



Biospecimen Exchange for Neurological Disorders

NINDS Udall Centers of Excellence for  
Parkinson's Disease Research:  
UAB

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BIOSPECIMEN COLLECTION & PROCESSING

# Overview

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1. Specimen uniformity and quality
2. Site Equipment
3. Procedures
  - Kit Contents and Ordering
  - Sample Labelling
  - Sample Collection and Processing
  - Shipping Samples
  - Non-Conformance
4. Contact Information

# Specimen Uniformity and Quality

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GENERAL REMINDERS

# Specimen Standardization and Quality

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Most biomarkers are sensitive to *time* and *temperature*

- Standardization of processing across sites is key
- Specimens must be processed within 2 hours of collection
- Reference the *BioSEND Biomarker Specimen Collection, Processing, and Shipment Manual* as needed
- Do not replace or supplement any kit components without first receiving approval from BioSEND/NINDS

Questions? Email [biosend@iu.edu](mailto:biosend@iu.edu)

# Site Consumables and Equipment

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*Sites will need to supply the following items:*

- Gloves
- Alcohol wipes
- Butterfly needles
- Tourniquet
- Gauze pads
- Bandages
- Microcentrifuge tube rack
- Sharps bin and lid
- Crushed ice
- Pipettes and pipette tips
- Centrifuge capable of maintaining 4°C
- -80°C Freezer
- Dry ice

# Procedures

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MAINTAINING SPECIMEN UNIFORMITY AND QUALITY

# Biospecimen Collection Protocol

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	BL	12M	24M	36M	48M	60M	72M	84M
Buffy coat (2 aliquots)	X	X	X	X	X	X	X	X
Plasma (6 x 1ml)	X	X	X	X	X	X	X	X
CSF (10 x 1ml)	X							

# Kit Contents and Ordering

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- All sites will be sent a Supplemental Kit with their first kit shipment
  - Contains extra blood collection tubes, processing supplies, and LP needles
  - May be used to replace items in study visit kits
- Study Visit Kits should be ordered as soon as visits are planned
  - Contains collection, processing, and shipping supplies specific to each visit
  - Includes barcoded labels
  - The supplies/labels in each study visit kit are intended for that visit only



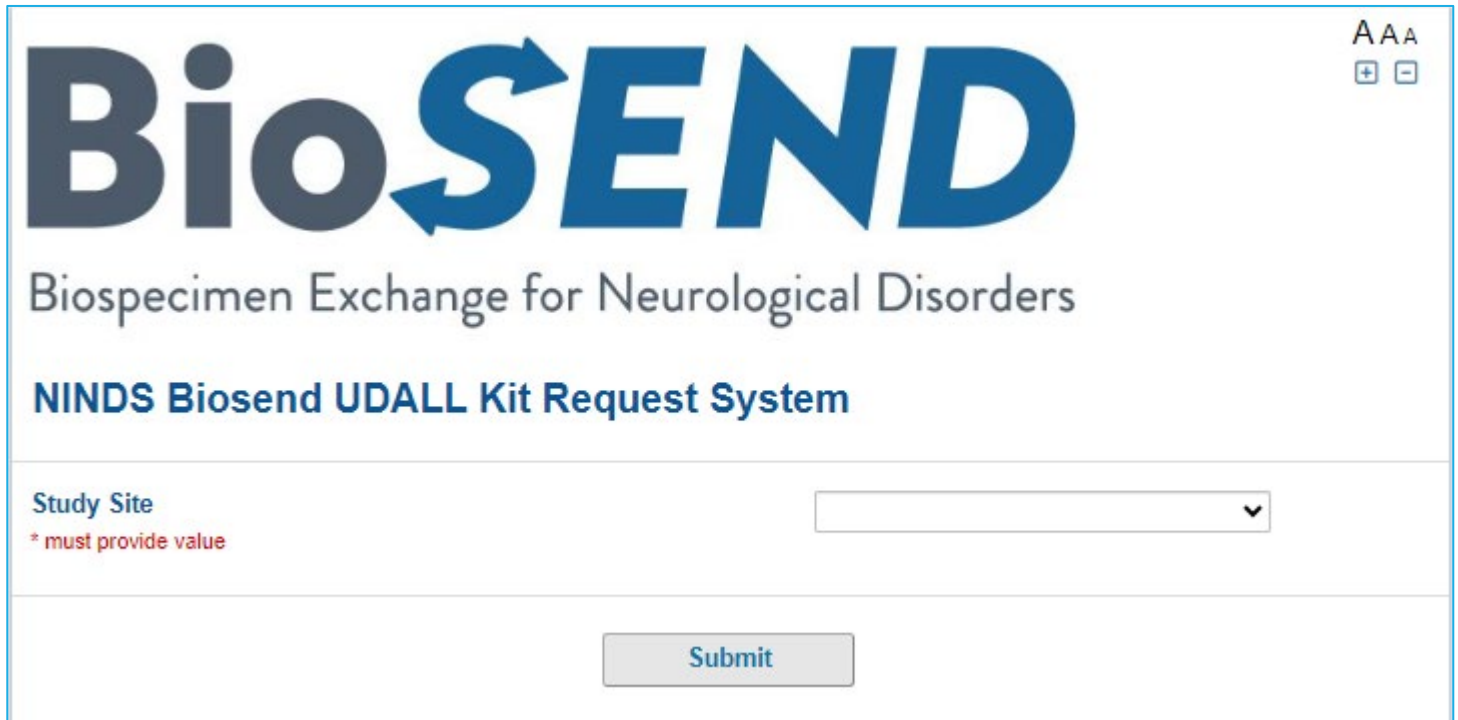
# Kit Contents and Ordering – REDCap Survey

<http://kits.iu.edu/biosend/udall>

Order kits online through the Kit Request Module for:

- Blood & CSF Kits
- Extra Supplies

Please provide as much notice as possible when ordering kits and/or supplies.



The screenshot shows the 'Biosend' logo in large blue letters, with 'Bio' in a standard font and 'SEND' in a bold, italicized font. Below the logo is the text 'Biospecimen Exchange for Neurological Disorders' and 'NINDS Biosend UDALL Kit Request System'. In the top right corner, there are 'AAA' text and zoom in/out icons. A form field labeled 'Study Site' is present, with a red asterisk and the text '\* must provide value' below it. A 'Submit' button is located at the bottom right of the form area.

**BioSEND**  
Biospecimen Exchange for Neurological Disorders  
**NINDS Biosend UDALL Kit Request System**

Study Site  ▼  
\* must provide value

Submit

# Kit Contents and Ordering: Confirm Site Info

UDALL Kit Request Module

<b>Study Site</b> <small>* must provide value</small>	Indiana University	Select your site from the drop-down list
Indiana University School of Medicine Carolyn Dunifon Dept. of Medical & Molecular Genetics 351 West 10th Street, TK-318 Indianapolis, IN 46202-3002 (317) 274-5751 cdunifon@iu.edu		
Verify contact information and update if needed		
<b>Is the contact name above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input checked="" type="radio"/> No	reset
<b>New Contact Name</b> <small>* must provide value</small>	Claire Wegel	
<b>Is the shipping address above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No	reset
<b>Is the e-mail address above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No	reset
<b>Is the phone number above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No	reset

# Kit Contents and Ordering: Kit Types

## UDALL Kit Request Module

- Kits are not specific to a subject or time point. After collection, sites will indicate the subject and time point to which BioSEND should link the samples.
- CSF processing kits are ordered independently of blood kits, as CSF is not required
- All specimen labels (including CSF) will be included in the Blood Collection Kit. If CSF is not collected at a visit, you may discard these extra labels

**Kit Type**  
\*\*Please allow two weeks for shipment\*\*  
\* must provide value

☒ Blood Collection Kit

☐ CSF Visit Kit

☐ Supplemental Kit

☐ Extra Supplies

Please specify in comments if you need kits before the standard two week shipment time.

**Blood Collection Kit Quantity**  
\* must provide value

**Comments**

Expand

# Kit Contents and Ordering: Kit Breakdown

UDALL Kit Request Module

<b>Comments</b>	
<a href="#">Expand</a>	
<b>Each Baseline Collection Kit</b>	
<b>Blood Collection Kit Contents:</b> 2 - Lavender-top EDTA tube (10 ml), glass 10 - Siliconized cryovial (2ml)	
<ul style="list-style-type: none"><li>1 - Cryobox, 25-slot</li><li>1 - Shipping label packet (Dry Ice, Fragile, UN3373)</li><li>1 - Airway bill envelope</li><li>1 - Shipping container for dry ice shipments</li><li>1 - Biohazard bag with absorbent sheet</li><li>2 - Individual tube bubble pouch</li><li>30 - Cryohold specimen/case labels--ST labels</li></ul>	



Kit contents of selected kit will appear at the bottom of the page

# Kit Contents and Ordering: Blood Kit

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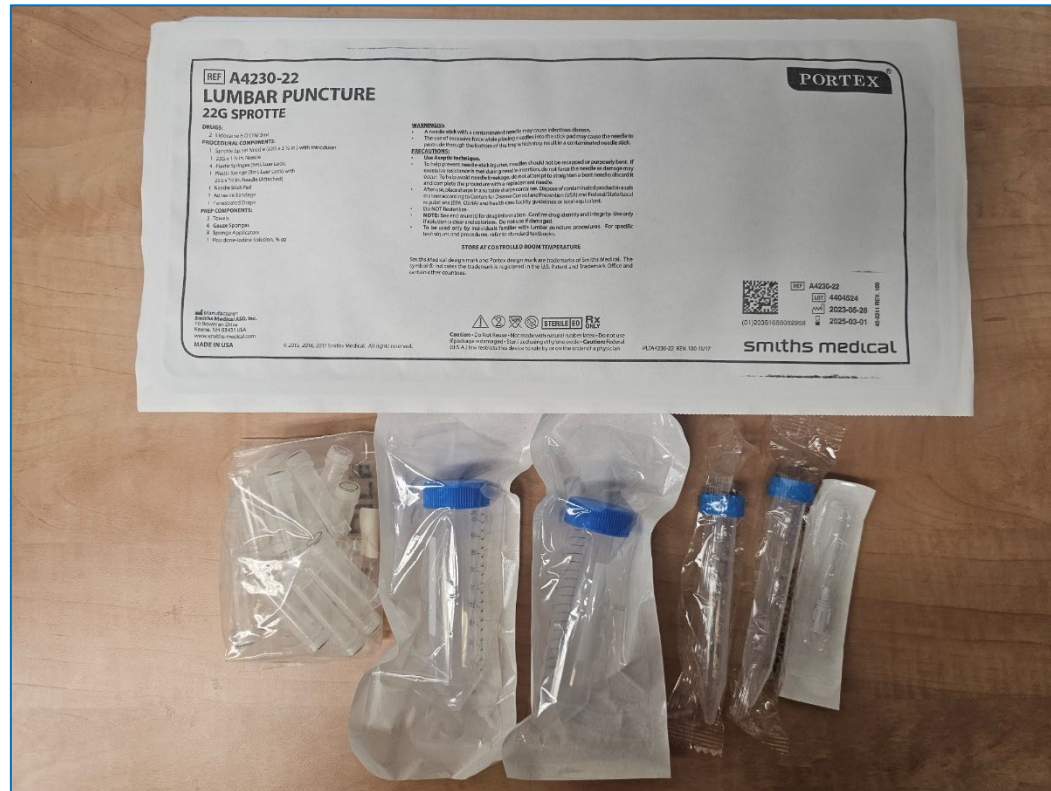




# Kit Contents and Ordering: CSF Kits

CSF:

LP Tray:



# Collection Volumes

Total blood and CSF volumes

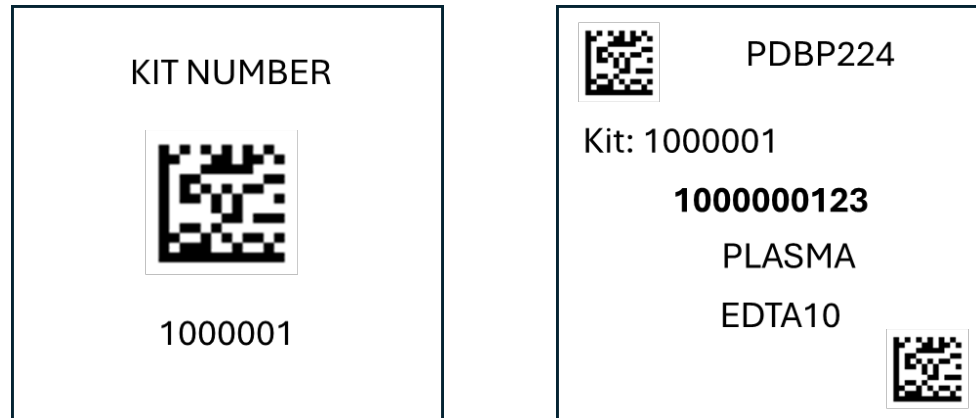
Sample Type	Amount
Whole Blood for Plasma and Buffy Coat	20 ml
Cerebrospinal Fluid	10 ml

# Sample Labelling: Example Labels

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## Labels are provided by Indiana University

- Please check that all samples are properly labelled to ensure correct identification by IU
- If do not have enough labels to complete a visit, please contact IU *immediately*
- Labelling the tubes during processing prevents sample mix-ups



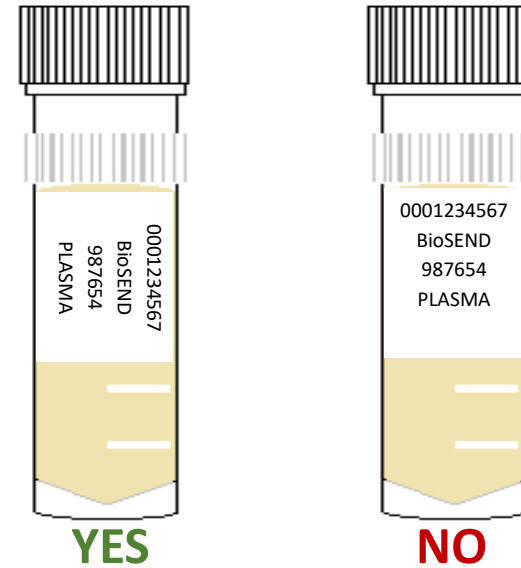


# Sample Labelling: Label Placement

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Please...

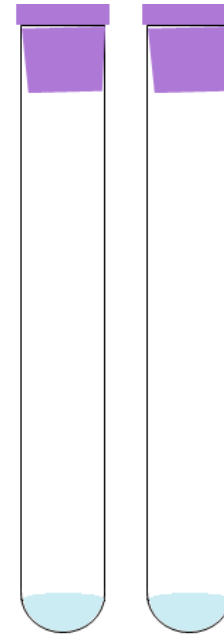
- Label all collection and aliquot tubes before cooling, collecting, processing, or freezing samples
- Label only 1 subject's tubes at a time to avoid mix-ups
- Wrap the label around the tube horizontally - label position is important for all tube types
- Make sure the label is completely adhered by rolling between your fingers



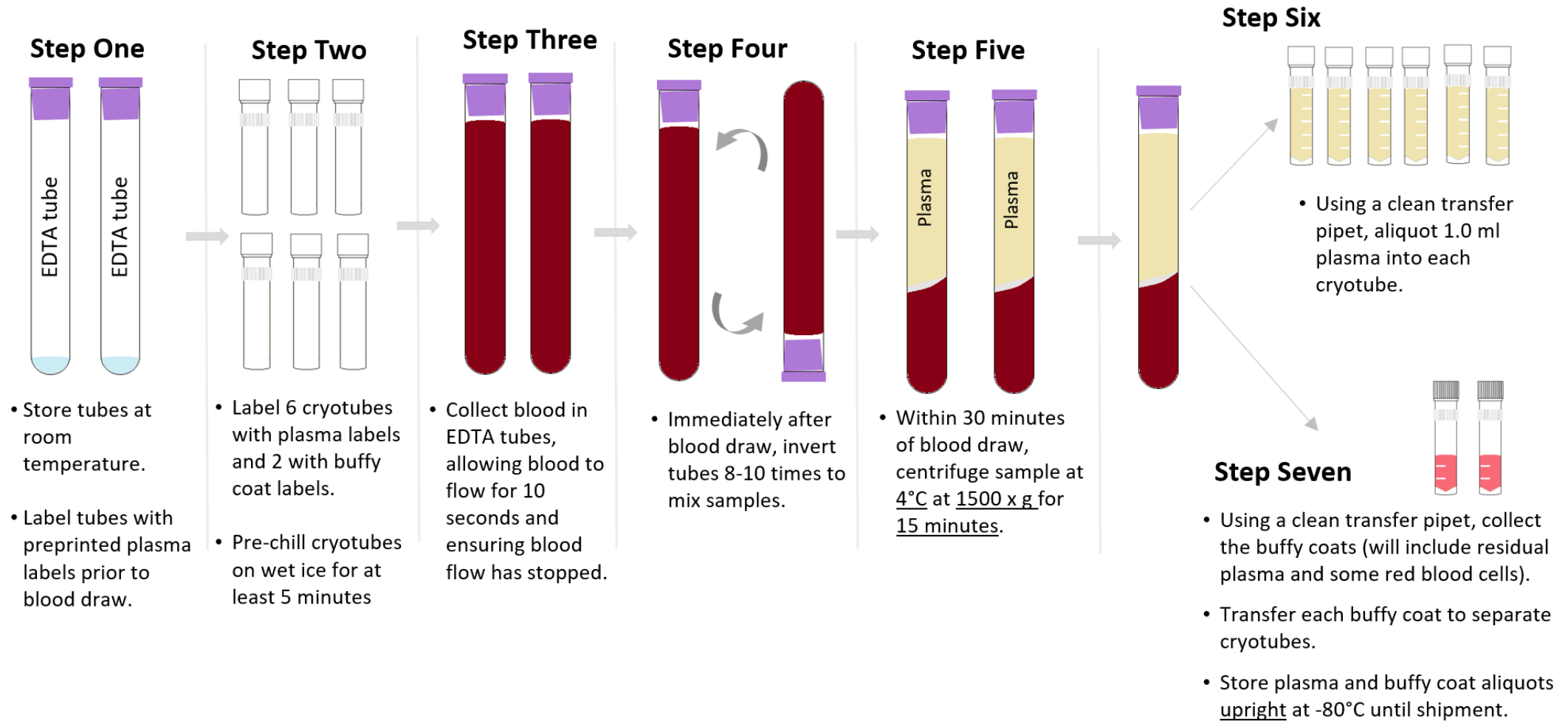
# Sample Collection and Processing

EDTA for plasma and buffy coat

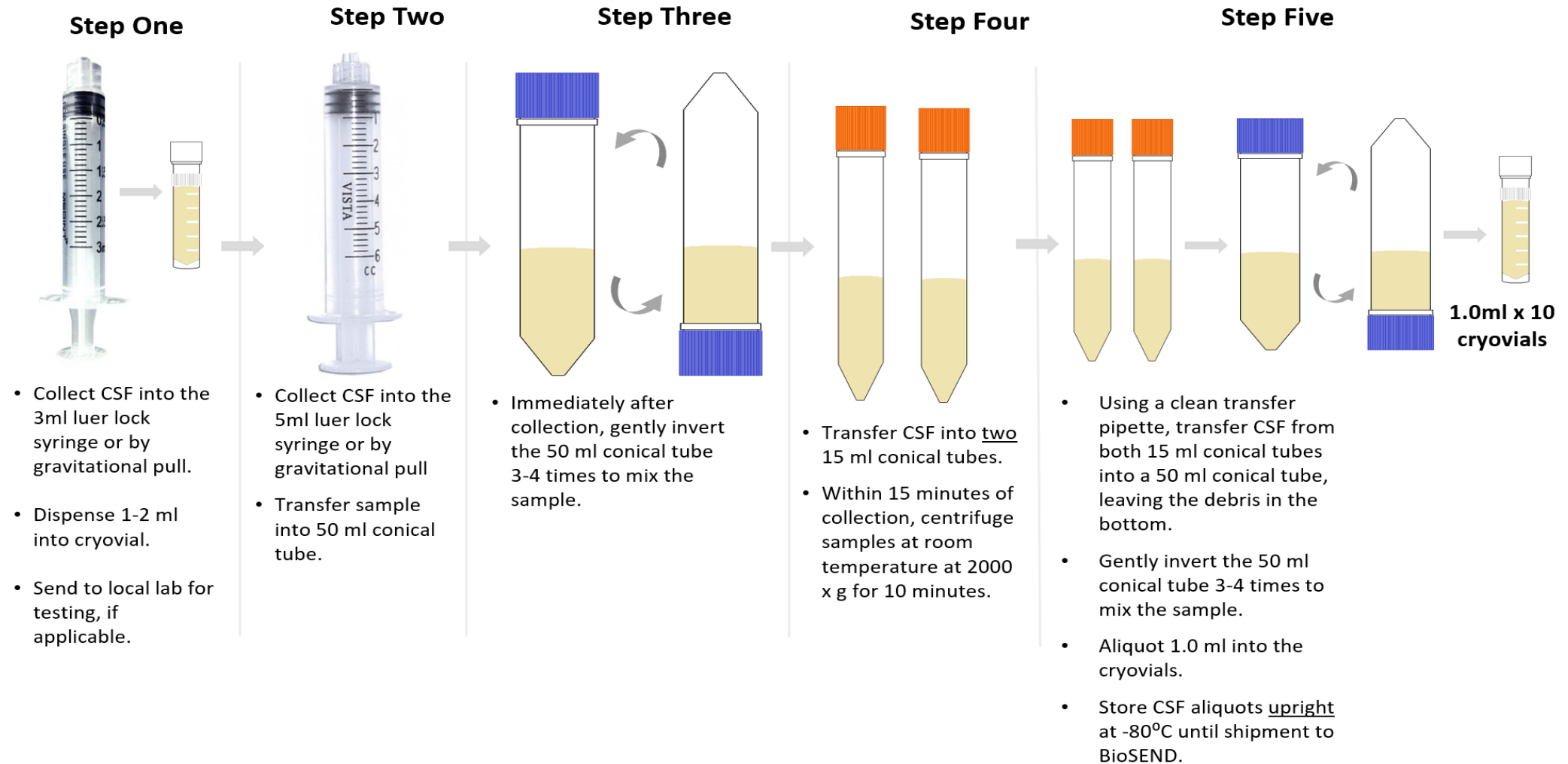
10ml EDTA



# Sample Collection and Processing: Plasma & Buffy Coat



# Sample Collection and Processing: CSF

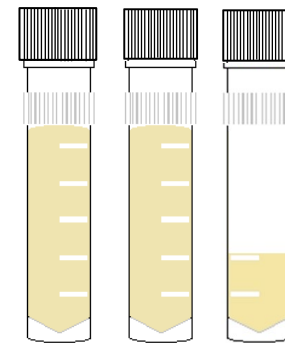


# Sample Collection and Processing: Aliquots

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Filling biomarker plasma and CSF aliquots:

- Fill as many cryovials as possible to 1.0 ml (plasma& CSF)
- Over-filled vials may burst in freezer!
- Ship ALL material to IU, even if final vial is less than standard volume



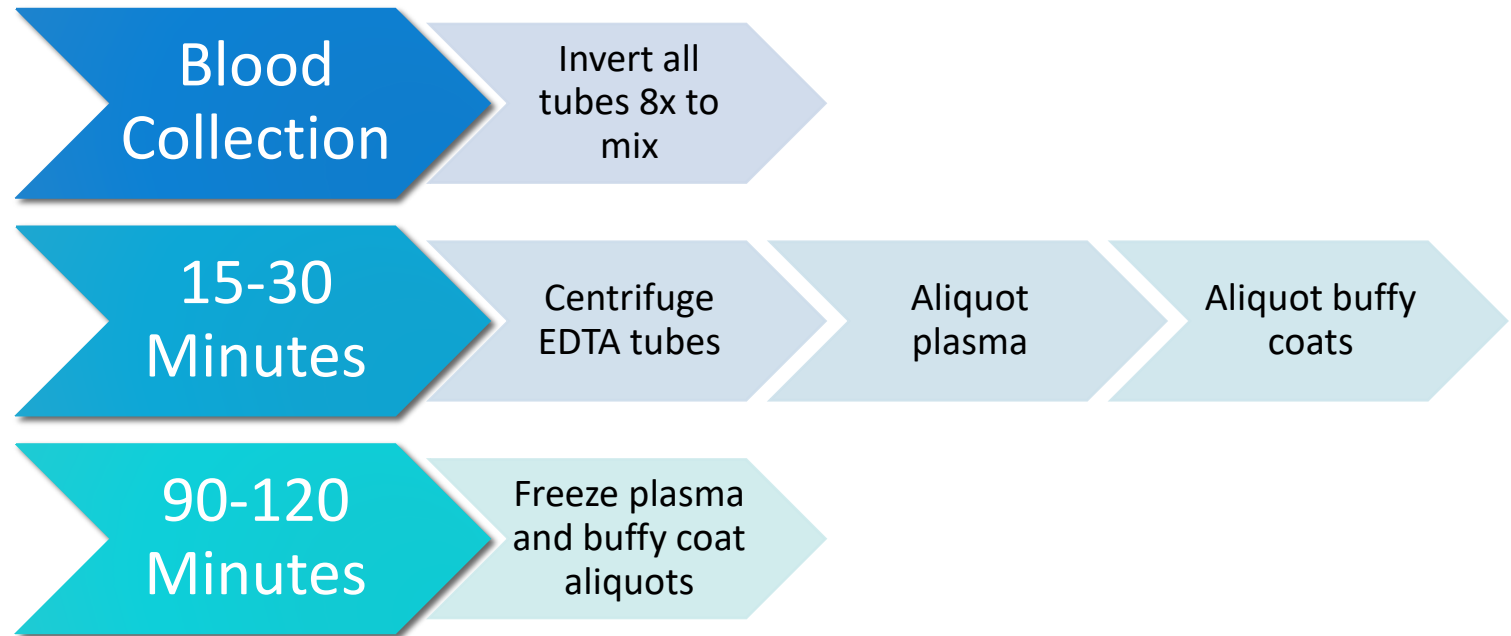
YES



NO

# Sample Collection and Processing: Timeline

Timeline for blood processing



# Sample Collection and Processing: Issue #1

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## Troubleshooting Blood Collection

### Issue #1: Tube with little/no vacuum

- Always check expiration date on the tube before beginning blood draw and discard expired tubes
- Store tubes at “room temperature” – extreme temperature can affect vacuum
- Keep extra vacutainer tubes from supplemental kit nearby during blood draw to replace “bad” tubes
- If this is a frequent occurrence, report tube type and lot number to IU.

# Sample Collection and Processing: Issue #2

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## Troubleshooting Blood Collection

### Issue #2: Hemolyzed serum and/or plasma caused by incorrect collection

Cause: Blood Collection Methods	Corrective Action
Improper venipuncture site	Draw from median cubital, basilic, and cephalic veins from antecubital region of arm
Prolonged tourniquet use	Tourniquet should be released after no more than 1 min, excessive fist clenching should be avoided
Not allowing alcohol to dry on skin before venipuncture	Without touching, allow the venipuncture site to air dry
Use of too large/small bore needle resulting in excess force applied to blood	Avoid using too small/large needle. Needle size dependent on the subject's physical characteristics & amount of blood to be drawn. Most commonly used sizes are 19 – 23.
Pulling/pushing plunger too fast while drawing/transferring blood	Avoid drawing the syringe plunger too forcefully when collecting blood
Ensure all blood collection assemblies are fitted securely, to avoid frothing	

For more information, visit: [http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk\\_Jan2004\\_VS7167.pdf](http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk_Jan2004_VS7167.pdf)



# Sample Collection and Processing: Issue #2 continued

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## Troubleshooting Blood Collection

### Issue #2: Hemolyzed serum and/or plasma caused by incorrect processing

Cause: Sample Processing Methods	Corrective Actions
Vigorous mixing/shaking	Gently invert blood collection tube when mixing additive with specimen, follow guidelines in Biologics Manual regarding number of times to invert each type of tube
Not allowing serum to clot for recommended time	Serum tubes without clot activator should be allowed to clot for 60 min in a vertical position
Exposure to excessive heat or cold	Keep samples at ambient temperature until processing
Prolonged contact of serum/plasma with cells	Do not store uncentrifuged samples beyond recommended time

For more information, visit: [http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk\\_Jan2004\\_VS7167.pdf](http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk_Jan2004_VS7167.pdf)

# Sample Collection and Processing Form

Direct link:

<https://redcap.link/UDALLUABSsampleForm>

First part captures basic subject and visit information

Returning?

AAA  
+ -

# BioSEND

## Biospecimen Exchange for Neurological Disorders

Please verify/update the information below. When you click the "Submit" button below, a PDF copy of the Sample Record and Shipment Notification Form will be emailed to you.

Please print a copy of that document and **include it in the shipping container.**

### BioSEND UDALL UAB Study

Study Site	<input type="text"/>
Email address of staff member completing this form	<input type="text"/>
<i>Note: A copy of the completed sample form and the shipping manifest will be sent to this address.</i>	
GUID:	<input type="text"/>
Sex (used for DNA quality control)	<input type="text"/>
Visit	<input type="text"/>
IU Kit Number	<input type="text"/>







6 characters remaining

# Sample Collection and Processing Form

Direct link:

<https://redcap.link/UDALLUABSsampleForm>

Second part captures collection information

Date of venipuncture blood collection	<input type="text"/>  Today M-D-Y
Time of venipuncture blood collection	<input type="text"/>  Now H:M Use 24 Hour clock
Date participant last ate	<input type="text"/>  Today M-D-Y
Time participant last ate	<input type="text"/>  Now H:M
<b>PLASMA EDTA</b>	
Number of PLASMA EDTA aliquots shipped:	<input type="text"/> Each aliquot should be 1.0 mL
Number of BUFFY COAT aliquots shipped:	<input type="text"/>
<b>CSF</b>	
Was CSF collected?	<div><div>Yes</div><div>No</div><div>reset</div></div>
Date of CSF collection	<input type="text"/>  Today M-D-Y
Time of CSF collection	<input type="text"/>  Now H:M Use 24 Hour clock
Number of CSF aliquots shipped:	<input type="text"/>
<b>NOTES</b>	
Please record any issues with collection/processing:	<div><div></div><div>Expand</div></div>

# Sample Collection and Processing Form

Direct link:

<https://redcap.link/UDALLUABSsampleForm>

PDF form of responses will be emailed to you. [Print a copy of the Frozen Shipping Manifest and include with shipment.](#)

## UDALL UAB Frozen Shipping Manifest

Page 1

Please verify/update the information below. When you click the "Submit" button below, a PDF copy of the Frozen Shipping Manifest will be emailed to you for Subject [subj\_id].

Please print a copy of that document and include it in the Kit #[kit\_num] shipping container.

Study Site:

☐ University of Alabama

GUID:

Visit:

- ☐ BL
- ☐ 12M
- ☐ 24M
- ☐ 36M
- ☐ 48M
- ☐ 60M
- ☐ 72M
- ☐ 84M

IU Kit Number:

Date of blood collection:

Date of CSF collection:

### PLASMA EDTA

Number of PLASMA EDTA aliquots shipped:

Number of BUFFY COAT aliquots shipped:

### CSF

Number of CSF aliquots shipped:

### Shipping Information - Please complete.

Frozen shipments should be sent Monday-Wednesday only. Please check for holiday closures prior to shipping. Contact us at biosend@iu.edu if you are unsure whether or not it is safe to ship.

# Shipping Frozen Samples: Tips

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## Packing and Shipping Frozen Samples

- Plasma, buffy coats and CSF all ship frozen
- Ship frozen samples on dry ice
- Frozen samples should be shipped **only** Monday through Wednesday
- Always fill carton to **top** with dry ice
- Do not pack shipment until the day of pickup



# Shipping Samples

## Packing and Shipping Frozen Samples

Class 9 Dry Ice Label should not be covered with other stickers and must be completed, or UPS will reject/return your package!

The image shows a Class 9 Dry Ice Label template. It features a large triangle with vertical bars inside, and a large '9' at the bottom. The label includes fields for shipper and consignee information, and a section for dry ice weight. Red arrows point to specific areas with labels: 'Net weight of dry ice in kg' points to the weight field, 'Your name & address' points to the shipper's name and address field, and 'IU information and address' points to the consignee's name and address field.

Shipper's Declaration not Required.

Dry Ice amount must be in kilograms.

Note: 2 lbs. = 1 kg.

Airwaybills / airbills must have the following:

1. Dry Ice; 9; UN 1845
2.  $\frac{\text{Number}}{\text{(Number pkgs)}} \times \frac{\text{wt}}{\text{(wt)}} \text{ Kg}$

Net weight of dry ice in kg

Dry Ice  kg.

Your name & address

Shipper's Name and Address

UN 1845

Consignee Name and Address

IU information and address

9

06426 1/01 RRD

# Shipping Samples: Frozen

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## Packing and Shipping Frozen Samples



Shipping Samples – UPS: <https://kits.iu.edu/UPS>

The screenshot shows the 'Shipping Form' for the Indiana University School of Medicine. The form is divided into two main sections: 'Ship From' and 'Shipment Information'. The 'Ship From' section contains fields for Code, Company, Contact, Address 1, Address 2, Address 3, City, State/Province, Postal Code, and Country/Territory. The 'Shipment Information' section contains fields for Study Group, Weight, Dry Ice Weight, and Description of Return. A 'Pickup Request' button is located between the two sections. At the bottom right, there are 'Reset' and 'Ship' buttons. Annotations with blue arrows point to various parts of the form: 'Search for address' points to the search icon in the 'Ship From' section; 'Choose Study' points to the 'Study Group' dropdown; 'Enter weight' points to the 'Weight' and 'Dry Ice Weight' fields; 'Schedule Pickup' points to the 'Pickup Request' button; and 'Click "Ship"' points to the 'Ship' button at the bottom right.

**INDIANA UNIVERSITY**  
SCHOOL OF MEDICINE

and Affiliated Biorepositories

**Ship From**

Search for address

Code

Company

Contact

Address 1

Address 2

Address 3

City

State/Province

Postal Code

Country/Territory

**Shipment Information**

Choose Study

Study Group

Weight

Dry Ice Weight

Description of Return

Enter weight

Pickup Request

Schedule Pickup

Click "Ship"

Reset Ship



# Shipping Samples via UPS

IU UPS ShipExec Shipping Portal

- Print out UPS air waybill
- Ensure all elements (barcode, return address, etc.) printed clearly
- Fold and insert UPS air waybill into clear plastic sleeve on package

JOHN SMITH INDIANA UNIVERSITY 410 WEST 10TH STREET INDIANAPOLIS IN 46202	2 LBS	1 OF 1
RS		
SHIP TO: SCHOOL OF MEDICINE 317-278-2694 INDIANA UNIVERSITY TK 217 351 W 10TH ST INDIANAPOLIS IN 46202		
	IN 461 9-01	
		
UPS NEXT DAY AIR		1
TRACKING #: 1Z 976 R8W 84 3985 8595		
 SAMPLE		
BILLING: P/P DESC: Biological Specimens RETURN SERVICE		
Reference No.1: 4087277		
XOL 20.03.09 NV45 83.0A 12/2019		 TM

# Non-Conformance

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Non-conformance to standard procedures may reduce the utility of the biospecimens:

- Not processing plasma within 2 hours of collection allows for breakdown of certain proteins and small molecules
- Over/under centrifuging changes plasma, CSF composition



# Non-Conformance Reporting con't

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Most common non-conformance issues:

- Shipment notification not sent
- Samples shipped for weekend/holiday delivery
- Sample form incomplete/inaccurate
- Low volume
- Unlabeled or mislabeled tube(s)
- Sample hemolysis



# BioSEND.org

On the website, you can:

- Access your study's kit request module and sample submission form
- Download the most recent version of the Manual of Procedures
- View a recording of this training
- Find information about holiday closures
- Access shipping resources

## Study Resources

### KIT REQUEST MODULE

Please follow the below link to access the Kit Request Module. This link will direct you to a REDCap database where study coordinators and staff may request kits, individual supplies, and/or labels. Please allow a total of two weeks for kit requests to be fulfilled.

[Kit Request System →](#)

### SPECIMEN COLLECTION AND PROCESSING FORM

Please use the below link to access the collection and processing form for this protocol. This form must be completed prior to shipment. We also ask that all shipments include a physical copy of the shipping manifest portion of the form.

[Specimen Collection and Processing Form →](#)

### MANUAL OF PROCEDURES

The below downloadable manual was created specifically for the DxCTEII study. Please feel free to explore the manual through the hyperlinked 'Table of Contents'. Questions concerning any part of the manual may be directed to [biosend@iu.edu](mailto:biosend@iu.edu) for further clarification.

[Manual of Procedures ↓](#)

### TRAINING SLIDES

These slides correspond to the BioSEND DxCTEII protocol training. Training is available upon request by contacting [biosend@iu.edu](mailto:biosend@iu.edu).

[Training Slides ↓](#)

### SAMPLE SHIPPING

BioSEND can receive samples Monday-Friday, excluding holidays. Frozen samples should be shipped M-W. Ambient samples may be shipped on Th.

[Generate UPS airbill or schedule pickup →](#)  
[Check holiday closures →](#)  
[What do I do for Friday blood draws →](#)

# Contacts

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## Indiana University

General Questions/Shipment Notifications:

[biosend@iu.edu](mailto:biosend@iu.edu)

317-278-6158

Request kits:

<http://kits.iu.edu/biosend/UDALL>