled at all, only fill the bubble marked N.

5.1.2 Description of blood collection tubes

Each draw tube is color coded to aid in handling.

Tube #1 is a 15 mL glass red-stoppered tube used to collect serum. This tube contains no anticoagulant so that the blood clots to form serum. After drawing, the blood is allowed to clot at room temperature for 40 minutes (Maximum = 90 minutes). Cryovial caps are coded orange (cryovials 1 and 2) and red (the rest of cryovials). The serum is used for future analysis of fasting glucose, fasting insulin, vitamin B12, future other tests, and archiving.

Tube #2 is a 4.0 mL lavender stoppered tube containing EDTA as the anticoagulant. After drawing, the tube should be mixed and immediately placed on ice. This tube will not be processed; it will be kept refrigerated (not frozen) and sent to LCBR for analysis of HgA1c.

Tube #3 is a 4.0 mL lavender stoppered tube containing EDTA as the anticoagulant. After drawing, the tube should be gently mixed and immediately placed on ice. This tube will be drawn only if the data from prior visits indicate that CBC is required. This tube will not be processed; it will be kept refrigerated (not frozen) and sent to your local laboratory for a complete blood count (CBC).

5.1.3 Immediate processing

Upon reaching the blood processing station, remove the blood drawing rack and ice bath containing tubes from the blood collection tray. The rack should contain tube #1. The ice bath should contain tubes #2 and #3.

5.1.4 Aliquots per sample type:

The following is a summary of how to handle each collection tube. Detailed instructions follow (volume indicates sample size, not cryovial size).

EDTA plasma: Tube #2 is a 4.0 mL lavender stoppered tube containing EDTA as the anticoagulant. After drawing, the tube should be mixed and immediately placed on ice. This tube will not be processed; it will be kept refrigerated (not frozen) and sent to LCBR for analysis of HgA1c.

EDTA plasma: Tube #3 is a 4.0 mL lavender stoppered tube containing EDTA as the anticoagulant. This tube will be drawn only if the data from prior visits indicate that CBC is required. After drawing, the tube should be mixed and immediately placed on ice. This tube will not be processed; it will be kept refrigerated (not frozen) and picked up by the field center's local laboratory for complete blood count (CBC) analysis.

Serum: The serum from tube #1 is aliquoted into two 5.0 mL coming round bottom tube with orange screw caps (only 0.5 mL should be aliquoted into each tube) and eight 0.5 mL cryovials (Two cryovials (cryo#01 and cryo #02) are sent to LCBR for future analysis of fasting glucose, fasting insulin, vitamin B12. Cryovials #3-5 are designated for future tests. The remaining aliquots (cryos #06-#10) are designated for storage.)
The total number of aliquots is: 10 (Color code = orange and red caps)
10 x 0.5 mL

The total number of aliquots per participant is 10 plus 2 unaliquotted specimen collection tubes. A detailed listing of aliquots can be found on the Laboratory Processing form (Appendix 3).

5.1.5 Centrifugation of serum samples

Tube #1 should be left at room temperature for at least 40 minutes (maximum 90 minutes; longer duration gives higher serum yield) after it is drawn. It should be displaying a clot by this time. It is centrifuged at 4° C for 10 minutes at 3000 G or 15 minutes at 2000 G.

While this tube is spinning:

- Restock the blood collection tray with tube rack and blood collection tubes, ice, and forms for the next participant.
- Recheck labels on the aliquot racks to ensure that they match the sample ID# on the draw tubes.
- Perform any necessary clean up.

5.1.6 Making serum aliquots

Allow the centrifuge to come to a complete stop. Carefully remove the tube from the centrifuge, being careful not to shake the tube, and place it on ice.

Serum (Tube #1) Color coded Red

Aliquots:	2 x 0.5 mL serum	use 5.0 mL tube	LCBR
	8 x 0.5 mL serum	use 0.5-mL cryovial	Stored in 3 different boxes

Note: The 5.0 tube is a corning round bottom tube with orange screw caps and the 0.5 mL cryovials are capped with red screw caps.

- Follow the outline on the Laboratory Processing form for aliquoting the serum samples. Fill in the bubble next to each cryovial that is filled, whether partially or totally. If the tube is only partially filled, also fill the bubble marked P. If a sample is hemolyzed, fill in the bubble marked H. To determine whether a sample is hemolyzed, compare its color to the chart provided by LCBR. If the tube is both hemolyzed and partially filled, fill the bubble marked B (only one P, H, or B bubble should be filled for each cryovial, if applicable). If the tube is not filled at all, fill the bubble in the "Filled /Yes or No" column (N).
- Pipet the serum with the *proper volume pipet (0.5 ml)*. Do not use the cryovial to estimate volume.
- Recap aliquots after each sample tube has been pipetted.

5.1.7 Processing of EDTA Plasma Samples

After drawing, Tubes #2 and #3 should be mixed and immediately placed on ice. Tubes #2 and #3 are NOT centrifuged. These tubes will not be processed; they will be kept refrigerated (not frozen) and sent to LCBR for analysis of HgA1c (Tube #2) and local laboratory for CBC analysis (Tube #3).

5.1.8 Return visit aliquots

Occasionally, participants return to the clinic after their Year 11 clinic visit just to have a fasting blood draw or because they were unable to give a sample at the regular clinic visit. The same types of forms are used for the first sample collection and lab processing as for the second. The only difference is that for the first sample collection the “first sample collection” bubble on each page is filled; for a repeat collection the “repeat sample collection” bubble is filled. Be sure to fill out all forms with the header information including the Health ABC Enrollment ID #, Acrostic, Date Form Completed, and Staff ID #.

5.1.9 Completed forms

The completed Phlebotomy and Laboratory Processing forms can be set aside in a daily work folder. These forms are copied (one copy for LCBR) and then the originals are scanned into the data system and filed in the participants’ charts. The copies are enclosed with each shipment of samples to LCBR.

End of the Day Procedures

- For the frozen cryo# 01 and cryo#2 (5 mL tube) there is a choice on how they can be packaged. Use which method works best for your lab. Keep samples frozen.

The cryo# 01 and cryo#2 tubes can be loaded into a 3” freezer box (9x9 dividers) ready for shipping.

- Tube #01 and Tube #02 are earmarked for later assays of glucose, insulin and Vitamin B12. The 3” freezer box containing tubes# 01 and tubes #2 are shipped together in the monthly frozen shipment to LCBR. *Note that the labels on these cryovials include the words “To LCBR” to make them easy to identify.* These boxes should be numbered consecutively (1, 2, 3, etc.) and should also be labeled with the name of the site (see Appendix 5).
- Frozen cryovials (cryos# 03-05) in racks are packaged into Dr Elsa Strotmeyer (ES) freezer boxes by numeric order of cryovials per participant. Mark the boxes (using pre-printed labels) to indicate the study (e.g. HABC), the site (e.g. Pittsburgh or Memphis), box name (e.g. ES or MS), and number (1, 2, 3...etc.). Number the boxes consecutively (For example ES #1, then ES #2, ...etc). Use big label to mark the top of the freezer box and 4 smaller labels to mark the 4 sides of the freezer box. Do not leave spaces in the boxes when the total number of cryovials is less than expected. Samples from one participant may overlap into two boxes. (See freezer box diagrams in Appendix 5).
- Frozen cryovials (cryos# 06-09) in racks are packaged into the study Maine Storage (MS) freezer boxes by numeric order of cryovials per participant. Mark the boxes (using pre-printed labels) to indicate the study (e.g., HABC), the site (e.g., Pittsburgh or Memphis),

- box name (e.g. ES or MS), and number (1, 2, 3...Etc). Number the boxes consecutively (For example MS #1, then MS #2, ...etc). Use big label to mark the top of the freezer box and 4 smaller labels to mark the 4 sides of the freezer box. Do not leave spaces in the boxes when the total number of cryovials is less than expected. Samples from one participant may overlap into two boxes. (See freezer box diagrams in Appendix 5).
- Last frozen cryovial (cryo#10) is packaged into the blind duplicate (D) freezer box. Mark the boxes (using pre-printed labels) to indicate the study (e.g., HABC), the site (e.g. Pittsburgh or Memphis), box name (i.e., D), and number (1, 2, 3...etc). Number the boxes consecutively (For example D #1, then D #2, ...etc). Use big label to mark the top of the freezer box and 4 smaller labels to mark the 4 sides of the freezer box. Do not leave spaces in the boxes when the cryovial is missing for one participant. (See freezer box diagrams in Appendix 5).
 - Collection tube #02 is being sent to LCBR for analysis within a 7 day window. Keep refrigerated. Collection tubes #02 are shipped bi-weekly in a refrigerated shipment to LCBR. **These tubes are not frozen. See procedure below for storage and shipment instructions.**
 - Collection tube #03 is being sent to local laboratory for CBC analysis on a daily basis. Follow the instruction of your local laboratory in preparing the samples for pick up.
 - Re-stock blood collection trays with supplies.
 - Label the next day's draw tubes and cryovials.
 - Arrange draw tubes and aliquots in their proper racks.
 - Wipe down all work areas with 10% Clorox solution.

5.2 Summary of processing time limitations

From end of venipuncture to start of processing:

- | | | |
|----|-------------------------------|-----------------------|
| 1. | Serum 15 mL (Tube #1) | 90 minutes |
| 2. | EDTA 4.0 ml (Tubes #2 and #3) | No further processing |

Once centrifuged, maximum time before aliquoting: 15 minutes. After aliquoting samples, freeze within 30 minutes. Please remember that the above time limits are the maximum times that are allowed and not the regular processing we are expecting on regular daily processing.

5.3 Shipping the serum and the whole blood

5.3.1 Shipping frozen serum samples to LCBR

Frozen serum samples (tubes #1 and #2) are shipped *monthly* to LCBR by Federal Express overnight delivery. The schedule will be as follows:

Monday	Memphis
Tuesday	Pittsburgh

This allows the laboratory and repository to stagger the arrival of samples on Tuesdays and Wednesdays for easier processing. When Monday is a holiday, the Monday shipment may be shipped on Tuesday.

Shipments to LCBR are charged to the University of Vermont (recipient) Federal Express account.

This shipping protocol follows the procedures mandated by the International Air Transport Association's Dangerous Goods Regulations-Packaging Instructions 650 and 904. All items from the shipping checklist (Appendix 6) should be kept in stock at all times.

The frozen serum samples to be shipped to the University of Vermont (LCBR) are those from the previous month.

Make complete copies (all pages) of corresponding Phlebotomy and Laboratory Processing forms for the LCBR shipment.

Samples should be prepared for shipping as follows:

For samples in freezer boxes:

- Wrap each 3" freezer box in paper towels to absorb possible leakage. Put a rubber band around the towel-wrapped box or bag.
- Put the individual freezer boxes containing the samples into a leakproof zip-lock plastic bag. Seal the zip-lock bags.

For the 5.0 mL tubes packaged in freezer boxes:

- Line the styrofoam mailer with absorbent material (e.g., paper towels).
- Place approximately one third of the dry ice on the bottom of the mailer. Add another layer of absorbent material.
- Carefully place the freezer boxes into the styrofoam mailer. Place no more than a total of 4 L of sample into the styrofoam shipping container. Use two or more styrofoam mailers when necessary. (In this case, label the mailers "1 of 2" and "2 of 2"). Again place a little absorbent material around the zip-lock bags.
- Place the remaining dry ice (approximately 7 - 14 lbs total) on top and around the samples to fill the styrofoam container.
- Enclose the styrofoam container in the outer cardboard sleeve.
- Place the copies of the Phlebotomy and Laboratory Processing forms in a big ziplock bag on top of the styrofoam container before closing up the outer sleeve with tape.

Fill out the FedEx Airbill as follows (Appendix 7):

- Type in your FedEx account number (for both Pittsburgh and LCBR shipments)
- Type the date of the shipment
- Type the name of the person sending the shipment under Section one, where it says 'From'
- Type in your address and telephone number in Section one.
- Type the recipient's name, address, and telephone number in Section two. *The telephone number is mandatory.*
- Type an 'X' in the Bill Recipient box for the LCBR shipment. Fill in the University of Vermont account number: 318-807-442 and internal reference "number:" HABC below the account number.
- Type an 'X' in Priority Overnight under Section 4a
- Type an 'X' in the Other Packaging box in Section 5
- Type an 'X' in the Deliver Weekday box (Box 2).
- Place an 'X' in the "Dry Ice" box in Section five (Box 6). Enter the weight of the dry ice in kilograms as specified and the number of boxes shipped.
- In section 6, place an 'X' in the 'Yes (Shipper's declaration not required)' box

Affix the completed airbill to the front side of the package in the plastic pouch (see Appendix 9).

The following additional labels are to be attached to each shipping box. (A diagram showing the placement of these labels on the shipping container is shown in Appendix 9):

- Return Address Label: placed on top in upper left corner.
- Consignee Address Label: placed on top in bottom right corner.
- Black and White Class 9 Label: placed on top in upper right hand corner.
(UN1845, see Appendix 10)
- Biological Substance Category B Label: placed on top under the return address label.
- Keep Frozen Label (optional): placed on any side

It is necessary to weigh the entire shipping container. The weight of the dry ice in kilograms is written on the Black and White Class 9 Label (Appendix 8) in the space provided and filled in on the FedEx airbill.

The LCBR mailing address at the University of Vermont is:

Elaine Cornell
University of Vermont-Pathology
208 South Park Drive, Suite 2
Colchester, VT 05446
(802) 656-8963

FAX the following information to LCBR at 802-656-8965, as applicable, when a shipment is sent (See Appendix 11):

Date of shipment
Expected arrival date
Number of styrofoam mailers shipped

FedEx airbill number

5.3.2 Shipping frozen serum samples to Pittsburgh

Frozen serum samples from Memphis site (cryovials #3 to #5 in ES boxes, cryovials #6 to #9 in MS boxes and cryovial #10 in D boxes) are shipped *monthly* (Mondays) to Pittsburgh by Federal Express overnight delivery.

Samples should be prepared for shipping as follows:

- Wrap each 2” freezer box in paper towels to absorb possible leakage. Put a rubber band around the towel-wrapped box or bag.
- Put the individual freezer boxes containing the samples into a leakproof zip-lock plastic bag. Seal the zip-lock bags.
- Line the styrofoam mailer with absorbent material (e.g., paper towels).
- Place approximately one third of the dry ice on the bottom of the mailer. Add another layer of absorbent material.
- Carefully place the freezer boxes into the styrofoam mailer. Place no more than a total of 4 L of sample into the styrofoam shipping container. Use two or more styrofoam mailers when necessary. (In this case, label the mailers “1 of 2” and “2 of 2”). Again place a little absorbent material around the zip-lock bags.
- Place the remaining dry ice (approximately 7 - 14 lbs total) on top and around the samples to fill the styrofoam container.
- Enclose the styrofoam container in the outer cardboard sleeve.
- Place the copies of the Phlebotomy and Laboratory Processing forms in a big ziplock bag on top of the styrofoam container before closing up the outer sleeve with tape.
- Fill out the FedEx Airbill as above except using Pittsburgh account number and internal reference "number," as provided by the Pittsburgh site.
- Affix the completed airbill to the front side of the package in the plastic pouch as shown above. Also, additional labels are to be attached to each shipping box as shown above.
- Pittsburgh mailing address:

Ayman Hanna
Bellefield Health Studies Lab manager
130 N. Bellefield Avenue, Rm 440
Pittsburgh, PA 15213
Telephone: 412-624-4249

FAX the following information to Pittsburgh at **412-624-7805**, as applicable, when a shipment is sent (See Appendix 11):

Date of shipment
Expected arrival date
Number of styrofoam mailers shipped
FedEx airbill number

5.3.3 Shipping refrigerated whole blood samples to LCBR

Whole blood samples (draw tube #2) must be shipped separately *twice weekly* by Federal Express overnight delivery to LCBR. This must be done on Monday and Wednesday to allow LCBR to process the tubes within 7 days of collection. Again, when Monday is a holiday, that shipment may be delayed until Tuesday.

The refrigerated samples to be shipped on Monday are those from that day and the previous Thursday and Friday. The samples to be shipped on Wednesday are those from that day and Tuesday.

- The samples should be placed in a 3" tall box with a 9 x 9 grid. If the stoppers get in the way of each other, you may skip a space.
- Line the styrofoam mailer with absorbent material (e.g., paper towels)
- Place one or two ice packs or frozen gel packs **not dry ice** into the bottom of the mailer. Add a layer of newspaper.
- Carefully place the bagged samples into the styrofoam mailer on top of the newspaper, then cover with another layer of newspaper. Place another one or two ice packs on top and around it. **Do not let the ice pack come into direct contact with the sample box.**
- It may be helpful to pack any remaining empty space with newspaper to prevent the package from shifting during shipment.
- Fill out the LCBR Shipping Form for Whole Blood (Draw tube #2) (Appendix 10), listing the sample barcode, participant's HABCID, the date of the Year 11 clinic visit for each sample in the box. The easiest way to do this is by copying this information from the stack of xeroxed Phlebotomy and Laboratory Processing forms in your daily work folder, making sure you don't include any cryovials that have already been shipped. Once the Shipping Form is completed, double check against the tubes in the box to be shipped, to ensure that all tubes are listed on the form and all tubes listed on the form are in the shipment box.
- Keep a copy of the shipping form to fax to LCBR with the FedEx tracking number. Enclose one copy with the styrofoam mailer.
- Enclose the styrofoam container in the outer cardboard sleeve.
- Place the LCBR Shipping Form for Whole Blood (Draw tube #2) on top of the styrofoam container before closing up the outer sleeve with tape. Do not enclose copies of the Plebotomy and Laboratory Processing forms with this shipment, as they will be included in the shipment of frozen samples for the same participants.
- Seal the outer sleeve with tape.
- Be sure to use appropriate styrofoam mailers that LCBR provides.
- Fill out the FedEx Airbill as above, except that the "Dry Ice" box should not be checked in section 5.

- The LCBR mailing address at the University of Vermont is:
Elaine Cornell
University of Vermont-Pathology
208 South Park Drive, Suite 2
Colchester, VT 05446
(802) 656-8963

FAX the LCBR Shipping Form for Whole Blood and the following information to LCBR at 802-656-8965, as applicable, when a shipment is sent (See Appendix 11):

Date of shipment
Expected arrival date
Number of styrofoam mailers shipped
FedEx airbill number

6. Procedures for performing the measurements at home

This procedure is the same for home visits as for clinic visits. The samples will be placed on ice (except for serum) and returned to the lab as soon as possible after the home visit, preferably within 1 hour. Be sure to check the "time blood draw completed" field on the Phlebotomy form and begin processing within the time limits described in Section 5.2. This may not be possible if there was a delay in getting the samples back to the lab. It is therefore doubly important to record the time processing was started on the Lab Processing form.

7. Quality assurance

7.1 Training requirements

Clinical experience with processing of blood samples is strongly recommended. Additional training should include:

- Read and study manual
- Attend Health ABC training session on techniques (or observe processing by experienced examiner)
- Discuss problems and questions with local expert or QC officer
- Certification by the Department of Transportation or other organization for packaging and shipment of biological specimens (information on training courses can be found at <http://hazmat.dot.gov/training.htm#classes> or <http://www.fedex.com/us/services/options/seminars.html>)

7.2 Certification requirements

- Complete training requirements
- Recite shipping schedule for applicable field center

- Process samples from volunteer or participant while being observed by QC officer using QC checklist

7.3 Quality assurance checklist

Preparation

- Aliquot racks correctly set up
- Cryovials correctly labeled
- Hepatitis B vaccination given or offered to all personnel handling blood

Processing serum tubes

- Time checked to ensure that tube #1 has stood at room temperature for at least 40 minutes, maximum 90 minutes
- Tube #1 centrifuged for 10 minutes at 3000 G or 15 minutes at 2000 G.
- Centrifuge correctly balanced with water tube(s)
- Serum correctly aliquoted

Freezing

- Aliquots checked to ensure they are not wet
- Rack placed upright in -80° C freezer or samples placed on dry ice

Whole blood

- Sample placed immediately in refrigerator after filling.

Shipment procedure – whole blood

- Shipment person certified by DOT
- Boxes correctly wrapped, etc.
- Styrofoam mailers correctly packed – absorbent material, ice pack or frozen gel pack not dry ice, newspaper, more ice packs.

End of day procedure

- Phlebotomy and Laboratory Processing forms placed in daily work folder
- Frozen aliquots removed from rack and placed in appropriate freezer boxes
- Freezer boxes correctly labeled
- Collection tube 02 placed in a separate container for LCBR
- Aliquots 01 and 02 stored appropriately in freezer box for shipment to LCBR
- Aliquots 03-05 placed in ES freezer boxes
- Aliquots 06-09 placed in MS freezer boxes
- Aliquots 10 placed in D freezer boxes

Shipment procedures -- dry ice

- Shipment person certified by DOT
- Freezer boxes correctly wrapped -- absorbent material, rubber band, and zip-lock bag
- Styrofoam mailers correctly packed -- absorbent material, dry ice
- Styrofoam mailer sealed in cardboard sleeve
- FedEx airbill correctly filled out
- Labels correctly affixed

Appendix 1 Sample Label Sheet (Bar Codes)

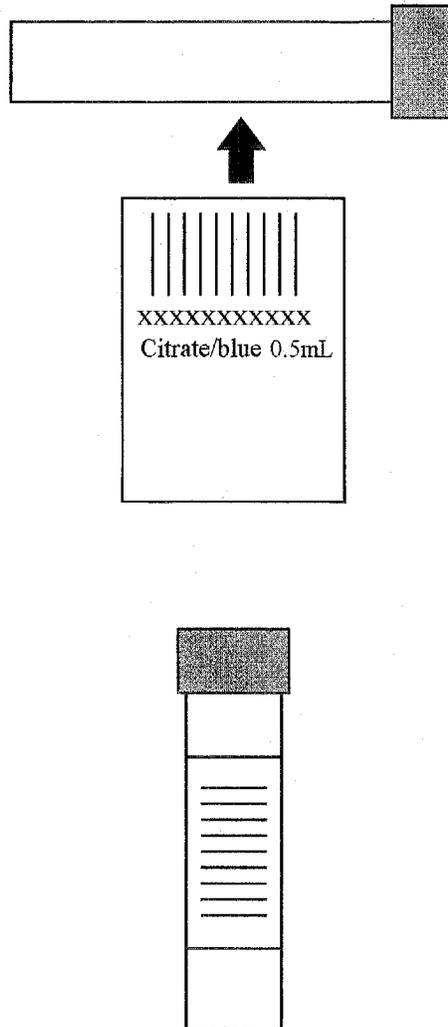
<p>#####</p>	<p>##### Draw Tube 1 Red top 15 mL</p>	 <p>##### Draw Tube 2 Purple top 4.0 mL To LCBR</p>
<p>#####</p>	 <p>##### Phlebotomy Form</p>	 <p>##### Laboratory Processing Form</p>
<p>Place this end on vial first</p>  <p>##### Back-up Vacutainer</p>	<p>Place this end on vial first</p>  <p>##### Back-up Vacutainer</p>	<p>Place this end on vial first</p>  <p>#####-01 O/Serum 5.0 To LCBR</p>
<p>Place this end on vial first</p>  <p>#####-02 O/Serum 5.0 To LCBR</p>	<p>Place this end on vial first</p>  <p>#####-03 R/Serum 0.5 ES box</p>	<p>Place this end on vial first</p>  <p>#####-04 R/Serum 0.5 ES box</p>

<p>Place this end on vial first</p>  <p>#####-05 R/Serum 0.5 ES box</p>	<p>Place this end on vial first</p>  <p>#####-06 R/Serum 0.5 MS box</p>	<p>Place this end on vial first</p>  <p>#####-07 R/Serum 0.5 MS box</p>
<p>Place this end on vial first</p>  <p>#####-08 R/Serum 0.5 MS box</p>	<p>Place this end on vial first</p>  <p>#####-09 R/Serum 0.5 MS box</p>	<p>Place this end on vial first</p>  <p>#####-10 R/Serum 0.5 D box</p>

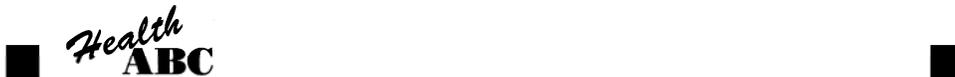
Appendix 2 Label Orientation on Cryovial

HEALTH ABC STUDY

Label Orientation on Cryovial



Appendix 3 Laboratory Processing Data Collection Form



HABC Enrollment ID #	Acrostic	Type of Annual Contact	Date Visit Completed	Staff ID#
H <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input checked="" type="radio"/> Year 11 <input type="radio"/> Other1 <input type="radio"/> Other2	<input type="text"/> / <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year	<input type="text"/> <input type="text"/> <input type="text"/>

LABORATORY PROCESSING ★

Bar Code Label

Sample Status

First sample collection
 Repeat sample collection

Time at start of processing: am pm

Hours Minutes

Collection Tubes	Cryo #	Cap / Type Cryo	Sample vol.	Filled? Yes/No	Problems	To	Box	Box Number	Box Row	Box Column
#1 serum	1	O/ 5.0	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	L	L			
	2	O/ 5.0	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	L	L			
	3	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	ES			
	4	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	ES			
	5	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	ES			
	6	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	MS			
	7	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	MS			
	8	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	MS			
	9	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	MS			
	10	R/ 0.5	0.5mL	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> H <input type="radio"/> O <input type="radio"/> P <input type="radio"/> B	PT	D			

L=LCBR; PT=Pittsburgh
 O=orange; R=red; H=Hemolyzed; P=Partial; B=Both
 ES=E. Strotmeyer Study; MS=Main Study; D=Duplicate



Appendix 4A: Sample Processing Checklist

- Crushed ice in ice bucket or plastic tub
- Pipets: 0.5 mL volumes
- Transfer pipets
- Labeled cryovials in rack
- Lab coat and gloves
- Biohazardous waste disposal
- Refrigerated centrifuge capable of spinning at 30000 g-minutes
- Balance tubes for the centrifuge
- 10% bleach solution
- 2" and 3" Freezer boxes with 9 x 9 grids
- Rubber bands
- Sturdy zip-lock plastic bags

See Appendix 12 for detailed list of equipment and supplies, including shipment containers.

Appendix 4B: Sample Processing Guide

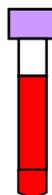
Health ABC
PROCESSING GUIDE

Tube#1



15 ml red top

Tube#2



4.0 ml EDTA

Tube#3

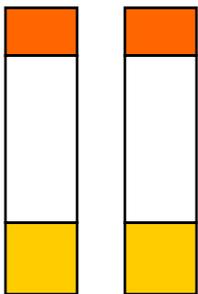


4.0 ml EDTA
(If required)

Centrifuge after 40 min at room temp and aliquot 0.5 ml serum in cryos 1-9

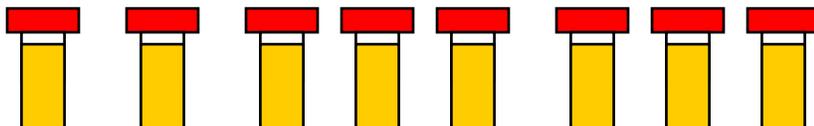
Keep in small refrigerator. Ship Mon and Wed on ice packs to Vermont

Keep in small refrigerator. Send daily to local lab for CBC analysis



1 ←→ 2

HABC Serum #1



3 ←→ 4 ←→ 5

HABC Serum #3-#5

6 ←→ 7 ←→ 8 ←→ 9

HABC Serum #6-#9

10 ↓

HABC Serum #10

Ship Monthly to Vermont

-----Ship Monthly to Pittsburgh-----

Appendix 5 Freezer Box Diagrams

Freezer Box Diagram for Shipping Serum Cryovial# 01 and #2 to LCBR.

Numbers = cryovial #

2 total blood sample cryovials per participant

start #1

Top

Ppt #1 01	Ppt #1 02	Ppt #2 01	Ppt #2 02	Ppt #3 01	Ppt #3 02	Ppt #4 01	Ppt #4 02	Ppt #5 01
Ppt #5 02	Ppt #6 01	Ppt #6 02	Ppt #7 01	Ppt #7 02	Ppt #8 01	Ppt #8 02	Ppt #9 01	Ppt #9 02
Ppt #10 01	Ppt #10 02	Ppt #11 01	Ppt #11 02	Ppt #12 01	Ppt #12 02	Ppt #13 01	Ppt #13 02	Ppt #14 01
Ppt #14 02	Ppt #15 01	Ppt #15 02	Ppt #16 01	Ppt #16 02	Ppt #17 01	Ppt #17 02	Ppt #18 01	Ppt #18 02
Ppt #19 01	Ppt #19 02	Ppt #20 01	Ppt #20 02	Ppt #21 01	Ppt #21 02	Ppt #22 01	Ppt #22 02	Ppt #23 01
Ppt #23 02	Ppt #24 01	Ppt #24 02	Ppt #25 01	Ppt #25 02	Ppt #26 01	Ppt #26 02	Ppt #27 01	Ppt #27 02
Ppt #28 01	Ppt #28 02	Ppt #29 01	Ppt #29 02	Ppt #30 01	Ppt #30 02	Ppt #31 01	Ppt #31 02	Ppt #32 01
Ppt #32 02	Ppt #33 01	Ppt #33 02	Ppt #34 01	Ppt #34 02	Ppt #35 01	Ppt #35 02	Ppt #36 01	Ppt #36 02
Ppt #37 01	Ppt #37 02	Ppt #38 01	Ppt #38 02	Ppt #39 01	Ppt #39 02	Ppt #40 01	Ppt #40 02	X

Bottom

End#81

continue to
next box....

Label outside of box: HABC, Serum #1-#2, Vermont

Appendix 5 Freezer Box Diagrams

ES Freezer Box Diagram for Shipping Serum Cryovial# 03-#05 to Pittsburgh

Numbers = cryovial #
3 total blood sample cryovials per participant

start #1

Top

Ppt #1 03	04	05	Ppt #2 03	04	05	Ppt #3 03	04	05
Ppt #4 03	04	05	Ppt #5 03	04	05	Ppt #6 03	04	05
Ppt #7 03	04	05	Ppt #8 03	04	05	Ppt #9 03	04	05
Ppt #10 03	04	05	Ppt #11 03	04	05	Ppt #12 03	04	05
Ppt #13 03	04	05	Ppt #14 03	04	05	Ppt #15 03	04	05
Ppt #16 03	04	05	Ppt #17 03	04	05	Ppt #18 03	04	05
Ppt #19 03	04	05	Ppt #20 03	04	05	Ppt #21 03	04	05
Ppt #22 03	04	05	Ppt #23 03	04	05	Ppt #24 03	04	05
Ppt #25 03	04	05	Ppt #26 03	04	05	Ppt #27 03	04	05

Bottom

End#81

continue to
next box....

Label outside of box: HABC, Serum #3-#5, ES#---, Pittsburgh

Appendix 5 Freezer Box Diagrams

MS Freezer Box Diagram for Shipping Serum Cryovial# 06-#09 to Pittsburgh

Numbers = cryovial #
4 total blood sample cryovials per participant

start #1

Top

Ppt #1 06	07	08	09	Ppt #2 06	07	08	09	Ppt #3 06
07	08	09	Ppt #4 06	07	08	09	Ppt #5 06	07
08	09	Ppt #6 06	07	08	09	Ppt #7 06	07	08
09	Ppt #8 06	07	08	09	Ppt #9 06	07	08	09
Ppt #10 06	07	08	09	Ppt #11 06	07	08	09	Ppt #12 06
07	08	09	Ppt #13 06	07	08	09	Ppt #14 06	07
08	09	Ppt #15 06	07	08	09	Ppt #16 06	07	08
09	Ppt #17 06	07	08	09	Ppt #18 06	07	08	09
Ppt #19 06	07	08	09	Ppt #20 06	07	08	09	X

Bottom

End#81

Continue to next box. . .

Label outside of box: HABC, Serum #6-#9, MS#---, Pittsburgh

Appendix 5 Freezer Box Diagrams

D Freezer Box Diagram for Shipping Serum Cryovial# 10 to Pittsburgh

Numbers = cryovial #10

One blood sample cryovials per participant

start #1

Top

Ppt #1	Ppt #2	Ppt #3	Ppt #4	Ppt #5	Ppt #6	Ppt #7	Ppt #8	Ppt #9
Ppt #10	Ppt #11	Ppt #12	Ppt #13	Ppt #14	Ppt #15	Ppt #16	Ppt #17	Ppt #18
Ppt #19	Ppt #20	Ppt #21	Ppt #22	Ppt #23	Ppt #24	Ppt #25	Ppt #26	Ppt #27
Ppt #28	Ppt #29	Ppt #30	Ppt #31	Ppt #32	Ppt #33	Ppt #34	Ppt #35	Ppt #36
Ppt #37	Ppt #38	Ppt #39	Ppt #40	Ppt #41	Ppt #42	Ppt #43	Ppt #44	Ppt #45
Ppt #46	Ppt #47	Ppt #48	Ppt #49	Ppt #50	Ppt #51	Ppt #52	Ppt #53	Ppt #54
Ppt #55	Ppt #56	Ppt #57	Ppt #58	Ppt #59	Ppt #60	Ppt #61	Ppt #62	Ppt #63
Ppt #64	Ppt #65	Ppt #66	Ppt #67	Ppt #68	Ppt #69	Ppt #70	Ppt #71	Ppt #72
Ppt #73	Ppt #74	Ppt #75	Ppt #76	Ppt #77	Ppt #78	Ppt #79	Ppt #80	Ppt #81

Bottom

End#81

Continue to next box. . .

Label outside of box: HABC, Serum #10, D#---, Pittsburgh

Appendix 6 Sample Shipping Checklist

- Styrofoam Mailing Container (2 different sizes) with outer cardboard sleeve
 - Polyfoam Packers # 430*
 - Polyfoam Packers # 346*
- Absorbent material
- 2" Freezer boxes with 9x9 grids (supplied by Pittsburgh)
- 3" Freezer boxes with 9x9 grids (supplied by LCBR)
- Leakproof Zip-lock bags
- Packaging tape
- Dry ice (approximately 20 lbs. per shipment)
- Ice packs for whole blood shipments
- FedEx Labels (provided by carrier)
- Labels, UN3373 Biological Substance Category B Labels
- Copies of Completed Phlebotomy/Processing Forms
- Rubber bands for boxes

Freezer and shipping boxes are supplied by Pittsburgh and LCBR.

Appendix 7 Examples of FedEx Labels

FedEx USA Airbill Express Track Your Package **832656379719**

1 From Please print and print large
 Date: _____ Sender's FedEx Account Number: _____
 Sender's Name: _____ Phone: () _____
 Company: _____
 Address: _____
 City: _____ State: _____ ZIP: _____

2 Your Internal Billing Reference
 (For all shipments with origin in the U.S.)

3 To
 Recipient's Name: **Ayman Hanna** Phone: **412 624-4249**
Health Studies Laboratory (U of Pittsburgh)
 Company: _____
 Address: **130 N Bellefield Avenue, 4th Floor**
 City: **Pittsburgh** State: **PA** ZIP: **15213**

Try online shipping at fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and to our current Service Guide, including terms that limit our liability.

Questions? Visit our Web site at fedex.com or call 1.800.Go.FedEx® 800.463.3339

Form ID No. **0200** **Sender's Copy**

4a Express Package Service Packages up to 150 lbs.
 FedEx Priority Overnight FedEx Standard Overnight FedEx First Overnight
 FedEx 2Day FedEx Express Saver Next Business Day
 FedEx 2Day Freight FedEx 2Day Freight FedEx 2Day Freight

4b Express Freight Service Packages over 150 lbs.
 FedEx 1Day Freight* FedEx 2Day Freight FedEx 3Day Freight

5 Packaging
 FedEx Envelope* FedEx Pak* Other Pkg.

6 Special Handling
 SATURDAY Delivery HOLD Wednesday at FedEx Location HOLD Saturday at FedEx Location
 Signature Required Signature Required for FedEx First Overnight Signature Required for FedEx Priority Overnight and FedEx 2Day (select service)

Does this shipment contain dangerous goods?
 No Yes Yes (over 70 lbs) Dry Ice (Dry Ice, 2 lbs max)

7 Payment Method
 Sender Recipient Third Party Credit Card Cash/Check

Total Packages: _____ Total Weight: _____ Total Declared Value: \$ _____

8 Release Signature Sign to authorize delivery without obtaining signature
 By signing this Airbill you authorize us to deliver this shipment without obtaining a signature and agree to indemnify us against all losses from any resulting claims. **446**

FedEx USA Airbill Express Track Your Package **832656379720**

1 From Please print and print large
 Date: _____ Sender's FedEx Account Number: _____
 Sender's Name: _____ Phone: () _____
 Company: _____
 Address: _____
 City: _____ State: _____ ZIP: _____

2 Your Internal Billing Reference **HABC**
 (For all shipments with origin in the U.S.)

3 To
 Recipient's Name: **ELAINE CORNELL** Phone: **802 656-8963**
UNIVERSITY OF VERMONT-PATHOLOGY
 Company: _____
 Address: **208 SOUTH PARK DRIVE, SUITE 2**
 City: **COLCHESTER** State: **VT** ZIP: **05446**

Try online shipping at fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and to our current Service Guide, including terms that limit our liability.

Questions? Visit our Web site at fedex.com or call 1.800.Go.FedEx® 800.463.3339

Form ID No. **0200** **Sender's Copy**

4a Express Package Service Packages up to 150 lbs.
 FedEx Priority Overnight FedEx Standard Overnight FedEx First Overnight
 FedEx 2Day FedEx Express Saver Next Business Day
 FedEx 2Day Freight FedEx 2Day Freight FedEx 2Day Freight

4b Express Freight Service Packages over 150 lbs.
 FedEx 1Day Freight* FedEx 2Day Freight FedEx 3Day Freight

5 Packaging
 FedEx Envelope* FedEx Pak* Other Pkg.

6 Special Handling
 SATURDAY Delivery HOLD Wednesday at FedEx Location HOLD Saturday at FedEx Location
 Signature Required Signature Required for FedEx First Overnight Signature Required for FedEx Priority Overnight and FedEx 2Day (select service)

Does this shipment contain dangerous goods?
 No Yes Yes (over 70 lbs) Dry Ice (Dry Ice, 2 lbs max)

7 Payment Method
 Sender Recipient Third Party Credit Card Cash/Check

Total Packages: _____ Total Weight: _____ Total Declared Value: \$ _____

8 Release Signature Sign to authorize delivery without obtaining signature
 By signing this Airbill you authorize us to deliver this shipment without obtaining a signature and agree to indemnify us against all losses from any resulting claims. **446**

Appendix 8 Dry Ice Label and Labeling Diagram
(page 1 of 2)

Shipper's Declaration not Required.

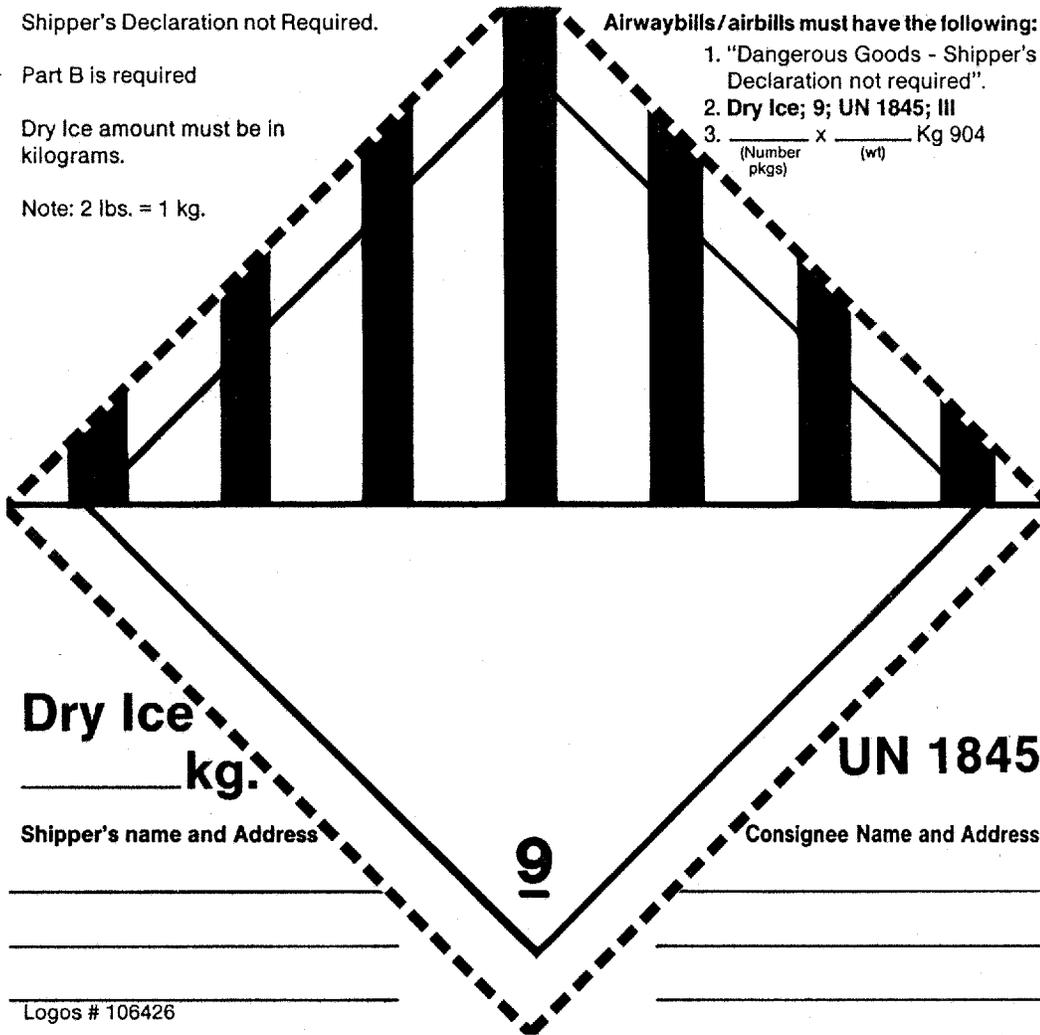
Part B is required

Dry Ice amount must be in kilograms.

Note: 2 lbs. = 1 kg.

Airwaybills/airbills must have the following:

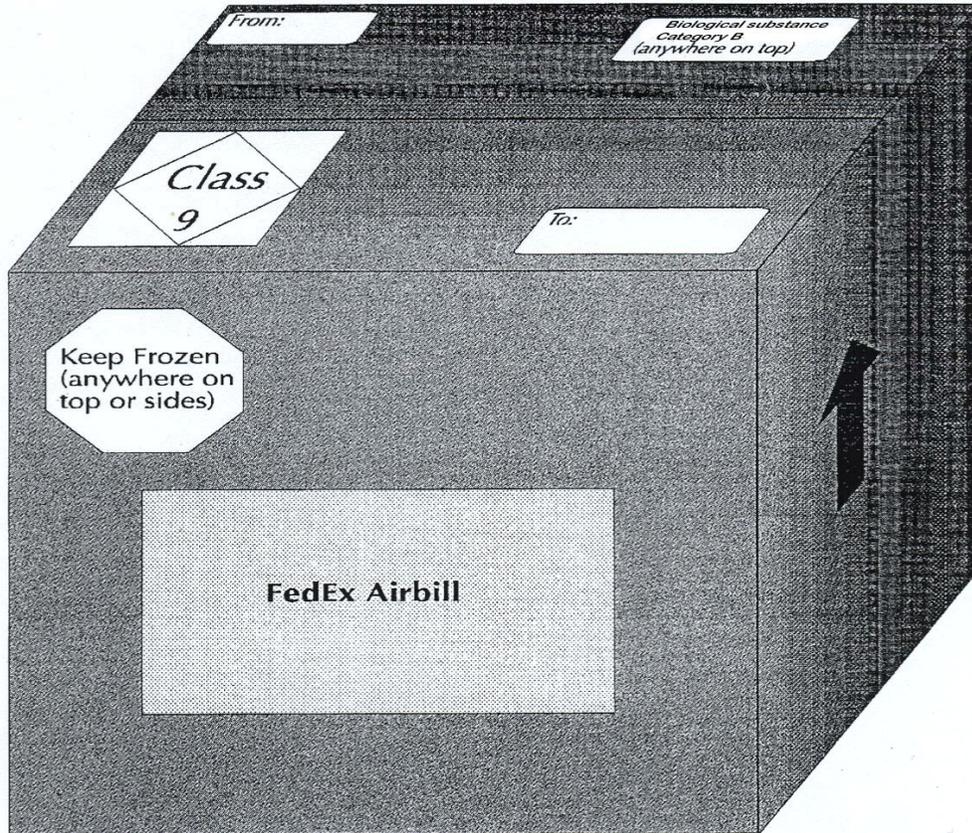
1. "Dangerous Goods - Shipper's Declaration not required".
2. Dry Ice; 9; UN 1845; III
3. $\frac{\text{Number}}{\text{(Number p kgs)}} \times \frac{\text{wt}}{\text{(wt)}} \text{ Kg 904}$



'DIAGNOSTIC SPECIMENS'
"PACKED IN COMPLIANCE WITH
IATA PACKING INSTRUCTION 650"

Appendix 9 Dry Ice and Labeling Diagram
(page 2 of 2)

OUTER BOX LABELING



NOTE: Labels must not overlap

Appendix 10A LCBR Shipping Form for Whole Blood



LCBR Shipping Form
for Whole Blood (Draw Tube #2)

Date of Shipment: / /

Month Day Year

Field Center: Memphis
 Pittsburgh

Shipment prepared by: _____

FedEx Airbill #: _____

Bar Code	HABC Enrollment ID #	Date of Year 11 Clinic Visit
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year
		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Month Day Year

Y11 LCBR Shipping Form, Version 1.0, 8/1/07

Appendix 11A Example of shipment notification

Notification of *Health ABC* Shipment

From:

Ayman Hanna
Health Studies Laboratory (University of Pittsburgh)
130 N Bellefield Avenue, 4th floor
Pittsburgh, PA 15213
Tel: 412 624 4249
Fax: 412 624 7805

To:

Elaine Cornell
University of Vermont-Pathology
208 South Park Drive, Suite 2
Colchester, VT 05446
Tel 802 656-8963
Fax **802 656-8965**

Samples shipped: **Whole blood** **Frozen samples**

Date of Shipping:

Expected date of arrival:

of Styrofoam mailers:

of Freezer Boxes:

FedEx Airbill #:

Comments:

Confirmation of Receipt

Arrival Date:

Samples Frozen: **Yes** **No**

Additional Comments:

Appendix 11B Example of shipment notification

Notification of *Health ABC* Shipment

From:

Susan Thomas, RN BSN
Project Manager Health ABC
University of Tennessee Health Science Center
Department of Preventive Medicine
66 N. Pauline, Ste. 520
Memphis, TN 38163
Office: (901) 448-1669

To:

Ayman Hanna
Health Studies Laboratory (University of Pittsburgh)
130 N Bellefield Avenue, 4th floor
Pittsburgh, PA 15213
Tel: 412 624 4249
Fax: 412 624 7805

Date of Shipping:

Expected date of arrival:

of Styrofoam mailers:

of Freezer Boxes:

FedEx Airbill #:

Comments:

Confirmation of Receipt

Arrival Date:

Samples Frozen: **Yes** **No**

Additional Comments:

Appendix 12 Equipment and Supplies List

SPECIMEN collection / processing / shipping

Item Specifications	Vendor/Source	Cost	Provided/Purchased by:		
			Coordin. Center	Field Center	Other
1. Centrifuges capable of spinning at 30,000 g-minutes	Exists locally			X	
3. Refrigerator space	Exists locally			X	
4. Blue ice or gel packs	Purchase locally			X	
5. Volumetric pipets and tips: 0.5 mL	MLA*-Brand Economical Precision Pipetters Fisher cat #: 21-336			X	
6. Lab coat and gloves	Purchase locally			X	
7. Biohazardous waste disposal container	Purchase locally			X	
8. Balance tubes for the centrifuge	Purchase locally			X	
9. Lab mat	Purchase locally			X	
10. 10% bleach solution	Purchase locally			X	
11. Rubber bands	Purchase locally			X	

Supply List

VENDORS: VWR: 800-932-5000 www.vwrsp.com Fisher Scientific: 800-766-7000 www.fishersci.com Polyfoam Packers: 800-323-7442 www.polyfoam.com www.krackeler.com Krackler Scientific: 800-334-7725 (NY) BD- Vacutainer: 888-237-2762 BD: Becton Dickinson brand, available through VWR, Baxter, and Fisher Qiagen: www1.qiagen.com or 1-800-426-8157
--

Note: Prices are from the catalogs. Educational discounts should apply.

cryovials / caps/ racks	# per participant	sample type	vendor: catalog #	\$ price/pk
0.5 mL cryovial with skirt w/o cap non-sterile	7	Serum	VWR: 20170-210 or Fisher: 02-681-333	51.90/ 500
Corning Externally Threaded Round bottom, self-standing Cryogenic Vials w/cap 5ml 500/c	2	Serum	Fisher: 430663	\$343.61/500
colored screw cap: red	7	Serum	VWR: 16466-074 or Fisher: 02-681-361	66.02/500 82.97/500
cryovial rack	1	Serum	VWR: 30128-346 or Fisher: 07-200-618	56.52/ 5 49.02/2
cover for cryovial rack	1 optional	Serum	VWR: 30128-350	48.76/ 5

Blood collection and processing supplies	# per participant	sample type	vendor: catalog #	\$ price/pk
15 mL Serum draw tube (red) Glass	1	serum	Fisher: 02-685-C VWR: VT6432 VWR Monoject# 14219-240	33.42/100 25.12/100 321.06/Case of 1000
4 mL K3 EDTA draw tube (purple) Plastic	2	EDTA plasma	Fisher: 22-040-036 Grenier# 454021	9.44/ 50 188.87/case of 24
21G BD Vacutainer Push Button Blood Collection Set with luer adaptor, green, 50 pack, 200/case	1		VWR: BD367344 or Fisher: B367344	\$367.71 /200 \$370/200
vacutainer needle holders (one time use only)	1	NA	Fisher: 22-289-953	\$46/1000
Gloves	variable	All	Fisher: 11-394-5A for small Fisher: 11-394-5B for medium Fisher: 11-394-5C for large	\$315.51/1000
Storage/ Shipping Supplies				
freezer boxes (supplied by LCBR and Pittsburgh)(2")	NA	Serum	Fisher: 11-678-24A	\$36.32 /12
freezer boxes (supplied by LCBR)(3")	NA	Serum	Fisher: 11-678-24B	\$50.92 /12
box dividers (9X9) (supplied by LCBR and Pittsburgh)	NA		Fisher: 13-989-218	\$22.05/12
Leakproof ziplock bags (12 x 12") for freezer boxes Bitran Polyethylene (Series PE) Bags	10 per week		VWR: 11217-128	150.00/ 250
Labels, UN3373 Biological Substance Category B Labels; Therapak; 3 1/2 x 4 in.; complies with IATA Packing lower price	1 roll		Fisher Cat: 22-130-067 Therapak: #54752	\$63/roll
Dry Ice labels	1 roll		Therapak: #54530	500/roll \$60.00
styrofoam shipping containers: 346UPS (supplied by LCBR)	6 for start	EDTA plasma	Fisher: 03-530-63	87.19/6
styrofoam shipping containers: large (supplied by LCBR and Pittsburgh)	4 for start	Serum	Krackeler Cat # 70-430-CS	\$96/4
Ice packs: U-TEK reusable packs or Reusable Refrigerant Packs	12 oz		VWR: 15715-105 Krackeler or purchase locally Fisher: 03-528B	23.39/24 27.90/24 23.20/24