

Blood Based Biomarker Shared Resource

in collaboration with the

National Centralized Repository for Alzheimer's Disease and Related Dementias



NCRAD

**Biospecimen Collection, Processing, and Shipment Manual of
Procedures**

Version 11.2020

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**1.0 ABBREVIATIONS**

AD	Alzheimer's Disease
BBBSR	Blood Based Biomarker Shared Resource
DNA	Deoxyribonucleic Acid
EDTA	Ethylene Diamine Tetra-acetic Acid
GUID	Globally Unique Identifier
IATA	International Air Transport Association
NACC	National Alzheimer's Coordinating Center
NCRAD	National Centralized Repository for Alzheimer's Disease and Related Dementias
PHI	Protected Health Information
RBC	Red Blood Cells
RCF	Relative Centrifugal Force
RPM	Revolutions Per Minute



2.0 PURPOSE

The collection of biofluids is an important part of the Blood Based Biomarker Shared Resource (BBBSR) Study. The purpose of this manual is to provide study staff (PIs, study coordinators, phlebotomists) at the various study sites with instructions for collection and submission of biological samples for BBBSR study visits. It includes instructions for biofluid submission to NCRAD located in Indianapolis at Indiana University.

The following samples will be sent to NCRAD:

- Plasma
- Buffy Coat (DNA Extraction)

This manual includes instructions for collection of blood, fractionation of blood from collection tubes, aliquoting, labeling, storage prior to shipping, and shipping to NCRAD.

These procedures are relevant to all study personnel responsible for processing specimens provided to NCRAD for the BBBSR protocol.



3.0 NCRAD INFORMATION

3.1 NCRAD Contacts

Tatiana Foroud, PhD, Core Leader

Phone: 317-274-2218

Kelley Faber, MS, CCRC, Project Manager

Phone: 317-274-7360

Email: kelfaber@iu.edu

Kaci Lacy, MPH, CCRP, Clinical Research Coordinator

Phone: 317-278-1170

Email: lacy@iu.edu

General NCRAD Contact Information

Phone: 1-800-526-2839

Fax: 317-321-2003

Email: alzstudy@iu.edu

Website: www.ncrad.org

Sample Shipment Mailing Address

BBBSR at NCRAD

Indiana University School of Medicine

351 W. 10th St. TK-342

Indianapolis, IN 46202

Phone: 1-800-526-2839

3.2 NCRAD Hours of Operation

Indiana University business hours are from 8 AM to 5 PM Eastern Time, Monday through Friday.

Ambient samples must be shipped **Monday-Thursday only**.

Frozen samples must be shipped **Monday-Wednesday only**.

For packing and shipment details of samples, please refer to [Section 8.0](#) of this protocol.

Check the weather report to make sure impending weather events (blizzards, hurricanes, etc.) will not impact the shipping or delivery of the samples.

3.3 NCRAD Holiday Observations

Date	Holiday
January 1	New Year's Day
3 rd Monday in January	Martin Luther King, Jr Day
4 th Monday in May	Memorial Day
July 4	Independence Day (observed)
1 st Monday in September	Labor Day
4 th Thursday in November	Thanksgiving
4 th Friday in November	Friday after Thanksgiving
December 25	Christmas Day

Please note that between December 24th and January 2nd, Indiana University will be open Monday through Friday for essential operations **ONLY** and will re-open for normal operations on January 2nd. If possible, biological specimens for submission to Indiana University should **NOT** be collected and shipped to Indiana University after the second week in December. Should it be necessary to ship blood samples for DNA extraction to Indiana University during this period, please contact the Indiana University staff before December 20th by e-mailing alzstudy@iu.edu, so that they can arrange to have staff available to process incoming samples. Please see: https://ncrad.org/holiday_closures.html for additional information.

- Please note that courier services may observe a different set of holidays.
- Please be sure to verify shipping dates with your courier prior to any holiday.
- **Weekend/holiday delivery must be arranged in advance with NCRAD staff.**

4.0 GLOBALLY UNIQUE IDENTIFIER (GUID)

The GUID is a subject ID that allows researchers to share data specific to a study participant, without exposing personally identifiable information. A GUID is made up of random alpha-numeric characters and does not include any PHI in the identifier. By using GUIDs in your research data, the system can associate a single research participant's genetic, imaging, and clinical assessment data even if the data was collected at different locations or throughout different studies. No PHI will be sent to NCRAD, only the GUID.

To create a GUID follow these steps:

1. Create an account: <https://bricsguid.nia.nih.gov/portal/jsp/login.jsp>

2. Once you have an account, go to the GUID Tool – Create GUID
3. To open the 'Launch GUID Tool' you will need to have Java installed on your device
4. In order to generate a GUID, the following PHI is required ([Appendix A](#)):
 - Complete legal given (first) name of subject at birth
 - If the subject has a middle name
 - Complete legal family (last) name of subject at birth
 - Day of birth
 - Month of birth
 - Year of birth
 - Name of city/municipality in which subject was born
 - Country of birth

5.0 BBBSR LABORATORY COLLECTION

5.1 Site Required Equipment

The following materials and equipment are necessary for the processing of specimens at the collection site and are to be **supplied by the local site**:

- Personal Protective Equipment: lab coat, nitrile/latex gloves, safety glasses
- Tourniquet
- Alcohol Prep Pad
- Gauze Pad
- Bandage
- Butterfly needles and hub
- Microcentrifuge tube rack
- Sharps bin and lid
- Wet Ice Bucket
- Wet ice
- Dry ice

In order to process samples consistently across all projects and ensure the highest quality samples possible, project sites must have access to the following equipment:

- Centrifuge capable of $\geq 2000 \times g$ with refrigeration to 4°C
- -80°C Freezer

In order to ship specimens, you must provide:

- Dry ice (approximately 45 lbs per shipment)

5.2 Biospecimens Sent to NCRAD

Samples are to be submitted according to the shipping methods outlined in [Section 8.0](#). Guidelines for the processing, storage location, and timing of sample collection are listed in the tables below.

5.2.1 Biofluid Collection Schedule

Biospecimen Collection Table

Biospecimen	All Visits
Plasma	X
Buffy Coat (DNA)	X

Whole blood is collected in two collection tubes (two 10 ml purple-top EDTA tubes) for shipment to NCRAD. The 10 ml EDTA tubes are processed locally into plasma, and buffy coat fractions; they are then aliquoted, frozen at the study site, and shipped to NCRAD.

Consent forms must specify that any biological samples and de-identified clinical data may be shared with academic and/or industry collaborators through NCRAD. Recommended consent language can be found on the NCRAD website at: https://ncrad.org/recommended_consent_language.html. A copy of the consent form for each participant should be kept on file by the site investigator.

5.2.2 Biofluid Collection Charts

Collection Tube	Drawn At	Specimen Type	Aliquot Volume	Total Number of Aliquots	Shipping Temperature
2 EDTA (Purple-Top) Blood Collection Tubes (10 ml)	Visit 1	Plasma	1.5 ml plasma aliquots	Up to 7	Frozen
	Visit 1	Buffy Coat	~1.0 ml buffy coat aliquots	2	Frozen

6.0 SPECIMEN COLLECTION KITS, SHIPPING KITS, AND SUPPLIES

NCRAD will provide: 1) Blood sample collection kits for research specimens to be stored at NCRAD, the Blood Supplemental Supply Kit, the Frozen Shipment Kit and Ambient Shipping Kit and 2) clinical lab supplies (with the exception of dry ice and equipment supplies listed in [Section 5.1](#)). The provided materials include blood tubes, pipettes, boxes for plasma/buffy coat aliquots, as well as partially completed shipping labels to send materials to NCRAD. Kit number labels, site and PTID labels, collection tube labels, and cryovial labels will all be provided by NCRAD. Details regarding the blood kits are found in this Manual of Procedures. Collection tube and cryovial labels will be

preprinted with study information specific to the type of sample being drawn. Ensure that all tubes are properly labeled during processing and at the time of shipment according to [Section 7.1](#).

6.1 NCRAD Specimen Collection Kit Contents

Collection kits contain the following (for each subject) and provide the necessary supplies to collect samples from a given subject. Do not replace or supplement any of the tubes or kit components provided with your own supplies unless you have received approval from the NCRAD Study team to do so. *Please store all kits at room temperature until use.*

BBBSR Kit

Quantity	BBBSR Kit Components
2	EDTA (purple-top) blood collection tube (10 ml)
1	15 ml conical polypropylene tube-individually wrapped
6	Cryovial (2.0 ml) with purple cap
1	Cryovial (2.0 ml) with blue cap
2	Cryovial (2.0 ml) with gray cap
2	Preprinted Collection Tube Labels
9	Preprinted Cryovial Label
3	Preprinted Kit Number Label
3	Label for handwritten Site and PTID
1	Cryovial box (holds up to 25 cryovials)
4	Disposable graduated transfer pipettes

BBBSR Supplemental Supply Kit

Quantity	BBBSR Supplemental Supply Kit Components
10	EDTA (purple-top) blood collection tube (10 ml)
5	15 ml conical polypropylene tube-individually wrapped
30	Cryovial (2.0 ml) with purple cap
5	Cryovial (2.0 ml) with blue cap
10	Cryovial (2.0 ml) with gray cap
15	Label for handwritten Site and PTID
5	Cryovial box (holds up to 25 cryovials)
10	Disposable graduated transfer pipettes

NCRAD Frozen Shipping Supply Kit

Quantity	Frozen Shipping Kit Components for Blood-Based Biomarkers
8	Plastic Biohazard bag with absorbent sheet (small)
1	UPS return airbill and pouch
1	Shipping box/Styrofoam container
1	Warning label packet with dry ice sticker

Individual Supplies

Quantities	Items Available upon request within the NCRAD kit module
By Request	Cryovial box (holds up to 25 cryovials)
By Request	Cryovial (2.0 ml) with purple cap
By Request	Cryovial (2.0 ml) with blue cap
By Request	Cryovial (2.0 ml) with gray cap
By Request	UPS return airbill
By Request	UPS Laboratory Pak
By Request	Shipping container for dry ice shipment (shipping and Styrofoam box)
By Request	Styrofoam shipping containers (11"x 9"x 8", 1 1/2" wall)
By Request	Plastic biohazard bag with absorbent sheet (small)
By Request	Disposable graduated transfer pipette
By Request	EDTA (Purple-Top) Blood Collection Tube (10 ml)
By Request	Warning label packet
By Request	UN3373 label
By Request	Biohazard label
By Request	Dry ice shipping label
By Request	Fine Point Permanent Markers
By Request	Site and PTID Labels

6.2 Kit Supply to Study Sites

Each site will be responsible for ordering and maintaining a steady supply of kits from NCRAD. We advise sites to keep a supply of each kit type available. Be sure to check your supplies and order additional materials before you run out or supplies expire so you are prepared for study visits. Please go to: <http://kits.iu.edu/BBBSR> to request additional kits and follow the prompts to request the desired supplies.

Please allow **TWO weeks** for kit orders to be processed and delivered.

7.0 BLOOD COLLECTION AND PROCESSING PROCEDURES

7.1 Labeling Samples


*****Important Note*****

In order to ensure the highest quality samples are collected, it is essential to follow the specific collection and shipment procedures detailed in the following pages. Please read the following instructions first before collecting any specimens. Have all your supplies and equipment out and prepared prior to drawing blood.

****Label Type Summary****

1. **Kit Number Label**
2. **Site and PTID Label**
3. **Collection Tube Label**
4. **Cryovial Label**

Kit Number



123456


Kit Number Labels tie together all specimens collected from one subject at one visit. They should be placed on each cryobox, and in the designated location on the Blood and CSF Sample and Shipment Notification Forms (Blood and CSF kits will have different Kit Numbers).

Site ID: _____

PTID: _____

Site and PTID Labels are used to document the individual's unique Site and PTID. Place one label on each blood collection tube.

0001234567



BBBSR

PLASMA

Kit #: 123456

Place one **Collection Tube Label** on each blood collection tube.

BBBSR

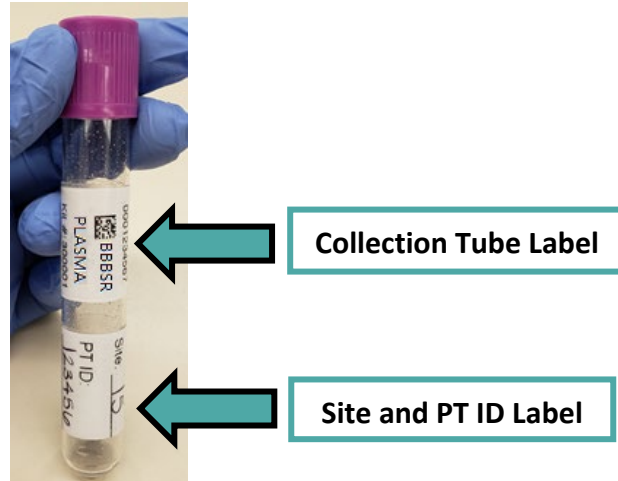
PLASMA

Kit # 123456

Place one **Cryovial Label** on each cryovial.

****Important Note****

Each collection tube will contain two labels: the collection tube label and the Site and PTID Label. Be sure to place labels in the same configuration consistently among tubes, with the barcoded label near the top of the tube and the handwritten Site and PTID label.

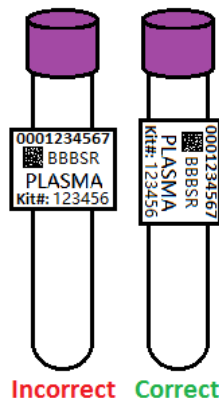


Labeled EDTA (Purple-Top) Blood Collection Tube

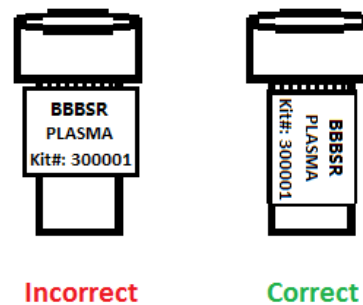
In order to ensure the label adheres properly and remains on the tube, please follow these instructions:

- Place cryovial labels on **ALL** cryovials **BEFORE** sample collection. This should help to ensure the label properly adheres to the tube before exposure to moisture or different temperatures.
- Using a fine point permanent marker, fill-in and place the site and PTID labels on the EDTA (purple-top) tubes **BEFORE** sample collection. These labels are placed on collection tubes in addition to the collection tube label.
- The collection tube labels contain a 2D barcode on the left hand side of the label. Place this barcode toward the tube cap.
- Place label **horizontally** on the tube (wrapped around sideways if the tube is upright).

Take a moment to ensure the label is **completely adhered** to each tube. It may be helpful to roll the tube between your fingers after applying the label.



Collection Tube Label Diagram



Cryovial Label Diagram

7.2 Whole Blood Collection with 10 ml EDTA (Purple-Top) Tube for Plasma and Buffy Coat

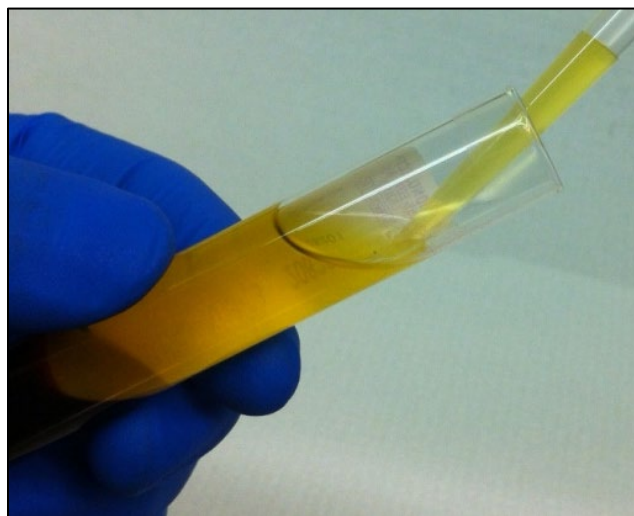
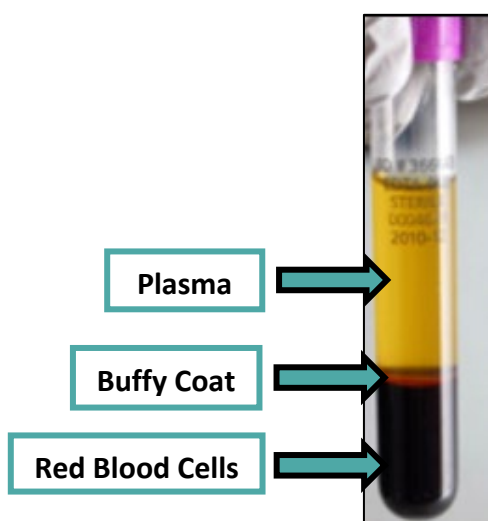
1. Store empty EDTA tubes at room temperature, 64°F - 77°F (18 °C – 25 °C) before use.
2. Set centrifuge to 4°C to pre-chill before use.
3. Place completed site and PTID Label and preprinted **PLASMA** collection tube label on the purple-top EDTA tube. Place preprinted **PLASMA** cryovial labels on the six 2 ml cryovial tubes with purple caps and one 2 ml cryovial tube with blue cap (if necessary, for residual). Place preprinted **BUFFY COAT** cryovial label on the 2 ml cryovials with gray caps.
4. Using a blood collection set and a holder, collect blood into the **EDTA (Purple-Top) Blood Collection Tube (10 ml)** using your institution's recommended procedure for standard venipuncture technique.

The following techniques shall be used to prevent possible backflow:

- a. Place participant's arm in a downward position.
 - b. Hold tube in a vertical position, below the participant's arm during blood collection.
 - c. Release tourniquet as soon as blood starts to flow into tube.
 - d. Make sure tube additives do not touch stopper or end of the needle during venipuncture.
5. Allow at least 10 seconds for a complete blood draw to take place in each tube. **Ensure that the blood has stopped flowing into the tube before removing the tube from the holder.** The tube with its vacuum is designed to draw 10 ml of blood into the tube.
 - a. If complications arise during the blood draw, please note the difficulties on the 'Biological Sample and Shipment Notification Form'. Do not attempt to draw an additional EDTA tube at this time. Process blood obtained in existing EDTA tube.
 6. Immediately after blood collection, gently invert/mix (180 degree turns) the EDTA tube 8-10 times.
 7. Immediately after inverting the EDTA tube, place it on wet ice until centrifugation begins.
 8. Centrifuge balanced tubes for 10 minutes at 2000 x g at 4°C. **It is critical that the tubes be centrifuged at the appropriate speed and temperature to**

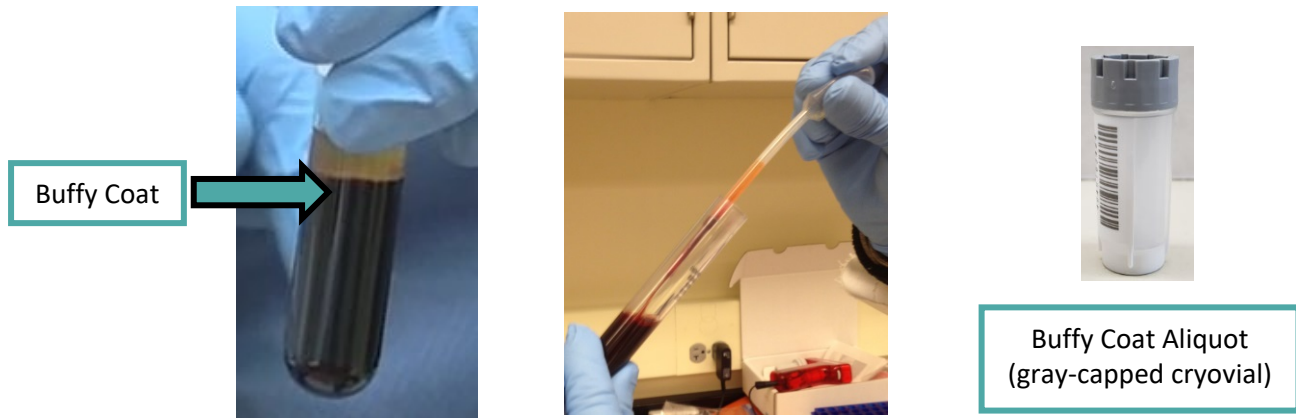
ensure proper plasma separation (see worksheet in [Appendix B](#) to calculate RPM.)

- a. Equivalent rpm for spin at 2000 x g
 - b. While centrifuging, remember to record all times, temperatures and spin rates on the Biological Sample and Shipment Notification Form.
 - c. Record original volume drawn for each tube in spaces provided on the Biological Sample Shipment and Notification Form.
 - d. Plasma samples need to be spun, aliquoted, and placed in the freezer within 1 hour from the time of collection.
 - e. Record time aliquoted on the Biological Sample Shipment and Notification Form.
9. Remove the plasma by tilting the tube and placing the pipette tip along the lower side of the wall being careful not to agitate the packed red blood cells at the bottom of the collection tube.
 10. Each EDTA tube should yield, on average, 4-5 ml of plasma. Transfer plasma from both EDTA tubes into the 15 ml conical tube and gently invert 3 times. Aliquot 1.5 ml plasma per cryovial. Be sure to only place **plasma** in cryovials with purple caps and labeled with **PLASMA** labels. Place residual plasma (<1.5 ml) in the blue-capped cryovial. **If a residual aliquot (<1.5 ml) is created, document the specimen number and volume on the Biological Sample and Shipment Notification Form.**



NOTE: When pipetting plasma from the EDTA tube into the 15 ml conical tube, be very careful to pipette the plasma top layer only, leaving the buffy coat and the red blood cell layers untouched.

11. Place the labeled cryovials in the 25 cell cryobox and place on dry ice.
Transfer to -80°C Freezer when possible. Store all samples at **-80°C until shipped** to NCRAD on dry ice. Record time aliquots placed in freezer and storage temperature of freezer on Biological Sample Shipment and Notification Form.
12. After plasma has been removed from the EDTA (Purple-Top) Blood Collection Tubes (10 ml), aliquot the buffy coat layer (in the top layer of cells, the buffy coat is mixed with RBCs-see figure) from one EDTA tube into a labeled, gray-capped cryovial using a micropipette. The buffy coat aliquot is expected to have a reddish color from the RBCs. Be sure to only place the buffy coat from one EDTA tube into each cryovial. Repeat this step for the second EDTA tube, placing this buffy coat into the second gray-capped cryovial.

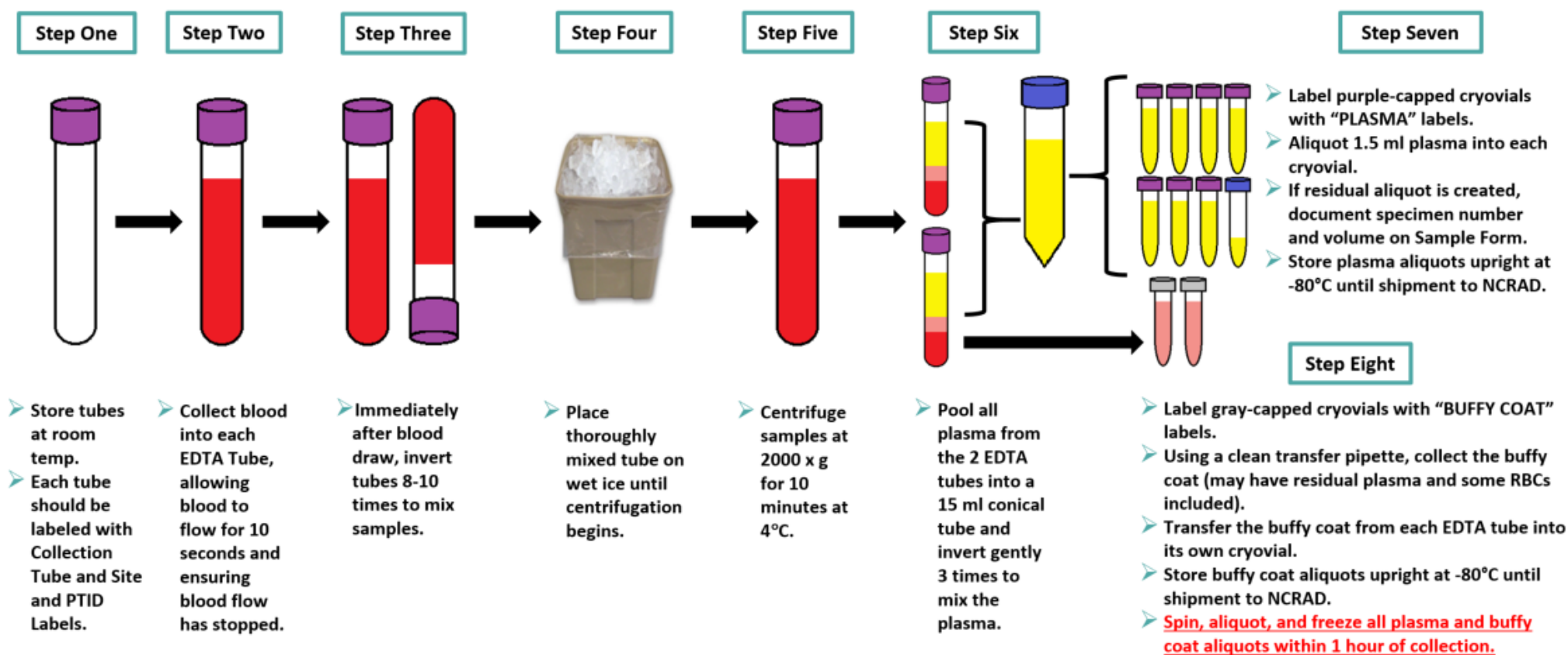


13. Dispose of collection tube with red blood cell pellet according to your site's guidelines for disposing of biomedical waste.
14. Record the specimen number and volumes of the EDTA tubes and corresponding buffy coat samples on the Biological Sample Shipment and Notification Form.
15. Place the labeled cryovials in the 25 cell cryobox and place on dry ice.
Transfer to -80°C Freezer when possible. Store all samples at **-80°C until shipped** to NCRAD on dry ice. Record time aliquots placed in freezer and storage temperature of freezer on Biological Sample and Shipment Notification Form.



Plasma Aliquots (up to 7 possible) and Buffy Coats (2)

Plasma and Buffy Coat Preparation EDTA Purple-Top Tube (10 ml)



8.0 PACKAGING & SHIPPING INSTRUCTIONS

ALL study personnel responsible for shipping should be certified in biospecimen shipping. If you have difficulty finding biospecimen shipping training, please notify a NCRAD coordinator.

In addition to tracking and reconciliation of samples, the condition and amount of samples received are tracked by NCRAD for each sample type. Investigators and clinical coordinators for each project are responsible to ensure the requested amounts of each fluid are collected to the best of their ability and that frozen samples are packed with sufficient amounts of dry ice to avoid thawing in the shipment process.

8.1 Frozen Shipping Instructions

The most important issue for shipping is to maintain the temperature of the samples. The frozen samples must never thaw; not even the outside of the tubes should be allowed to defrost. This is best accomplished by making sure the Styrofoam container is filled completely with pelleted dry ice.

*****Important Note*****

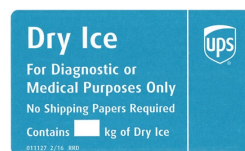
FROZEN SAMPLES MUST BE SHIPPED MONDAY-WEDNESDAY ONLY!

Specimens being shipped to NCRAD should be considered as Category B UN3373 specimens and as such must be tripled packaged and compliant with IATA Packing Instructions 650. *See the Latest Edition of the IATA Regulations for complete documentation.*

Triple packaging consists of a primary receptacle(s), a secondary packaging, and a rigid outer packaging. The primary receptacles must be packed in secondary packaging in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents into the secondary packaging. Secondary packaging must be secured in outer packaging with suitable cushioning material. Any leakage of the contents must not compromise the integrity of the cushioning material or of the outer packaging.

*** Packing and Labeling Guidelines ***

- The primary receptacle (cryovial) must be leak proof and must not contain more than 1L total.
- The secondary packaging (biohazard bag) must be leak proof and if multiple blood tubes are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent direct contact with adjacent blood tubes.
- Absorbent material must be placed between the primary receptacle and the secondary packaging. The absorbent material should be of sufficient quantity in order to absorb the entire contents of the specimens being shipped. Examples of absorbent material are paper towels, absorbent pads, cotton balls, or cellulose wadding.
- A shipping manifest of specimens being shipped must be included between the secondary and outer packaging.
- The outer shipping container must display the following labels:
 - ✓ Sender's name and address
 - ✓ Recipient's name and address
 - ✓ Responsible Person
 - ✓ The words "Biological Substance, Category B"
 - ✓ UN3373
 - ✓ UPS Dry Ice label and net weight of dry ice contained



8.1.1 NCRAD Packaging and Shipment Instructions – Frozen Shipments

1. Contact UPS to confirm service is available and schedule package to be picked up.
2. Notify NCRAD of shipment by emailing NCRAD coordinators at alzstudy@iu.edu. Attach the following to the email:
 - a. Completed Sample Form ([Appendix C](#)) to the email notification (email NCRAD coordinator prior to shipment to receive sample form).
 - b. If email is unavailable please call NCRAD at 1-800-526-2839 and do not ship until you've contacted and notified NCRAD coordinators about the shipment in advance.
3. Place the cryovial boxes containing frozen samples into a biohazard bag.

4. As the cryovial box is placed in the plastic biohazard bag, do NOT remove the absorbent material found in the bag. Seal according to the instructions on the bag.



5. Place approximately 2-3 inches of dry ice in the bottom of the Styrofoam shipping container.
6. Place the biohazard bags into the provided Styrofoam-lined shipping container on top of the dry ice. Please ensure that cryovial boxes are placed so the cryovials are upright in the shipping container.
7. Fully cover the biohazard bags containing the cryovial boxes tubes with approximately 2 inches of dry ice.
8. After the samples have been placed into the shipping container, fill the inner Styrofoam with plenty of dry ice pellets to ensure the frozen state of the specimens during transit.
9. Replace the lid on the Styrofoam carton. Place the completed Blood Sample and Shipment Notification Form in the package on top of the Styrofoam lid for each patient specimen, and close and seal the outer cardboard shipping carton with packing tape.
10. Complete the UPS Dry Ice Label with the following information:
 - a. Net weight of dry ice in kg (must match amount on the airbill)

- b. Do not cover any part of this label with other stickers, including preprinted address labels.

11. Apply all provided warning labels and the preprinted UPS return airbill to the outside of package, taking care not to overlap labels.

*****Important Note*****

Complete the required fields on the UPS Dry Ice label or UPS may reject or return your package.

12. Hold packaged samples in -80°C freezer until time of UPS pick-up/drop-off.



13. Specimens should be sent to the below address via UPS Next Day Air. Frozen shipments should be sent Monday through Wednesday to avoid shipping delays on Thursday or Friday.

BBBSR at NCRAD
Indiana University School of Medicine
351 W. 10th St. TK-342
Indianapolis, IN 46202

14. Use UPS tracking to ensure the delivery occurs as scheduled and is received by NCRAD. Please notify NCRAD by email (alzstudy@iu.edu) that a shipment has been sent and include the UPS tracking number in your email.

9.0 DATA QUERIES AND RECONCILIATION

Sample and Shipment Notification forms must be completed on the day that samples are collected (for ambient samples), or before sample shipment (for batch frozen samples) because they include information that will be used to reconcile sample collection and receipt, as well as information essential to future analyses.

NCRAD will collaborate with the data team at NACC to reconcile information captured in the NACC database compared to samples received and logged at NCRAD. Additional discrepancies may be sent directly to the Center staff to reconcile.



Data queries or discrepancies with samples shipped and received at NCRAD may result from:

- Incorrect samples collected and shipped
- Damaged or incorrectly prepared samples
- Unlabeled samples, samples labeled with incomplete information, or mislabeled samples
- Discrepant information documented on the Blood Sample and Shipment Notification Form and logged at NCRAD compared to information entered into the NACC database.

10.0 APPENDICES

[Appendix A: GUID Demographics Form](#)

[Appendix B: Rate of Centrifuge Worksheet](#)

[Appendix C: Blood Sample and Shipment Notification Form](#)

Appendix A: GUID Demographics Form

Please be certain to collect the following demographic information to generate a Global Unique Identifier. **Do NOT** return this information to NCRAD. Only send the GUID to NCRAD.

1. Complete legal given (first) name of subject at birth: _____
2. Complete additional (middle) name or names at birth: _____
3. Complete legal family (last) name of subject at birth: _____
4. Suffix: _____
5. Date of Birth: _____
6. Name of city/municipality in which subject was born: _____
7. Country of birth: _____

Appendix B: Rate of Centrifuge Worksheet

Please complete and return this form by fax or email to the NCRAD Project Manager if you have any questions regarding sample processing. The correct RPM will be sent back to you.

Submitter Information

Name:

Site:

Submitter e-mail:

Centrifuge Information

Please answer the following questions about your centrifuge.

Centrifuge Type

Fixed Angle Rotor: ☐

Swing Bucket Rotor: ☐

Radius of Rotation (mm):

Determine the centrifuge's radius of rotation (in mm) by measuring distance from the center of the centrifuge spindle to the bottom of the device when inserted into the rotor (if measuring a swing bucket rotor, measure to the middle of the bucket).

Calculating RPM from G-Force:

$$RCF = \left(\frac{RPM}{1,000} \right)^2 \times r \times 1.118 \Rightarrow RPM = \sqrt{\frac{RCF}{r \times 1.118}} \times 1,000$$

RCF = Relative Centrifugal Force (G-Force)

RPM = Rotational Speed (revolutions per minute)

R= Centrifugal radius in mm = distance from the center of the turning axis to the bottom of centrifuge

Comments:

Please send this form to NCRAD Study Coordinator

317-321-2003 (Fax)

alzstudy@iu.edu

Appendix C: Blood Sample and Shipment Notification Form

Please email or fax the form on or prior to the date of shipment.

To: Kelley Faber Email: alzstudy@iu.edu Fax: 317-321-2003 Phone: 1-800-526-2839

From: _____ UPS tracking #: _____

Phone: _____ Email: _____

Study: ☐ ADCFB ☐ BIFB ☐ BBBSR Sex: ☐ M ☐ F Year of Birth: _____

PT ID: _____

GUID: _____

KIT BARCODE

BIFB ID: BIFB- _____ ☐ N/A

Blood Collection:

Date of Draw: _____ [MMDDYY]	Time of Draw: _____ [HHMM]
Date subject last ate: _____ [MMDDYY]	Time subject last ate: _____ [HHMM]

Blood Processing:

Plasma & Buffy Coat (EDTA Tube)

EDTA #1 specimen number (Last four digits): _____	Original blood volume of EDTA #1: _____ mL
EDTA #2 specimen number (Last four digits): _____	Original blood volume of EDTA #2: _____ mL
Time spin started: _____ [HHMM]	Duration of centrifuge: _____ mins
Temp of centrifuge: _____ °C	Rate of centrifuge: _____ x g
Time aliquoted: _____ [HHMM]	Number of 1.5 mL plasma aliquots created (purple cap, up to 6): _____
If applicable, volume of residual plasma aliquot (less than 1.5 mL in blue cap): _____ mL <input type="checkbox"/> N/A	If applicable, specimen number of residual plasma aliquot (Last four digits): _____ <input type="checkbox"/> N/A
Buffy coat #1 specimen number (Last four digits): _____	Buffy coat #1 volume: _____ mL
Buffy coat #2 specimen number (Last four digits): _____	Buffy coat #2 volume: _____ mL
Time aliquots placed in freezer: _____ [HHMM]	Storage temperature of freezer: _____ °C

Notes: _____