

Specimen Packaging and Transport

Source: [WHO Guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens](#)

Safe Transport of Infectious Substances

- There are certain guidelines which are applicable to the transport of infectious substances and diagnostic specimens both nationally and internationally.
 - Provide information for identifying and classifying the material to be transported and for its safe packaging and transport.
 - Stress the importance of developing a working relationship between the groups involved – *the sender, the carrier and the receiver* – in order to provide for the safe and expeditious transport of this material

Overview: What are your responsibilities as the shipper

Steps	Definition
1. Identifying	Identify correct class, shipping name, UN number.
2. Packing	Correctly following instructions, with appropriate packing
3. Labeling	According to regulations
4. Marking	According to regulations
5. Documentation	Required for shipment
6. Arrangements	With recipient
7. Training	Confirm that all individuals involved in the preparation are trained

1. Identifying & Classifying: Identify correct class, shipping name, UN number.

Classes and shipping name of Dangerous Goods

- **Class:** Both **Liquid serum** and **Dried blood spots (DBS)** belong to **Class 6** of Dangerous Goods
- **Shipping names:** **Liquid serum** is a “biological substance category B” while **DBS** is an “non regulated, exempt materials”

Class 1	Explosives
Class 2	Gases
Class 3	Flammable liquids
Class 4	Flammable Solids
Class 5	Oxidizing Substances & Organic peroxides
Class 6	Toxic and Infectious Substances 6.1 Toxic Substances 6.2 Infectious Substances
Class 7	Radioactive Material
Class 8	Corrosives
Class 9	Miscellaneous Dangerous Goods



6.2 Infectious Substances Includes:

- Infectious substances, infectious to humans
- Infectious substances, infectious to animals
- **Biological Substances Category B**
- **Non regulated, exempt materials**
- Biological products
- Clinical or Medical Waste
- *(Important to distinguish them as some are hazardous and some are not)*

Liquid
Serum

DBS

Category A

Not applicable for
typical serosurvey
specimens

- *An infectious substance which is transported in a form that, when exposure to it occurs, is capable of **causing permanent disability, life-threatening or fatal disease in healthy humans or animals.***
- ***UN2814**- Infectious substance affecting humans*
- ***UN2900**- Infectious substance affecting animals*
- *Packing Instruction **620***
- *Must have shipper's Declaration*

Category B (Liquid Serum)

- **Category B means an infectious** substance that is not in a form generally capable of causing permanent disability or life-threatening or fatal disease in healthy humans or animals when exposure to it.
- UN- 3373

Non regulated, exempt materials (DBS) (if applicable)

- DBS specimens are “non-regulated, exempt materials” or “exempt, biological specimens” as per IATA and ICAO regulations.
- UN number or packing instruction number is not applicable for this material.

1. Identifying Liquid serum and DBS specimens

Criteria	Liquid Serum	DBS (if applicable)
Class	6 (Toxic and Infectious Substances)	6 (Toxic and Infectious Substances)
Category name	Biological Substances Category B	Non-regulated, exempt specimen
Can cause permanent disability/life threatening to humans or animals	No	No
UN number	3373	NA
Packing instruction	650	NA
Shipper's Declaration for Dangerous Goods	No	No
Certified training required	No (Awareness training will do)	No (Awareness training will do)
Shipping temperature	-20C	Room temperature (RT)

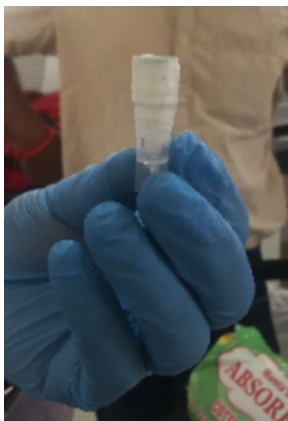
2. Packing: Instructions for packing liquid serum and DBS specimens for courier. We will use courier courier company for all shipments.

2. Packing: Triple packaging system

We will use the **triple packaging system** for both types of specimens. Each type of specimen will have a different containers as described below.

Container	Liquid Serum	Dried Blood Spots (DBS) (if applicable)
Primary container	Screw cap tubes (SCTs) <i>Note: rubber "O" ring in SCT cap helps prevent spillage/ leak</i>	HemaSpot HF device
Secondary container	Cryobox/ freezerbox (9x9 boxes) <i>(Note: should keep a layer of absorbent cotton or tissue paper between SCTs and lid of the cryobox to absorb any leakage. Site should seal boxes with tape and then individually wrap each box with tissue paper.</i>	Individual Ziploc bag (small) Cluster specific Ziploc bags (large) <i>(Note: each individual bag should have 1 desiccant and each cluster specific bag should have at least 5 desiccants)</i>
Tertiary container	Thermocol leak proof container. <i>(note: ice packs or dry ice should also be placed in tertiary container)</i> Provided by courier	Airtight plastic containers
Outer container (Additional)	Outer cardboard box to keep the thermocol container Provided by courier	Outer cardboard box to keep the airtight containers Provided by courier

2. Packing: Triple packaging system



Primary container: screw cap vial



Pack cryobox with absorbent material (cotton roll/ tissue paper)



Wipe box dry and seal box with tape

Secondary container: Freezerbox



Wrap box with tissue paper



Place cryobox in bag with dry ice inside thermocol



Tie/ seal bag.
Add additional packing material (bubble wrap etc) to ensure bag does not move inside box.



Close lid of thermocol box and seal with tape



Place thermocol box in cardboard box. Seal outer box with tape

Outer container: Card board box (provided by courier)

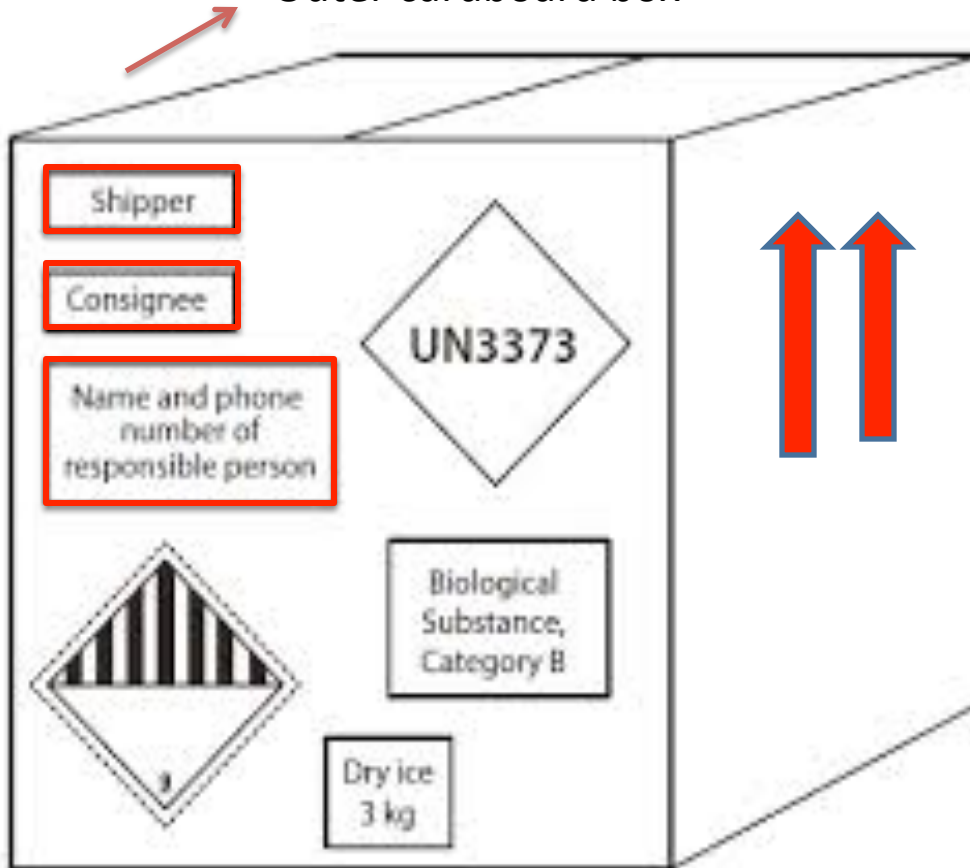
Tertiary Container: Thermocol box with dry ice (provided by courier)

3. Labeling and 4. Marking: Instructions for packing liquid serum and DBS specimens for courier courier.

Labeling: Liquid Serum

Site should print labels as listed (can refer to the Shipping label template document).
Outer cardboard box with pre printed labels will provided by **courier**.

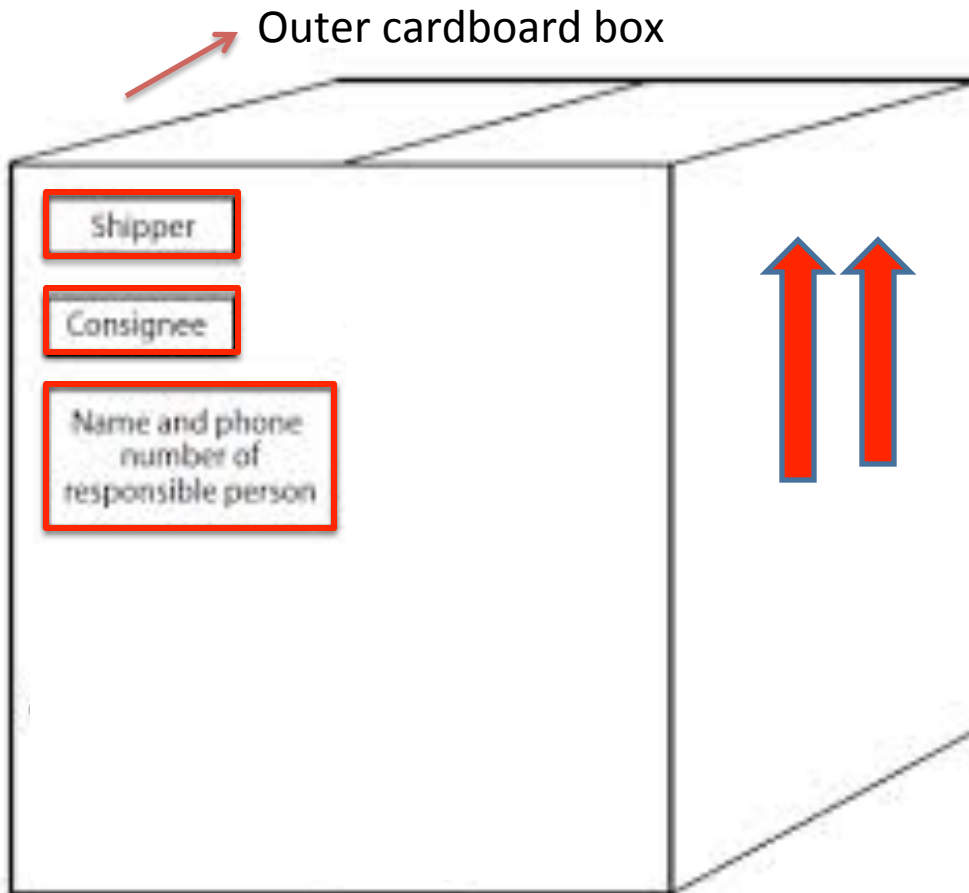
Outer cardboard box



- Site prints:
 - Shipper: Site address
 - Consignee: central lab address
 - Contact information of responsible person: Identify contact from site
- Courier adds later:
 - Biological Substance Category B
 - Dry Ice (specify weight in kg)
 - 2 Diamond shaped labels: UN3373 & Miscellaneous labels (top half has stripes) for dry ice
 - Arrows point upwards: these arrows denote the direction for the top of the box.

Labeling: Dried Blood Spots

Site should print labels as listed (can refer to the Shipping label template document).
Outer cardboard box with pre printed labels will provided by **courier**.



- Site prints:
 - Shipper: Site address
 - Consignee: central lab address
 - Contact information of responsible person: Identify contact from site
- Courier adds later:
 - Arrows point upwards: these arrows denote the direction for the top of the box.

5. Documentation: Required for shipment

Documents required

1. Invoice (to be prepared and signed by the site)
 - Custom invoice
 - Shippers certificate for non hazardous cargo
 - Declaration letter
2. Site should send soft copies of freezer box maps (of boxes shipped) to central lab team (via email or WhatsApp)
3. Shipment list: soft copy of list of samples
4. Receipt: If using courier option, courier company should provide a Docket or tracking number, check with courier pick up staff at the time of shipment.

1a. Invoice template for Liquid serum

CUSTOM INVOICE (EXAMPLE)

Site address	EXPORTER :		INVOICE No. & DATE		EXPORTER REF:	
	From <CONTACT NAME, SITE ADDRESS, AND CONTACT PHONE NUMBER FOR SITE>		13.06.2019			
Central lab address	CONSIGNEE:		BUYER (IF OTHER THAN CONSIGNEE)			
	To <CONTACT NAME, SITE ADDRESS, AND CONTACT PHONE NUMBER FOR RECIPIENT LABORATORY>		NO			
Place of Receipt by pre carrier, port of loading: site location	Pre Carriage By	Place of Receipt by pre carrier < LOCATION OF SITE>	Country of origin of goods < COUNTRY NAME>	Country of Final Destination < COUNTRY NAME>		
	Vessel/Flight No.	Port of Loading < LOCATION OF SITE>	Terms of Delivery and payment			
Port of Discharge < LOCATION OF RECIPIENT LAB>		Final Destination < LOCATION OF RECIPIENT LAB>				
Port of discharge, Final Destination	Marks & No./ container No.	No. & Kind of package	Description of Goods	Quantity	Rate	Amount
	For Laboratory testing only. No Commercial Value Value Given For Custom Purpose: USD 10/			XX Freezer boxes	00	00
Declaration: We declare that this invoice shows the actual price of the goods Described and that all the particulars are true and correct.						
				Signature / Date		Signature of responsible person in site

1a. Invoice template for Liquid serum

SHIPPERS CERTIFICATE FOR NON HAZARDOUS CARGO

AWB: Airway Bill No. or courier
Docket number: check with
courier Staff at the time of
shipment for this number and if
you should add into invoice.

AWB No.	Airport of Dep.	Airport of Dest.
Check with courier or central lab staff	<AIRPORT>	<AIRPORT>

Airport of
departure

This is to certify that the articles/substances of this shipment are properly described by name, that they are not listed in the current edition of IATA Dangerous Goods Regulations (DGR), Alphabetical list of Dangerous Goods nor do they correspond to any of the hazard classes appearing in the DGR. Section 3, classification of the Dangerous Goods and that they are known to be not dangerous i.e. not restricted. Further more the shipper confirms that the goods are in proper condition for transportation on passenger carrying aircraft's (DGR, para B 1.23)

Marks & number of Packages	Proper Description of Goods (Trade Names not permitted) Specify each article separately	Net Quantity Per Package
No. of cardboard boxes	XX Freezer boxes For Laboratory testing only (XX vials)	XX Freezer Boxes Per Cardboard box.
Address		Stamp, Signature, Date & Title
CONTACT NAME, SITE ADDRESS, CONTACT PHONE NUMBER FOR SITE		

Estimate total number of
vials from lab tally sheet

Site address

Sign, date
and stamp
by Site staff.

1a. Invoice template for Liquid serum

<To be printed on site letter head>

To,
The Cargo Manager
.....Airways.

Date :- ____ / ____ / ____

Print this page on
Site letterhead

Dear Sir/Madam
MAWB No. *Check with courier or
central lab staff*

To Whomsoever It May Concern|

This to certify that the articles / substances of this shipment are properly described by the name **Biological Substances Category (B) UN 3373** and they does not correspond to any of hazard classes of dangerous goods i.e non-hazardous, non-poisonous, non infectious, non flammable, non explosive, non-radioactive, non-infectious. It is not a restricted item as per current edition of IATA Dangerous Goods Regulation (Edition 58th) and can be safely transported by a Passenger Aircraft.

The shipment is packed as per IATA Packing Instructions 650 with all necessary regulations pertaining to packing and documentation complied with. The shipment is packed in Dry Ice which has been used as refrigerant purpose and for cooling purpose.

Dry Ice(UN 1845)_____KG, Class 9, _____ Box

Thanking You

Your's Truly

CONTACT NAME,
SITE ADDRESS,
CONTACT PHONE NUMBER FOR SITE

Site address

1b. Invoice template for DBS

CUSTOM INVOICE

Site address

Central lab address

Place of Receipt by pre carrier, port of loading: site location

Port of discharge, Final Destination

Invoice date

Country name

Number of airtight containers

Signature of responsible person in site

EXPORTER :		INVOICE No. & DATE		EXPORTER REF:	
From <CONTACT NAME, SITE ADDRESS, AND CONTACT PHONE NUMBER FOR SITE>		13.06.2019			
CONSIGNEE:		BUYER (IF OTHER THAN CONSIGNEE)			
To <CONTACT NAME, SITE ADDRESS, AND CONTACT PHONE NUMBER FOR RECIPIENT LABORATORY>		NO			
Pre Carriage By	Place of Receipt by pre carrier < LOCATION OF SITE>	Country of origin of goods < COUNTRY NAME>	Country of Final Destination < COUNTRY NAME>		
Vessel/Flight No.	Port of Loading < LOCATION OF SITE>	Terms of Delivery and payment			
Port of Discharge < LOCATION OF RECIPIENT LAB>	Final Destination < LOCATION OF RECIPIENT LAB>				
Marks & No./ container No.	No. & Kind of package	Description of Goods	Quantity	Rate	Amount
For Laboratory testing only. No Commercial Value Value Given For Custom Purpose: USD 10/			XX airtight containers	00	00

Declaration:

We declare that this invoice shows the actual price of the goods Described and that all the particulars are true and correct.

Signature / Date

1b. Invoice template for DBS

SHIPPERS CERTIFICATE FOR NON HAZARDOUS CARGO

AWB No.	Airport of Dep.	Airport of Dest.
Check with courier or central lab staff	<AIRPORT>	<AIRPORT>

Airport of
departure

This is to certify that the articles/substances of this shipment are properly described by name, that they are not listed in the current edition of IATA Dangerous Goods Regulations (DGR), Alphabetical list of Dangerous Goods nor do they correspond to any of the hazard classes appearing in the DGR. Section 3, classification of the Dangerous Goods and that they are known to be not dangerous i.e. not restricted. Further more the shipper confirms that the goods are in proper condition for transportation on passenger carrying aircraft's (DGR, ~~para~~ B 1.23)

Marks & number of Packages	Proper Description of Goods (Trade Names not permitted) Specify each article separately	Net Quantity Per Package
No. of cardboard boxes	XX Air Tight containers For Laboratory testing only (XXX DBS devices)	XX Air tight container boxes
Address CONTACT NAME, SITE ADDRESS, CONTACT PHONE NUMBER FOR SITE		Stamp, Signature, Date & Title

Site address

Sign, date
and stamp
by Site staff.

1b. Invoice template for DBS

<To be printed on site letter head>

To,
The Cargo Manager
.....Airways.

Print this page on
Site letterhead

Date :- ____ / ____ / ____

Check with courier Staff

Dear Sir/Madam
MAWB No. *Check with courier or central lab staff*

To Whomsoever It May Concern

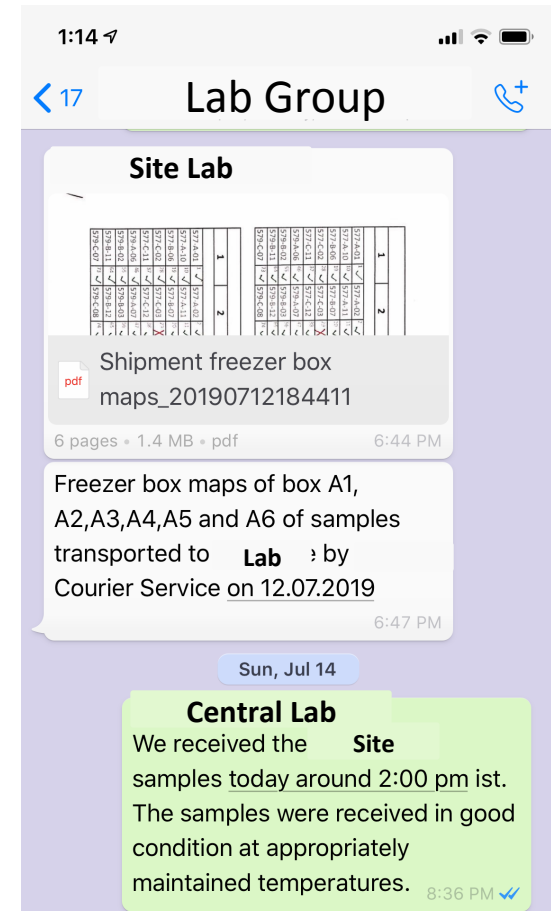
This to certify that the articles / substances of this shipment are properly described by the name **Non regulated, exempt materials** and they does not correspond to any of hazard classes of dangerous goods i.e non-hazardous, non-poisonous, non infectious, non flammable, non explosive, non-radioactive, non-infectious. It is not a restricted item as per current edition of IATA Dangerous Goods Regulation (Edition 58th) and can be safely transported by a Passenger Aircraft.

Thanking You

CONTACT NAME,
SITE ADDRESS,
CONTACT PHONE NUMBER FOR SITE

2. Freezer box maps (site should send)

- Site should send soft copies of freezer box maps of boxes shipped to central lab teams via WhatsApp or email



3. Shipment list: list of samples

Specimen Listing: Site Name Shipment 3 Date of Shipment: June 27 2019													
Cluster ID	Participant ID	Collection Date	Aliquot 1 ID	Aliquot 2 ID	Number of aliquots	DBS ID	Sera volume (ul)	Hemolysis	Aliquot 1 Box	Aliquot 1 Position	Aliquot 2 Box	Aliquot 2 Position	Comments
460	460-A-01	06-Jun-19	460A01V1	460A01V2	2		900	None	A10	1	B10	1	
460	460-A-02	05-Jun-19	460A02V1	460A02V2	2		500	None	A10	2	B10	2	
460	460-A-03	05-Jun-19	460A03V1	460A03V2	2		350	Mild	A10	3	B10	3	
460	460-A-04	06-Jun-19	460A04V1	460A04V2	2		250	None	A10	4	B10	4	
460	460-A-05	06-Jun-19	460A05V1	460A05V2	2		600	None	A10	5	B10	5	
460	460-A-06	06-Jun-19	460A06V1	460A06V2	2		450	None	A10	6	B10	6	

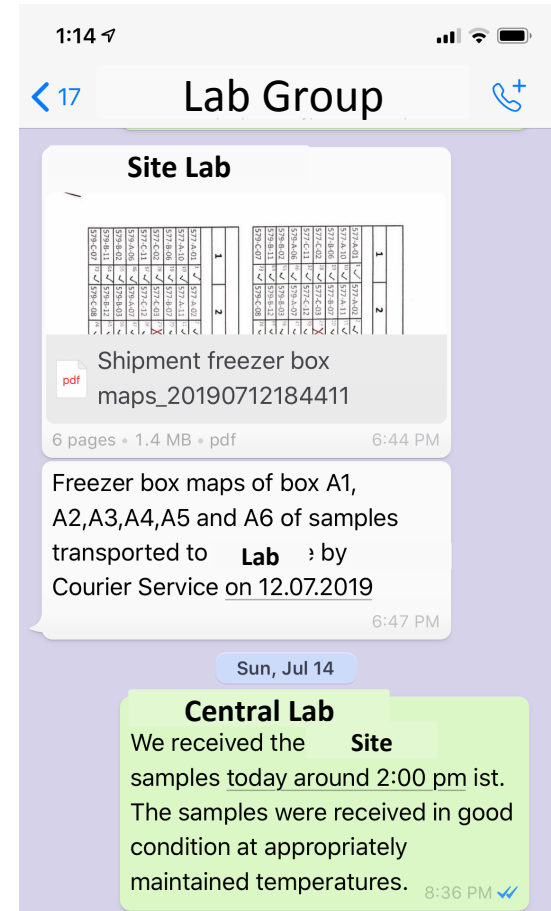
4. Receipt (provided by courier)

- Courier should provide a Docket or tracking number, check with courier pick up staff at the time of shipment.

6. Arrangements: planning with central lab

Arrangements & Communication

- Coordinate with central lab teams when scheduling pick ups
 - Site should inform central lab 1-2 weeks before first shipment.
 - After the first shipment, if site is comfortable they can directly communicate with courier and inform central lab at the time of shipment
- Site Coordinator/ ULT to send updates on WhatsApp Lab group when samples are shipped.



7. Training: Use this slide deck to train Unit lab technician

Shipment checklist

Complete the following activities prior to every shipment:

- ☐ Develop shipment plans with central lab (frequency and timing of shipments).
- ☐ Finalize first shipment date 1-2 weeks prior to scheduled first shipment date.
- ☐ Compile site address and contact information and populate labels and invoice forms. Print out labels and invoice prior to scheduled pickup.
- ☐ Finalize list of clusters to be shipped in each shipment and work with central lab to prepare shipment list
- ☐ Organize all specimens to be shipped and ensure they are properly packed in the secondary container (for liquid blood; cryoboxes) or tertiary container (for DBS; airtight plastic containers)
- ☐ Site Coordinator/ULT to send updates on project lab WhatsApp group when samples are shipped.

Thank you