

Blood Collection Processing

For survey with venous samples (page 2-16)

For survey with DBS samples (page 17-19)

Logging and processing serum specimens: Overview

1. Receive specimens (centrifuged in field)
2. Prepare storage tubes
3. Aliquot in storage tubes
4. Enter data in lab register & freezer box map
5. Transfer aliquots to freezer
6. Complete electronic lab tally sheet within 1-2 days of processing

1. Receive specimens

- Site lab tech must be at the laboratory to receive the blood specimens
- Check number of specimens sent with number in freezer box (*should do with field lab technician*)
- Assess cold chain – are ice packs frozen? Were tubes touching ice packs? If any problems, contact study supervisor immediately and record problems in lab register. (send via WhatsApp message)
- Check specimens centrifuged in field to confirm serum has separated; if not, centrifuge again (next slide)
- **Note:** Processing of samples must be done **within 24 hours of collection**. If unable to process on the day of collection, place centrifuged vacutainers in to 4° C refrigerator and process the next morning.

2. Centrifuge & prepare storage tubes *(only if necessary; should be separated from field centrifuge)*

- Place tubes in centrifuge and balance
 - If necessary, balance with tubes filled with water
- Close top and centrifuge
 - 10 min at 3000 RPM
 - Do not open lid during spinning
- During spinning, label storage aliquots and start filling out lab register



**Ideally use the field portable centrifuges rather than the lab centrifuge. Inform teams to carry centrifuge to lab with the samples at the end of the day.

RPM, revolutions per minute

2. Prepare storage tubes

3. Aliquot in storage tubes

Prepare storage tubes and labels

- Tube #1 – maximum 100 uL serum in 0.5 mL cryovial
 - Tube #2 – all remaining sera in 2 mL cryovial
 - Prepare pre-printed labels
 - Find correct participant ID labels
 - Write V, V1, V2 after participant ID (see example)
 - Write date and time of collection
 - Place labels on lab register, tube #1 and #2
- After centrifuging, pipette serum (from above gel in yellow top tubes) into storage tubes. 100 uL serum in tube #1 and all remaining sera in storage tube #2 (2 mL).

IN SITE LAB

651A03V
lab register
6-3-2020 11:14

← Lab register

651A03V₁
Aliquot
6-3-2020 11:14

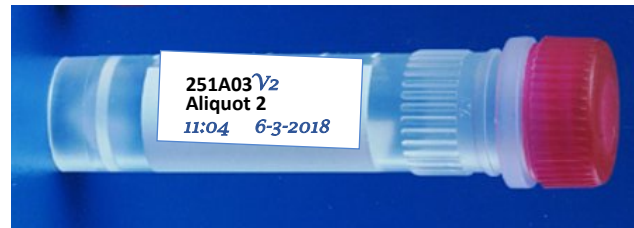
← Aliquot 1 (V1)

651A03V₂
Aliquot
6-3-2020 11:14

← Aliquot 2 (V2)



Tube #1 - Fill 100uL serum in 0.5 mL cryovial



Tube #2 – All remaining sera in 2 mL cryovial

4. Enter data in lab register & freezer box map

- Fill out lab register and affix 'lab register' label after writing date, time and V after participant ID with a sharpie marker.

Serial No.	Label	Venous Specimen Rec'd	Date of receipt	Estimated vol (ul)	Hemolysis	Aliq 1	Aliq 2	Aliq Date	Aliq Time
1	651C01 <i>V</i> Lab register <i>7-3-2020</i> <i>9:00am</i>	✓	06-03-2020	550	1	✓	✓	07-03-20	9:00 AM
2	651C02 <i>V</i> Lab register <i>7-3-2020 9:10am</i>	✓	06-03-2020	700	1	✓	✓	07-03-20	9:10 AM
		Freezer Box No. (V1)	Freezer Box Position (V1)	Freezer Box No. (V2)	Freezer Box Position (V2)	Comments			
		A1	1	B1	1				

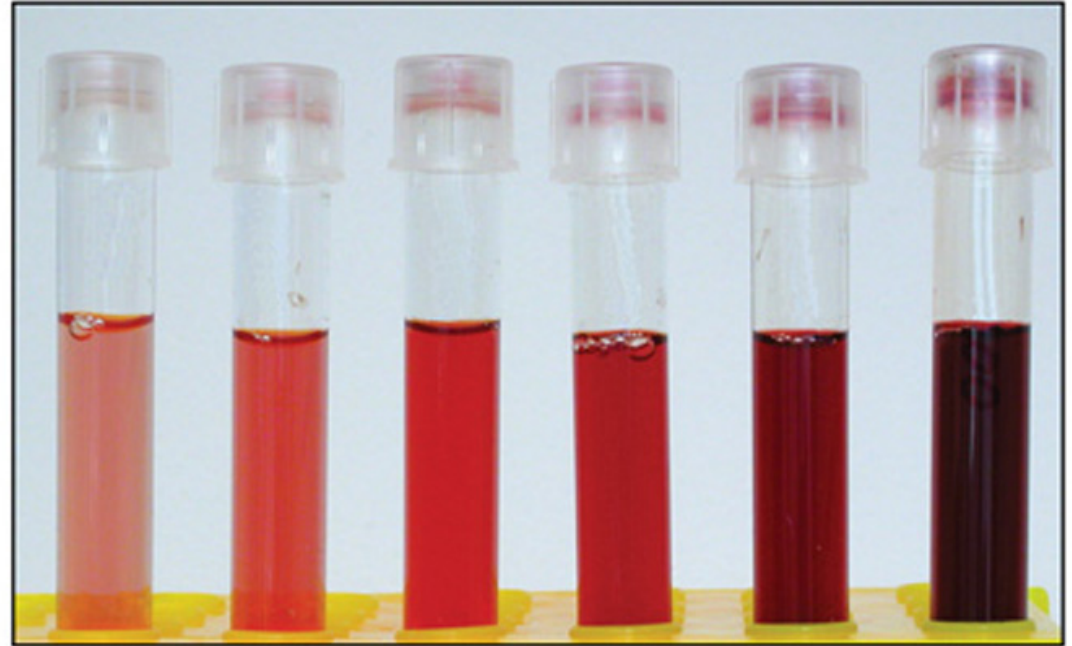
Con't.

Assess hemolysis on lab register



None

Moderate/severe



Mild

Moderate/severe

None: light yellow

Mild: tinge of pink

Moderate / severe: pink or red

Example

CLUSTER ID : 867

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Tab	Labels	Specimen Received	Date of Receipt	Calculated Volume	Specimen type	V _i	V _a	Aliquots Date	Aliquots Time	Aliq. V _i	Position	Box	V _a Position	Comments
1	BUTAB1 Lab Register	✓	13/01/19	700	Holocene	✓	✓	14-1-19	11:00am	A1	2	B1	2	
2	BUTAB2 Lab Register	✓	13/01/19	200	Shale	✓	✓	14-1-19	11:15am	A1	3	B1	3	
3	BUTAB3 Lab Register	✓	13/01/19	700										
4	BUTAB4 Lab Register	✓	13/01/19	700										
5	BUTAB5 Lab Register	✓	13/01/19	700										
6	BUTAB6 Lab Register	✓	13/01/19	700										
7	BUTAB7 Lab Register	✓	13/01/19	600										
8	BUTAB8 Lab Register	✓	13/01/19	100										
9	BUTAB9 Lab Register	✓	13/01/19	700	Sand	✓	✓	14-1-19	11:45am	A1	9	B1	9	
10	BUTAB10 Lab Register	✓	13/01/19	600	Sand	✓	✓	14-1-19	11:50	A1	10	B1	10	
11	BUTAB11 Lab Register													
12	BUTAB12 Lab Register													
13	BUTAB13 Lab Register													

Only 100ml of aliquots

Affix all labels in the lab register (A1-13, B1-13, C1-13) prior to receiving the samples
If no sample collected for an ID after mop-up day, strikethrough the line in the book

Each cluster ID will have its own page(s) in the lab register

4. Enter data in lab register & freezer box map

Freezer box map

- Purpose: show where every aliquot is stored in freezer on paper-based map (see example)
- Tubes #1 (500 uL) and Tube #2 (2 mL) should be stored in separate boxes but same position in each box.
- Label freezer boxes A1, A2, A3,...[aliquot 1] and B1, B2, B3...[aliquot 2].
- Tick off which specimen was received on paper box map.
- Fill out freezer box map before placing aliquots in freezer.
- First day of sample collection: Arrange aliquots in their correct position in the labeled freezer box then place box into -20 freezer. Leave blank spaces for samples that may be collected on mop-up day.
- Mop-up day sample collection: Arrange aliquots in dummy freezer box during processing then quickly transfer to empty spaces in the Day 1 freezer boxes. Do not leave freezer boxes at room temperature for more than 3 minutes. In the box map cross out which specimens were not received.

Lab register and freezer box map

Study (Sample Location Map)(Testing Aliquot)																		
1		2		3		4		5		6		7		8		9		
Box A1 (For Testing)																		
1	8X1-A-01	¹ ✓	8X1-A-02	² ✓	8X1-A-03	³ ✓	8X1-A-04	⁴ ✓	8X1-A-05	⁵ ✓	8X1-A-06	⁶ X	8X1-A-07	⁷	8X1-A-08	⁸	8X1-A-09	⁹
2	8X1-A-10	¹⁰	8X1-A-11	¹¹	8X1-A-12	¹²	8X1-A-13	¹³	8X1-B-01	¹⁴	8X1-B-02	¹⁵	8X1-B-03	¹⁶	8X1-B-04	¹⁷	8X1-B-05	¹⁸
3	8X1-B-06	¹⁹	8X1-B-07	²⁰	8X1-B-08	²¹	8X1-B-09	²²	8X1-B-10	²³	8X1-B-11	²⁴	8X1-B-12	²⁵	8X1-B-13	²⁶	8X1-C-01	²⁷
4	8X1-C-02	²⁸	8X1-C-03	²⁹	8X1-C-04	³⁰	8X1-C-05	³¹	8X1-C-06	³²	8X1-C-07	³³	8X1-C-08	³⁴	8X1-C-09	³⁵	8X1-C-10	³⁶
5	8X1-C-11	³⁷	8X1-C-12	³⁸	8X1-C-13	³⁹		⁴⁰	8Y1-A-01	⁴¹	8Y1-A-02	⁴²	8Y1-A-03	⁴³	8Y1-A-04	⁴⁴	8Y1-A-05	⁴⁵
6	8Y1-A-06	⁴⁶	8Y1-A-07	⁴⁷	8Y1-A-08	⁴⁸	8Y1-A-09	⁴⁹	8Y1-A-10	⁵⁰	8Y1-A-11	⁵¹	8Y1-A-12	⁵²	8Y1-A-13	⁵³	8Y1-B-01	⁵⁴
7	8Y1-B-02	⁵⁵	8Y1-B-03	⁵⁶	8Y1-B-04	⁵⁷	8Y1-B-05	⁵⁸	8Y1-B-06	⁵⁹	8Y1-B-07	⁶⁰	8Y1-B-08	⁶¹	8Y1-B-09	⁶²	8Y1-B-10	⁶³
8	8Y1-B-11	⁶⁴	8Y1-B-12	⁶⁵	8Y1-B-13	⁶⁶	8Y1-C-01	⁶⁷	8Y1-C-02	⁶⁸	8Y1-C-03	⁶⁹	8Y1-C-04	⁷⁰	8Y1-C-05	⁷¹	8Y1-C-06	⁷²
9	8Y1-C-07	⁷³	8Y1-C-08	⁷⁴	8Y1-C-09	⁷⁵	8Y1-C-10	⁷⁶	8Y1-C-11	⁷⁷	8Y1-C-12	⁷⁸	8Y1-C-13	⁷⁹		⁸⁰		⁸¹

Study (Sample Location Map)(Back Up Aliquot)																						
1		2		3		4		5		6		7		8		9						
Box B1 (For Back Up)																						
1	8X1-A-01 ¹ ✓	8X1-A-02 ² ✓	8X1-A-03 ³ ✓	8X1-A-04 ⁴ ✓	8X1-A-05 ⁵ X	8X1-A-06 ⁶ X	8X1-A-07 ⁷	8X1-A-08 ⁸	8X1-A-09 ⁹													
2	8X1-A-10 ¹⁰	8X1-A-11 ¹¹	8X1-A-12 ¹²	8X1-A-13 ¹³	8X1-B-01 ¹⁴	8X1-B-02 ¹⁵	8X1-B-03 ¹⁶	8X1-B-04 ¹⁷	8X1-B-05 ¹⁸													
3	8X1-B-06 ¹⁹	8X1-B-07 ²⁰	8X1-B-08 ²¹	8X1-B-09 ²²	8X1-B-10 ²³	8X1-B-11 ²⁴	8X1-B-12 ²⁵	8X1-B-13 ²⁶	8X1-C-01 ²⁷													
4	8X1-C-02 ²⁸	8X1-C-03 ²⁹	8X1-C-04 ³⁰	8X1-C-05 ³¹	8X1-C-06 ³²	8X1-C-07 ³³	8X1-C-08 ³⁴	8X1-C-09 ³⁵	8X1-C-10 ³⁶													
5	8X1-C-11 ³⁷	8X1-C-12 ³⁸	8X1-C-13 ³⁹		8Y1-A-01 ⁴⁰	8Y1-A-02 ⁴¹	8Y1-A-03 ⁴²	8Y1-A-04 ⁴³	8Y1-A-05 ⁴⁴	8Y1-A-06 ⁴⁵												
6	8Y1-A-06 ⁴⁶	8Y1-A-07 ⁴⁷	8Y1-A-08 ⁴⁸	8Y1-A-09 ⁴⁹	8Y1-A-10 ⁵⁰	8Y1-A-11 ⁵¹	8Y1-A-12 ⁵²	8Y1-A-13 ⁵³	8Y1-B-01 ⁵⁴													
7	8Y1-B-02 ⁵⁵	8Y1-B-03 ⁵⁶	8Y1-B-04 ⁵⁷	8Y1-B-05 ⁵⁸	8Y1-B-06 ⁵⁹	8Y1-B-07 ⁶⁰	8Y1-B-08 ⁶¹	8Y1-B-09 ⁶²	8Y1-B-10 ⁶³													
8	8Y1-B-11 ⁶⁴	8Y1-B-12 ⁶⁵	8Y1-B-13 ⁶⁶	8Y1-C-01 ⁶⁷	8Y1-C-02 ⁶⁸	8Y1-C-03 ⁶⁹	8Y1-C-04 ⁷⁰	8Y1-C-05 ⁷¹	8Y1-C-06 ⁷²													
9	8Y1-C-07 ⁷³	8Y1-C-08 ⁷⁴	8Y1-C-09 ⁷⁵	8Y1-C-10 ⁷⁶	8Y1-C-11 ⁷⁷	8Y1-C-12 ⁷⁸	8Y1-C-13 ⁷⁹															

Note: Specimens should be placed into freezer boxes in order of ID.

- Update box number in template (e.g., A1 and B1; etc.) and Cluster numbers (Ctrl+H 'Find and Replace'); print
- If sample received, place tickmark (✓) in cell
- If no sample was collected for an ID after mop-up day, write (X) in cell. If only one aliquot obtained, write (X) the corresponding position in Aliquot 2 box (e.g., 8X1-A-05 only 1 aliquot).

Example of completed box map

1	2	3	4	5	6	7	8	9
Box A1 (For Testing)								
867-A-01 ¹ X	867-A-02 ² ✓	867-A-03 ³ ✓	867-A-04 ⁴ ✓	867-A-05 ⁵ ✓	867-A-06 ⁶ ✓	867-A-07 ⁷ ✓	867-A-08 ⁸ ✓	867-A-09 ⁹ ✓
867-A-10 ¹⁰ ✓	867-A-11 ¹¹ X	867-A-12 ¹² X	867-A-13 ¹³ X	867-B-01 ¹⁴ X	867-B-02 ¹⁵ ✓	867-B-03 ¹⁶ ✓	867-B-04 ¹⁷ ✓	867-B-05 ¹⁸ X
867-B-06 ¹⁹ ✓	867-B-07 ²⁰ X	867-B-08 ²¹ X	867-B-09 ²² ✓	867-B-10 ²³ ✓	867-B-11 ²⁴ ✓	867-B-12 ²⁵ ✓	867-B-13 ²⁶ ✓	867-C-01 ²⁷ ✓
867-C-02 ²⁸ ✓	867-C-03 ²⁹ ✓	867-C-04 ³⁰ X	867-C-05 ³¹ ✓	867-C-06 ³² X	867-C-07 ³³ X	867-C-08 ³⁴ ✓	867-C-09 ³⁵ ✓	867-C-10 ³⁶ ✓
867-C-11 ³⁷ ✓	867-C-12 ³⁸ ✓	867-C-13 ³⁹ X			862-A-01 ⁴¹ ✓	862-A-02 ⁴² X	862-A-03 ⁴³ ✓	862-A-04 ⁴⁴ ✓
862-A-06 ⁴⁶ ✓	862-A-07 ⁴⁷ ✓	862-A-08 ⁴⁸ ✓	862-A-09 ⁴⁹ X	862-A-10 ⁵⁰ ✓	862-A-11 ⁵¹ ✓	862-A-12 ⁵² X	862-A-13 ⁵³ ✓	862-B-01 ⁵⁴ ✓
862-B-02 ⁵⁵ ✓	862-B-03 ⁵⁶ ✓	862-B-04 ⁵⁷ ✓				862-B-09 ⁶² ✓	862-B-10 ⁶³ ✓	
862-B-11 ⁶⁴ ✓	862-B-12 ⁶⁵ ✓	862-B-13 ⁶⁶ ✓				862-C-05 ⁷¹ X	862-C-06 ⁷² ✓	
862-C-07 ⁷³ ✓	862-C-08 ⁷⁴ ✓	862-C-09 ⁷⁵ ✓						
Box A2 (For Testing)								
1	2	3	4	5	6	7	8	9
867-A-01 ¹ X	867-A-02 ² ✓	867-A-03 ³ ✓	867-A-04 ⁴ ✓	867-A-05 ⁵ ✓	867-A-06 ⁶ ✓	867-A-07 ⁷ ✓	867-A-08 ⁸ X	867-A-09 ⁹ ✓
867-A-10 ¹⁰ ✓	867-A-11 ¹¹ X	867-A-12 ¹² X	867-A-13 ¹³ X	867-B-01 ¹⁴ X	867-B-02 ¹⁵ ✓	867-B-03 ¹⁶ ✓	867-B-04 ¹⁷ ✓	867-B-05 ¹⁸ X
867-B-06 ¹⁹ ✓	867-B-07 ²⁰ X	867-B-08 ²¹ X	867-B-09 ²² ✓	867-B-10 ²³ ✓	867-B-11 ²⁴ ✓	867-B-12 ²⁵ ✓	867-B-13 ²⁶ ✓	867-C-01 ²⁷ ✓
867-C-02 ²⁸ ✓	867-C-03 ²⁹ ✓	867-C-04 ³⁰ X	867-C-05 ³¹ ✓	867-C-06 ³² X	867-C-07 ³³ X	867-C-08 ³⁴ ✓	867-C-09 ³⁵ ✓	867-C-10 ³⁶ ✓
867-C-11 ³⁷ ✓	867-C-12 ³⁸ ✓	867-C-13 ³⁹ X			862-A-01 ⁴¹ ✓	862-A-02 ⁴² X	862-A-03 ⁴³ ✓	862-A-04 ⁴⁴ ✓
862-A-06 ⁴⁶ ✓	862-A-07 ⁴⁷ ✓	862-A-08 ⁴⁸ ✓	862-A-09 ⁴⁹ X	862-A-10 ⁵⁰ ✓	862-A-11 ⁵¹ ✓	862-A-12 ⁵² X	862-A-13 ⁵³ ✓	862-B-01 ⁵⁴ ✓
862-B-02 ⁵⁵ ✓	862-B-03 ⁵⁶ ✓	862-B-04 ⁵⁷ ✓	862-B-05 ⁵⁸ ✓	862-B-06 ⁵⁹ ✓	862-B-07 ⁶⁰ X	862-B-08 ⁶¹ ✓	862-B-09 ⁶² ✓	862-B-10 ⁶³ ✓
862-B-11 ⁶⁴ ✓	862-B-12 ⁶⁵ ✓	862-B-13 ⁶⁶ ✓	862-C-01 ⁶⁷ X	862-C-02 ⁶⁸ X	862-C-03 ⁶⁹ ✓	862-C-04 ⁷⁰ ✓	862-C-05 ⁷¹ X	862-C-06 ⁷² ✓
862-C-07 ⁷³ ✓	862-C-08 ⁷⁴ ✓	862-C-09 ⁷⁵ ✓	862-C-10 ⁷⁶ ✓	862-C-11 ⁷⁷ X	862-C-12 ⁷⁸ ✓	862-C-13 ⁷⁹ ✓		

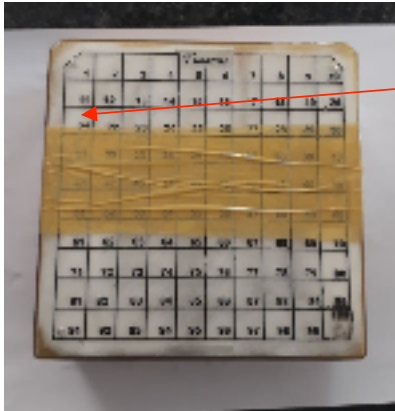
Prepopulate Excel file template with the cluster ID numbers (2 clusters per box, samples ordered A1-13, B1-13, C1-13)

Recommend using different coloured pens to distinguish between received (tick) and not received (X)

5. Transfer samples to freezer boxes

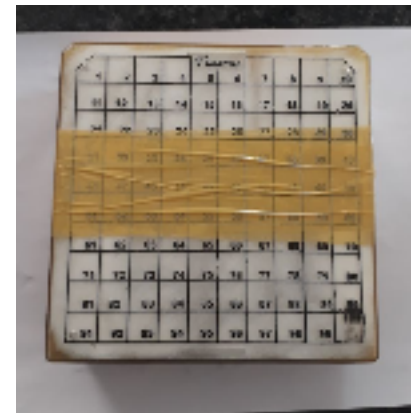
Freezer box 1

(for 500 uL tube #1)



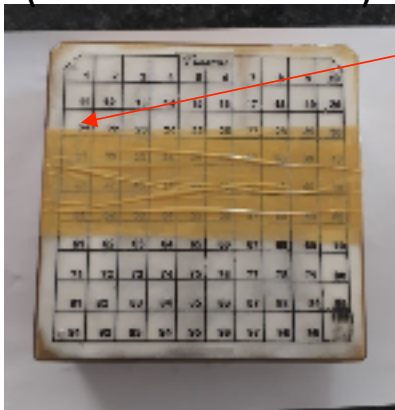
Put all 500 uL tubes (#1) in box one in position described in freezer box map and lab register

If any participants have a 3rd aliquot, place in separate freezer box (RARE)



Freezer box 2

(for 2 mL tube #2)



Put all 2 mL tubes (#2) in box two in position described in freezer box map and lab register

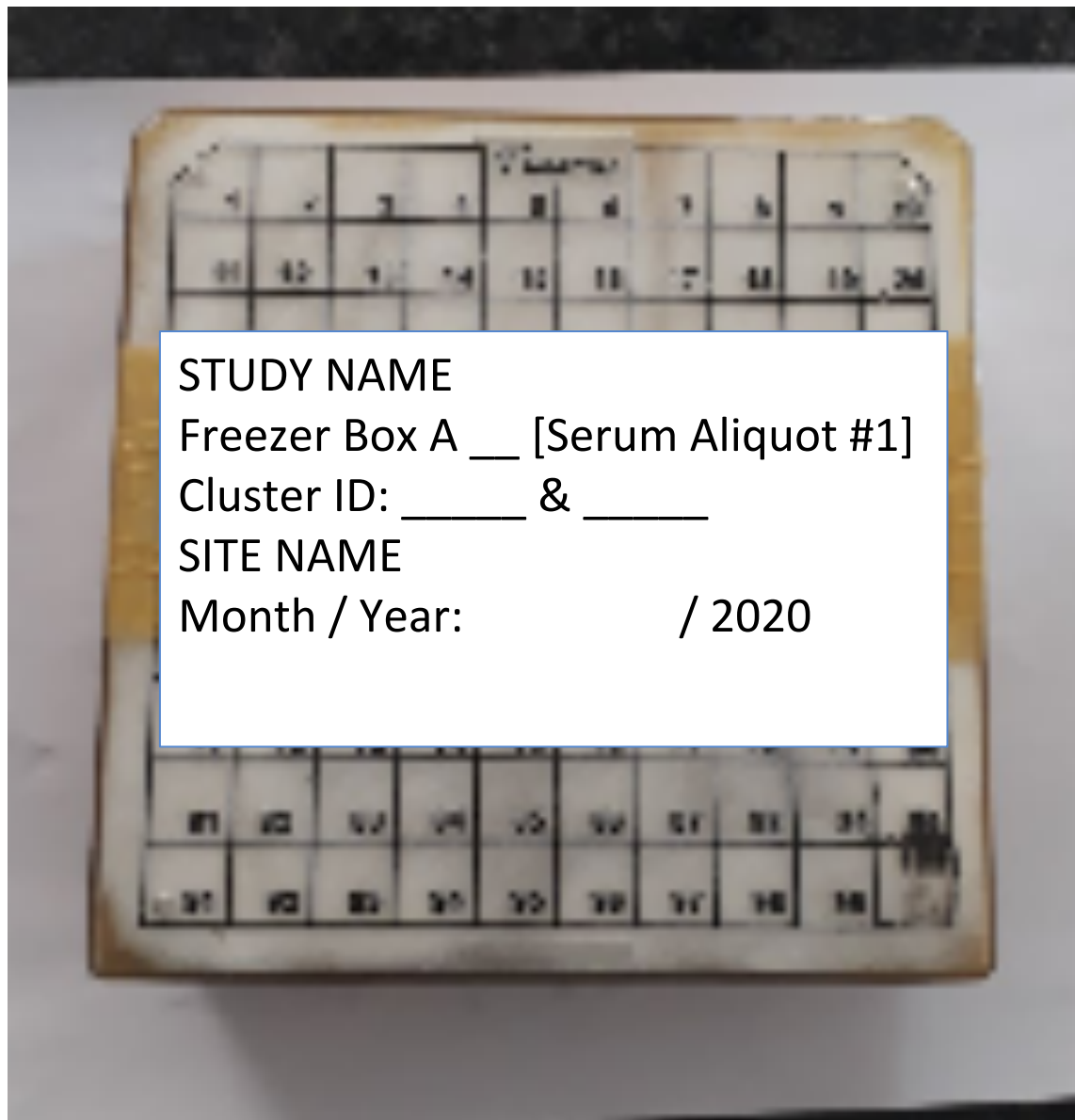
Freezer box 3

(for 2 mL tube #3)

This is uncommon.

ON MOP-UP DAYS, QUICKLY TRANSFER SAMPLES FROM DUMMY BOX TO FROZEN CRYOBBOXES; DO NOT TAKE OUT BOXES OUT OF FREEZER FOR MORE THAN 3 MINUTES

Label freezer boxes



STUDY NAME

Freezer Box A __ [Serum Aliquot #1]

Cluster ID: ____ & ____

SITE NAME

Month / Year: ____ / 2020

Include:

- Box number
- Name of project
- Cluster Nos.
- Site
- Specimen type and which aliquot (#1 or 2)
- Month/year of collection

6. Complete electronic lab tally sheet within 1-2 days of processing

Lab tally sheet – electronic version of lab register and random list

Autopopulated

ClusterID	Participant ID	Collection Date (DD-MM-YYYY)	Collection Time (HH:MM AM/PM)	Date of receipt at lab (DD-MM-YYYY)	Hemolysis? Enter None, Mild, Moderate or Severe	Estimated volume of serum (in uL)	Aliquot 1 collected? (Tick 1 [Y] or leave blank [N])	Aliquot 2 collected? (Tick 1 [Y] or leave blank [N])	Aliquot 1 ID (autopopulated)	Aliquot 2 ID (autopopulated)	Aliquoting Date (DD-MM-YYYY)	Aliquoting Time (HH:MM AM/PM)	Aliquot 1 Freezer box/tray number	Aliquot 1 Freezer box position	Aliquot 2 Freezer box/tray number	Aliquot 2 Freezer box position
651	651-A-03	01-02-20	9:50	01-02-20	None	1000	1	1	651-A-03-V1	651-A-03-V2	01-02-20	17:50	A1	12	B1	12

Copied
from Field
Tally Sheet

Copy from lab register

Copy from lab register

- Green columns: cut and paste information from 'field tally sheet' or 'random list' from NIE. Do not enter this data by hand.
- Grey columns – autopopulated fields - Do not make changes to these columns.
- Blue columns – fill out using the lab register
- Do not make changes to other tabs on Excel sheet
- Save as with today's date on Dropbox or send via email. Example: "Lab Tally Sheet_SITENAME_DD.MM.YYYY.xlsx"

Electronic Lab Tally Sheet

Entered by Data Entry Staff/Lab Tech from Register

Autopopulated based on
prior columns

Collection Date (DD-MM-YYYY)	Collection Time (HH:MM AM/PM)	Date of receipt at lab (DD-MM-YYYY)	Hemolysis? Enter None, Mild, Moderate or Severe	Estimated volume of serum (in uL)	Aliquot 1 collected? (Tick 1 [Y] or leave blank [N])	Aliquot 2 collected? (Tick 1 [Y] or leave blank [N])	Aliquot 1 ID (autopopulated)	Aliquot 2 ID (autopopulated)
01-02-20	9:50	01-02-20	None	1000	1	1	651-A-03-V1	651-A-03-V2

Electronic Lab Tally Sheet (entered from Lab Register)

All columns entered by Data Entry Staff

Copied from
specimen label
affixed to register

Copied from lab
register

Collection Date (DD-MM-YYYY)	Collection Time (HH:MM AM/PM)	Date of receipt at lab (DD-MM-YYYY)	Hemolysis? Enter None, Mild, Moderate or Severe	Estimated volume of serum (in uL)	Aliquot 1 collected? (Tick 1 [Y] or leave blank [N])	Aliquot 2 collected? (Tick 1 [Y] or leave blank [N])	Aliquot 1 ID (autopopulated)	Aliquot 2 ID (autopopulated)	Aliquoting Date (DD-MM-YYYY)	Aliquoting Time (HH:MM AM/PM)	Aliquot 1 Freezer box/tray number	Aliquot 1 Freezer box position	Aliquot 2 Freezer box/tray number	Aliquot 2 Freezer box position
01-02-20	9:50	01-02-20	None	1000	1	1	651-A-03-V1	651-A-03-V2	01-02-20	17:50	A1	12	B1	12

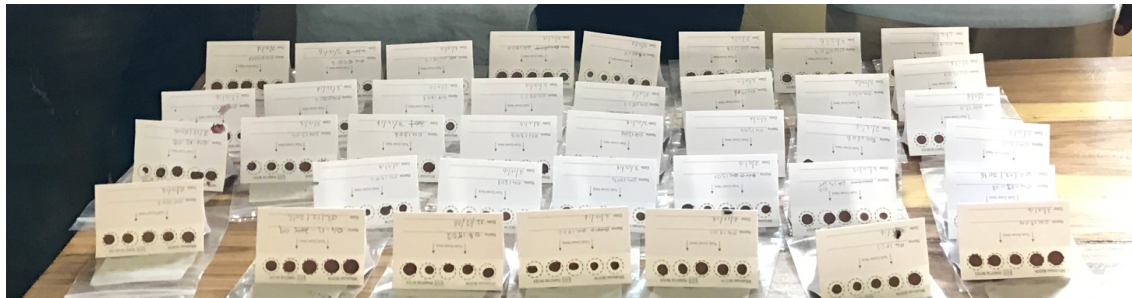
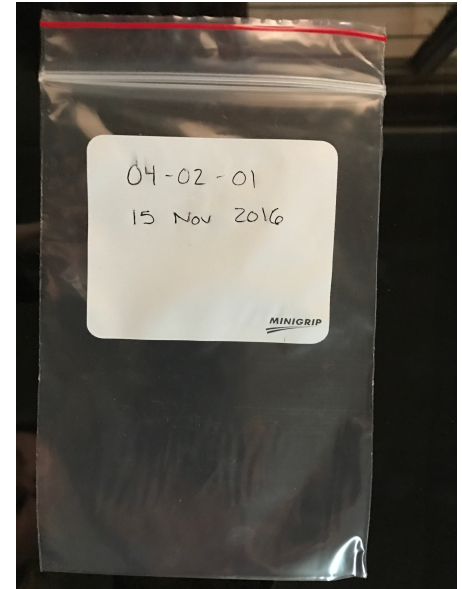
651A03V
Lab register

11:04 01-02-2020

Slides for DBS processing

Receipt of DBS cards at local laboratory

- Take out each card from its sealed Ziploc bag and dry on rack in a dust-free area for 4 or more hours
- Replace cards in same Ziploc bag with a desiccant pack
- Recommend placing the card on top of its labelled resealable bag during drying to prevent mixing up bags



Organization and Storage of DBS cards

- Place DBS cards in cluster-specific bags, then store cluster-specific bags in Tupperware

