

Serosurveillance to Assess Measles and Rubella Prevalence

Country X, 20YY-YY

Standard Operating Procedures

Specimen Collection for venous and dried blood spots using HemaSpot HF device

Version: October 20XX

1. Purpose/Background

- 1.1. The purpose of this document is to describe how to collect a blood sample from a finger prick in the form of liquid blood or dried blood spot (DBS) or venipuncture (where applicable) in the field, packing and transport of samples in field to site lab. Blood collection protocol varies by site, please check with your supervisor the blood collection options for your site.

2. Scope/Applicability

- 2.1. This SOP is intended for all individuals who will collect blood as part of study procedures.

3. Roles and responsibilities

- 3.1. Survey Laboratory Technicians for the serosurvey are responsible for blood collection.

4. Prerequisites / Supplies Needed

- 4.1. Ensure you have all the material that you need BEFORE beginning (see Appendix 4 for detailed supplies lists):
 - Gloves – multiple sizes
 - Pre-printed labels for microtainer / vacutainer tubes, DBS cards, consent forms and logs (if needed)
 - Extra blank labels for microtainer/ vacutainer tubes, DBS cards, consent forms and logs (if needed)
 - Alcohol swabs/ wipes
 - Cotton swabs
 - Thin permanent marker for labeling (must be waterproof and not smear)
 - Bin for hazardous waste (red bag)
 - Bin for non-hazardous waste (black bag)
 - Hazardous waste bag (red)
 - Non-hazardous waste bag (black)
 - Laboratory coat (site to decide if this will be useful for technician for credibility in community)

- Conditioned Ice packs: Ice packs that have been left at room temperature for a short period of time until they have condensation or 'sweat' on outside of pack; done to avoid freezing the samples. May borrow from local health facility in the cluster.
- Hard shell vaccine carrier and a cold box with extra ice packs in the vehicle.
- Packing materials for transporting samples from field: cotton cushions, rubber bands, tape, and tissue paper.
- For venipuncture:
 - Tourniquet
 - Sterile gauze pieces or cotton
 - Band aids
 - Butterfly scalp vein with 23-gauge needle
 - DispoVan 2 ml disposable syringes with needles (or 5 mL or mix depending on site preference)
 - Yellow top serum separator vacutainer tubes (3 or 5 mL)
 - Microtainer serum separator tubes
 - Vacutainer rack/holder that fits in vaccine carrier
 - Needle cutter box
 - Sharps container
- For dried blood spot collection (only for site doing DBS vs serum comparison; only for adult women):
 - BD retractable lancet
 - HemaSpot HF DBS device
 - Ziploc storage bags (small and medium sized bags)
 - Desiccant packs
 - Rubber bands
- Tablet with Specimen Collection Form
- Field Tally Sheet (to verify receipt of specimens at site)

5. Location of blood collection

5.1. There are two main options for blood collection location:

5.1.1. In the household of the enrolled participants

5.1.2. In a central location within the cluster (e.g., clinic, school, meeting hall).

5.2. The layout of the houses within the cluster (e.g., distance between households, distance between houses and central location), and other considerations including community acceptance (may vary in urban vs. rural settings), will influence the decision on where samples should be collected.

5.3. Prior to entering a cluster, the site PI and coordinators should have a general idea of the cluster structure and may be able to provide a recommendation for the location of blood collection. Upon arrival to the cluster on Day 1 when the survey team is

meeting with the local health workers and local leaders they should discuss the proposal for blood collection and decide what would be best.

5.4. Within a cluster the survey team may decide to do house-to-house collection in one area then centralized collection in a denser area.

5.5. Central location considerations:

5.5.1. Two options:

5.5.1.1. Data (except household data) and specimen collection in central location. Household data will still need to be collected at household to obtain household GPS information.

5.5.1.2. Data collection in the household and specimen collection done centrally. Based on experience with prior surveys, this option was preferred to improve process flow and avoid overwhelming the survey team at the central collection point.

5.5.2. If both are done centrally, data and specimen collection should be done in a semi-private area of the central location, away from the other families who are waiting. A waiting area with chairs should be available.

5.5.3. Survey team members may decide to split up. Below are some suggestions:

5.5.3.1. 1 survey member travel with the local health workers to the households of the selected participants informing them they were selected and instructing them where to go for specimen collection. They should confirm the name, date of birth/age, and household prior to inviting the family to the central location, then begin data collection if doing household data collection. If central data collection, request they bring birth and vaccination documentation with them to the central location.

5.5.3.2. If central data collection, the survey team member should complete the household questionnaire in tablet either prior to or after blood collection at central location.

5.5.3.3. 2 survey members (including lab technician) remain at the central location with additional local health workers to conduct data/specimen collection.

5.5.3.4. Recommend printing two copies of the Field Tally Sheet, one for each group, to track visits to households (field team) and participant arrival at central location (central team) (see Appendix 1). If doing household data collection, recommend using the Central Collection Log (see Appendix 2) containing additional columns to record specimen collection variables while the other survey team members have the tablet, then updating the tablet at the end of the day using the information on the log.

5.5.4. Prior to specimen/data collection at the central location, the survey team members must do the following (**High priority items**):

- 5.5.4.1. Verify the name and age of the participant to confirm they are the selected individual and to identify their participant ID. If a local health worker is present, they can also assist with this.
- 5.5.4.2. Ensure the correct participant ID labels are used for the specimen tubes and consent form. If doing central data collection, ensure the correct participant's forms are selected in the tablet.
- 5.5.4.3. Confirm the person giving consent for the child in the central location is the parent or legal caregiver.
- 5.5.5. If family who was visited at the household does not show up to the central location, the survey team should go to their household at the end of the day or on the mop-up day to do data and specimen collection.
- 5.6. Considerations for household collection:
 - 5.6.1. Depending on layout of houses and location of selected participants, the survey team may request one household to 'host' neighboring participants so that collection may be done of a couple participants within one location.
 - 5.6.2. Survey team will need to factor in additional specimen transport supplies for transporting specimens between households and allow 30 minutes for clotting prior to movement of specimens.

6. Specimen collection method by age group

- 6.1. Each site may have different considerations for collecting blood based on the participant's age.
 - 6.1.1. Butterfly needles may be used to collect venous blood, especially for children under age 2 years. The veins of small children are very thin and collapsible; therefore drawing blood by applying suction pressure directly on vein by syringe may not be successful. Butterfly needles used with vacutainers may be more successful.



- 6.2. For all children ≥ 2 years and for adults, the default will be to collect venous blood by needle and syringe.
- 6.3. DBS collection, in addition to venipuncture, will only be done on adult women and only in select sites. Recommend collecting blood by venipuncture first then DBS.

7. Procedural steps

5.1 State the following to the participant and/or parent/caregiver:

We will now take a blood sample from you/your child to test the level of protection in your/your child's blood against measles and rubella viruses and possibly other pathogens that can cause vaccine-preventable diseases. The sample will be collected by pricking your/your child's vein or finger (state what is applicable for the participant's age/site).

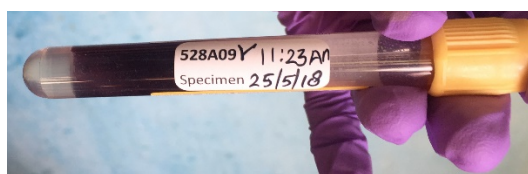
- *For venipuncture: Up to two attempts will be made to collect a sample by drawing blood from your/ your child's vein. When we are finished we will observe you/ your child for 5 minutes to make sure you/ your child are feeling well.*

5.2 For fingerprick (adult women in select sites): Up to two pricks may be done to collect the required blood sample. When we are finished, we will observe you/your child for 5 minutes to make sure you/your child are feeling well.

5.3 Arrange blood collection materials (gloves, tourniquet, alcohol wipes, cotton swabs, DispoVan syringe with needle, microtainer/ vacutainer tube, pre-printed labels, marker, needle cutter, sharps container etc.) in a clean area. Place biohazard bag (red bag) and garbage bags (black bag), vacutainer rack and vaccine carrier nearby. If DBS is collected, arrange DBS card and other supplies (see Appendix 4).

5.1 Blood collected by **venipuncture**: prepare labels as follows (refer to Study ID and Labeling SOP for details related to IDs):

- Using waterproof pen, append the letter "V" to the participant ID on 2 pre-printed labels. For example, participant ID is 303C12 and the corresponding venipuncture label would be 303C12V.
- Write time of collection (HH:MM am/pm), and date of collection (DD/MM/YY) on each label.
- Place one label on the vacutainer. The 2nd label will be placed on the informed consent form or parent permission sheet in the appropriate location.



5.2 If **blood is being collected as dried blood spots (DBS)**, prepare labels as follows (refer to Study ID and Labeling SOP for details related to IDs):

- Using waterproof pen, append the letter "D" to the participant ID on 2 pre-printed labels. For example, participant ID is 303C12 and the corresponding DBS label would be 303C12D.
- Write time of collection (HH:MM am/pm), and date of collection (DD/MM/YY) on each label.
- **Place labels on DBS card/ device as follows:**

- **Whatman 903 cards:** Open DBS card and fold back cover so 5 circles are visible. Place one label on the DBS card.
- **HemaSpot HF device:** Affix one label to the back of the device in the designated space.
- The 2nd label will be placed on the informed consent form or parent permission sheet in the appropriate location.
- Using permanent marker, handwritten specimen ID onto small Ziploc bag and place 1 desiccant in the bag.

5.3 Put on a fresh pair of gloves (change gloves after use on each participant).

5.4 **For blood collection in small children:** Ask the caregiver to sit on a chair with the child on his/her lap and to warm the child's hand by holding and rubbing it.

- Show caregiver how to immobilize the child:
 - Position guardian's legs around the child's legs in a cross-leg pattern
 - Ask the guardian to extend their arm across the child's chest and tuck the child's free arm underneath. With that same hand, the guardian should grasp the child's other arm at the elbow (i.e. the hand to be pricked), and hold it securely
 - Ask the guardian to use their other arm to firmly grasp the child's wrist, holding it palm down so that the fingers are below the elbow, tilted towards downwards
 - Alternatives: Mothers can breastfeed child while blood is drawn.



Source: WHO Guidelines on drawing blood: best practices in phlebotomy.

5.5 **For blood collection in older children:** Ask the participant to sit on a chair with his/her hand extended on the lap so that fingers are below the elbow and palm is face upwards.

5.6 **Collection of blood specimen by venipuncture:**

- Position the child as described in section 5.4 and 5.5.
- Determine the best collection site (e.g., wrist, cubital area).
- Tie a tourniquet proximal to the site of puncture.
- Clean the venipuncture site with alcohol swab and allow the area to air dry.

- Draw 1-2 ml blood using the syringe or butterfly needle. Release the tourniquet once the blood starts flowing.
- One **important precaution** to remember while using butterfly needle is that, at the time of vein puncture the other end of the tube should be open and free. Once the blood starts flowing in the tube then only the hub of the syringe should be attached to the end of tube to draw blood in the syringe. Remove the needle from the vein and press the puncture site with sterile gauze for about 15 seconds until the blood oozing stops.
- Remove the needle from the syringe using the needle cutter before transferring the sample slowly and gently along the inner side of the plain yellow top vacutainer tube to avoid hemolysis. Do not push the blood through the needle.
- Apply a band-aid at the site of puncture.
- **Allow blood in the tube to rest at room temperature for 30 minutes for clot formation then place tubes into vaccine carrier (2-8 °C). Recommend collecting sample after consent is obtained but prior to data collection to allow time for clot formation.** Recommend keeping tubes in a tube rack until a few have been collected then wrapping the tubes together with a rubber band (see image). Place set of tubes in a beaker filled with cotton then place beaker in vaccine carrier at 2 – 8⁰C with conditioned ice packs for storage/transport around cluster. Vaccine carrier must be carried with care to avoid severe shaking. Preferable to carry by hand as opposed to over the shoulder.



- Put any material contaminated with blood (gloves, gauzes) into the bin with the red bag (hazardous material)
- Put the rest of non-hazardous material (e.g., packing material, wrappers, packaging, etc.) into the bin with a black bag
- All waste (red and black bags) must be returned to the site at the end of the day. **Do not dispose of any waste in the community, even if non-hazardous.**
- Survey Supervisor to record relevant information in the Field Tally Sheet. See Appendix 1 and/or 2.
- Survey Supervisor/ Survey Assistant to record relevant information in tablet for individual.

- If sufficient blood could not be collected by venipuncture on first attempt, or initial sample was hemolyzed during collection, technician may attempt one additional prick by venipuncture
 - Use a different vacutainer since initial sample may have clotted.
 - If small volume (less than 0.5 ml) use microtainer tube instead of vacutainer tube. Must be at least 0.25 mL (250uL) but do not exceed more than 0.5mL (500uL). Replace the top on tube, invert tube 3 times, and securely place it in the beaker stuffed with cotton then place the beaker into the cooler box. It is important to invert the tube to allow the coagulant in the vacutainer to mix with the sample.
 - Use blank label for the new specimen container; record specimen ID, date, and time of collection.
 - Note: 2 ml is the target volume for collection; if approximately 1 ml collected there is no need to prick again to collect additional volume.
- Ensure label is legible. Confirm specimen ID on tube is same as participant ID on household census.

5.7 Collection of blood by finger prick (if applicable for site/age group)

• Pricking the finger

- Explain the procedure:
"I am now going to prick your/your child's finger to collect the blood on this paper. This may hurt temporarily but it will be quick and will not cause any harm. Do you have any questions before we begin?"
- Select a finger without abrasions and few callouses. The 4th finger (ring finger) is the top choice. If not, select the 3rd finger (middle finger). Do NOT attempt on the 1st finger (thumb) or the 5th finger (pinkie).
- Wipe the area of selected finger with alcohol swab and allow to air dry.
- For the finger, use your thumb or forefinger to lightly press the subject's finger from the top of the knuckle to the tip. This stimulates the blood flow towards the sampling point.
- Use lancet according to manufacturer's recommendation to puncture finger.
- **Always wipe away the first drop of blood** with a clean piece of dry cotton or gauze to reduce contamination with tissue fluid. This also stimulates the blood flow.
- The puncture site should be held sloping downwards, below the level of the heart. If necessary, apply light pressure, until another drop appears.
- Gently rub the hand or finger to maintain blood flow. **Do NOT tightly squeeze the finger.**

• Collecting blood spots on HemaSpot HF (DBS) device (only for site doing DBS vs serum comparison; only for adult women)

- Let blood droplets form and fall into the center hole in the device.
- Gently apply pressure near the puncture site to **obtain 4-5 drops or until the flower is full.**

- Allow blood droplets to fall **one by one** directly into the **center of the application disk** and flow through the small hole.
 - Blood will travel to edges of the flower (~1 min).
 - Ensure paper is fully saturated (no white around the edges).
 - Snap device closed within 1-2 minutes of collection. Ensure device properly snapped shut (both pieces should snap into place).
 - Check pre-printed label on outside of device against the consent form ID. Ensure label is legible. Confirm specimen ID on tube is same as participant ID on household census.
 - After use, dispose of the lancet in a sharps container and cotton balls and alcohol swab in biohazard bag. If using a retractable lancet, the lancet can be disposed in the biohazard bag.
 - Survey Supervisor to record relevant information in the Field Tally Sheet. See Appendix 1 and/or 2.
 - Survey Supervisor/ Survey Assistant to record relevant information in tablet for individual.
- **Pricking finger more than once.** The technician may attempt one additional finger if:
 - Insufficient blood is collected. See Trouble shooting tips to increase blood flow (below).
 - The data collector misses puncturing the finger. If this occurs, ensure the caregiver is holding the child's arm firmly against a flat surface to steady the puncture site.

For each attempt at finger prick, select a new different finger (3rd or 4th finger only)

5.8 Clean up and storage

- For liquid blood (microtainer tubes or vacutainers):
 - Double check the cap on the tube is tightly secured
 - Keep microtainer and vacutainer tubes upright and stored at 2-8 C in vaccine carrier/cold box until processing at the site laboratory within 24 hours.
- For HemaSpot HF (DBS):
 - Place device into small Ziploc bag with 2 desiccants (original HF package desiccant + study desiccant)
 - Note: if using color-indicating desiccants and a new desiccant has already changed colors, do not use.
 - If desiccant inside a Ziploc bag (with a device) has changed colors:
 - Remove used desiccant in bag with a new desiccant
 - Inspect Ziploc bag for any holes or tears; if seen, replace Ziploc bag

- Carefully seal the Ziploc bag, ensuring fully sealed
- Place rubber band around small Ziploc bag to secure
- Ensure participant ID is correct and is visible through the bag (not covered by desiccant)
- Field team should confirm specimen ID on tube/ DBS card is same as participant ID on Field tally sheet (Appendix 1 and/or 2) prior to leaving the household.
- Properly dispose of all soiled waste in the red biohazard bag and any wrappers or non-soiled waste in the black garbage bag. Bring all waste bags to the laboratory; do not dispose of specimen-related waste in the field.

5.9 Packing and Transport to site lab

- For liquid blood samples: If portable centrifuge is available, samples should be spun at 3000 RPM for 10 minutes then placed in cold box for transport.
 - All samples must remain at room temperature for 30 minutes to clot then be placed into the vaccine carrier (2-8 C) for 30 minutes prior to centrifugation.
 - Place the tubes in a centrifuge, taking care to balance the load using other specimens or by creating blank tube filled with similar volume of water.
 - Do not open lid during spinning.
 - Note: using portable centrifuge in the field requires car adapter or locating a source of electricity at the local health facility or other building.
- For HemaSpot HF (DBS) device:
 - Place the individually labelled plastic bags with DBS cards into the medium-sized Ziploc bag labelled with the cluster ID.
 - Place additional (4-5) desiccants into larger Ziploc bag to prevent moisture.
 - Carefully place the sealed medium sized Ziploc bag into supplies bag for transport.
- Prior to leaving the field the field supervisor should confirm there is a labelled specimen in the vaccine carrier/cold box/DBS Ziploc bag for each individual indicated as having a specimen collected (per the field tally sheet).
- Check if cold packs have melted throughout the day. Replace as needed before transport back to site.
- To protect the tubes from shaking during transport, use a glass beaker with cotton cushions inside the vaccine carriers (microtainer tubes). Place tissue paper over tubes to absorb leakage should any of the tubes become damaged during transport.



- Once all samples have been confirmed and properly packaged, place top on vaccine carrier and apply tape to the sides to keep the top in place.
- Transport the microtainer tubes and/ or vacutainers in the vaccine carrier/ cold box and the DBS cards at room temperature to site at the end of the day.
 - Microtainer tubes and/ or vacutainers of blood need to be transferred to local site within 24 hours for processing and storage. Give specimens to site lab technician to process. Site lab technician must be at lab to receive specimens. Do not leave vaccine carrier in lab. See Processing and Specimen Shipment SOPs for details.
 - Do not leave specimens in vaccine carrier overnight.

TROUBLESHOOTING

Potential Roadblocks for Blood Sampling	Proposed Action(s)
What if a surveyor runs out of materials?	Field laboratory technician should inform the supervisor when the supplies are running low, who will contact the study coordinator.
What if the cold packs are no longer cool?	Field laboratory technician should inform the supervisor and discuss with local health workers who may have cold packs the team can borrow for the day. Cold packs should be used for a maximum of 24 hours.
What if the child is agitated, crying, or will not sit still?	For children, ask the caretaker or another member of the household to hold the child. Reassure the child or distract the child with a toy or video.
What if the guardian requests that we stop the sampling?	The participant or parent/caretaker have the right to stop blood collection at any time. If requested, stop the procedure and apply firm pressure with a sterile cotton swab to stop the bleeding.
What if the lancet does not prick the finger or is otherwise broken?	Dispose of it into the sharps bag. Use a new lancet to attempt pricking the participant's finger again.

What if the blood collects at the top of the microtainer tube?	Tap the tube on the table to draw the blood down into the tube and avoid coagulation. If this does not work and there is not sufficient enough blood, dispose of tube in a biohazard container. Using a new lancet, the data collector should select a new finger to attempt blood collection again (maximum 2 attempts).
What if the surveyor cannot collect enough blood?	The surveyor may make a maximum of 2 total prick attempts by fingerprick or venipuncture. If fingerprick, use a fresh lancet each time and a different finger. Prior to the fingerprick: 1. Have caregiver hold the participant's hand below the heart, let it hang, and then shake it gently 2. Rhythmically tighten and release the participant's wrist, to ensure that there is sufficient flow of blood. 3. Keep the participant warm by removing as few clothes as possible and having the caregiver wrap around the participant for warmth, leaving only the extremity of the site of capillary sampling exposed. During blood collection: 1. Steady and confident prick 2. Gently rub the hand or finger to maintain blood flow. Gently rub the hand or finger to maintain blood flow. Do NOT tightly squeeze the finger.
What if the data collector injures him/ herself with the lancet or needle?	1. Follow the site-specific Post-Exposure Prophylaxis protocol 2. Report the incident to the Field Coordinator immediately
What if the data collector's nose, mouth or skin (broken or not) make contact with the blood sample?	1. Follow the site-specific Post-Exposure Prophylaxis protocol 2. Report the incident to the Field Coordinator immediately
What if the participant loses consciousness, begins to sweat, becomes pale, vomits, sighs or stares excessively, convulses, or has a sudden drop in blood pressure during or after having their finger pricked?	In the rare circumstance that the participant loses consciousness, begins to sweat, becomes pales, vomits, sighs or stares excessively, or has a sudden drop in blood pressure: 1. Discontinue the blood sampling immediately 2. Lay the participant down and place them in a recovery position (i.e. head to the side and chin up). 3. Elevate their feet above their heart (~30 cm) 4. Check that the child's airway is clear by first visually inspecting the child for the rise and fall of their chest. Then, you may place your cheek near the child's mouth and nose to feel their breath. 5. Loosen any belts, collars, or other tight-fitting clothes 6. If the child vomits while unconscious, clear the airway with finger and check again for breathing.

	If participant stops breathing: 1. Instruct someone to call for a physician 2. Perform CPR until a physician or other medical aid arrives If the participant does not regain consciousness after one minute or begins to convulse: 1. Call a physician or provide transport to a medical facility 2. Prevent the participant from standing because they are at risk of fainting again. If the participant regains consciousness quickly: 1. Monitor the participant for 10 minutes after the event 2. Give fluids to drink AFTER the child has received the proper care: 3. Note the event on the child form in the tablet. 4. Thank the family for their time and remind family of contact information on consent forms, if needed 5. Inform the field coordinator
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Appendix 1: FIELD TALLY SHEET (FOR TRACKING ENROLLMENT OF RANDOMLY SELECTED INDIVIDUALS)

Pre-populated from random selection list														Completed by Survey Team during		
ClusterID	HH NO	Name	Head	Sex	Sno	AgeGroup	DOB	Age in Yrs (Calculated)	Need Verbal Assent?	Need Written Assent?	Need Parent Permission?	Need Written Consent?	ParticipantID	StatusaD1a	StatusaD2a	Specimen Verified
501	2	Ajay Kumar	Suresh Kumar	M	9	B	17-07-2009	8.7	Yes	Yes	Yes	No	501-B-09	✓+		Yes
501	3	Muthu Raj	Mohan Raj	M	1	A	23-12-2016	1.6	No	No	Yes	No	501-A-01	-	✓+	Yes
501	4	Mukesh Raj	Mohan Raj	M	1	B	20-11-2007	10.5	Yes	No	Yes	No	501-B-01	-	X	

^aStatus of Visit 1 (V1) and Visit 2 (V2):																
✓ : Participant enrolled																
✓+: Participant enrolled and specimen collected																
X : Incomplete; no revisit (e.g., participant refused, ineligible, two unsuccessful revisits made)																
- : Household to be revisited (e.g, locked, child/parent unavailable)																

Appendix 2. Central Collection Tally Sheet

Pre-populated from random selection list										Completed by Field Lab Technician during centralized specimen collection					
ClusterID	HH NO	Name	Head	Sex	Sno	AgeGroup	DOB	Age in Yrs (Calculated)	Participant ID	Liquid blood collected ^a	Date of collection	Time of collection	Specimen quality/volume ^b	Specimen collection problem ^c	Comments
114	1	Aryan	Vihaan	M	3	B	17-07-09	8.7	114-A-1	✓	29-05-18	15:30	✓	1	
114	7	Anaya	Muhammad	F	7	A	23-12-16	1.6	114-C-1	X			-	3	
114	12	Krishna	Aarush	M	11	B	20-11-07	10.5	114-B-1	-					.

All specimens assumed to be collected by venepuncture.

^a Specimen collected	^b Specimen volume	^c Specimen collection problem
✓: Specimen collected	✓: Adequate volume (≥ 2ml)	1: No problem
X: Individual came to central location but blood not collected (record reason in Comments)	-: Inadequate volume (< 2ml)	02: Could not be completed because participant was crying, moving too much, or other reasons
-: Individual did not show for centralized collection		03: Participant or guardian asked to stop
		99: Other

Appendix 3. Appropriate blood collection on a DBS card

HemaSpot HF device

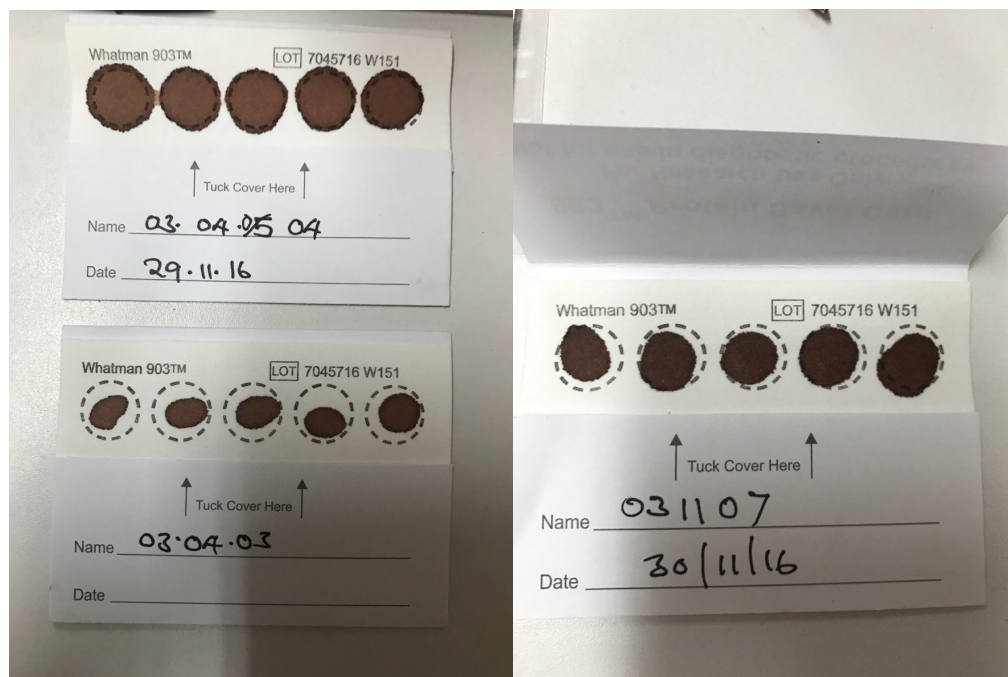


Left photo: Example of a device that was not fully saturated (white around edges); Right photo: Example of device fully saturated (no white around edges).

Whatman card



Left card - comparison of acceptable and insufficient DBS. Right card – all spots are acceptable (100%)



Left photo – top card shows 100% for spots 1-4 and 75-99% for spot 5. Bottom card shows <50% for all spots

Right photo - card shows 50-74% for spot 1 and 75-99% for spots 2-5.

Appendix 4: Blood Collection and Processing Supplies list

Supplies list for 1500 participants in 1 site

#	Material	Quantity for 2 teams
Field (Specimen Collection)		
1	DispoVan 5ml syringe with needles 23/24G	1000
2	DispoVan 2ml syringe with needles 23/24G	500
3	Butterfly scalp vein with 23-gauge needles	200
4	Needle Destruction unit	2
5	BD vacutainer SST Tubes (Gel, yellow top vacutainer tubes) (Product number: 367984)	1500
6	BD Microtainer SST (500ul Gel, yellow top) tubes	100
7	Hard shell Vaccine Carrier (Standard size)	4
8	Vacutainer/ gel tube rack (should hold up to 40 tubes)	2
9	Ice/ gel packs	16 (4 in each vaccine carrier plus extras)
10	500ml Beakers (for transportation of tubes from field to site and overnight storage in fridge)	4
11	Cotton rolls (for packing samples during transport)	10 rolls
12	Sharps Container	35- 40 (if single use)
13	Band-aid	1700
14	Cold Box (small-medium size: to be used for storing extra ice packs)	2
15	Alcohol Wipes	1700
16	Tourniquets	2
17	Gloves (<i>check with site on preferred sizes</i>)	2500
18	Hand sanitizer (Sterilium 50 ml)	4
19	Thin waterproof markers	5
20	Bio Hazard Bag (Red) (thicker, higher quality)	100
21	Garbage bags (black) (thicker, higher quality)	100
22	Gauge Swab	1700
23	Cotton Swab Sterile	1700
24	Rubber bands	450
25	Cello tape	2 rolls

26	Scissor	2
27	BD retractable lancet (Product number: 366594)	800
28	HemaSpot HF Device	500
29	Dessicant (size of a postage stamp)	600
30	Small Ziploc bags (1 DBS device should fit in this bag)	500
31	Medium Ziploc bags (Glad Freezer Bags 30 units (gallon size))	2
32	Tote bags (to carry supplies to field) (1/ team)	2
33	Laboratory coat (<i>check with site on preferred sizes</i>)	2
34	Portable centrifuge	2
Site Lab (Specimen Processing)		
35	Pipette 1000ul	2
36	Pipette 200ul	2
37	Filter tips 200ul	10 boxes
38	Filter tips 1000ul	10 boxes
39	Sterile Screw cap vial 0.5ml	1250
40	Sterile Screw cap vial 1.8ml	1250
41	Vacutainer/ gel tube rack (should hold upto 40 tubes)	2
42	Cryovial tube rack	2
43	Cryoboxes (capacity 9x9) for smaller screw cap vial 0.5mL	15
44	Cryoboxes (capacity 9x9) for larger screw cap vial 1.8 mL	15
45	Large Ziploc bags (to carry samples from site to central lab)	100
46	Large Tupperware (to carry from site to central lab)	4
47	500ml Beaker (to be used in lab)	2
48	Laboratory coat (<i>check with site on preferred sizes</i>)	1
49	Scissor	1

Daily blood collection supply list for fieldwork (per team per cluster) (to enroll 39 individuals per cluster)

Material	Quantity (per team per cluster)
Preprinted cryolabels	5 labels/participant in each age group
Blank labels (back up)	1 sheet
Gloves	1 box
Thin permanent marker	1
Bag/ bin for soiled plastics waste (red bag)	2-3
Bag/ bin for nonhazardous waste (black bag)	1-2
Hard shell Vaccine Carrier (Standard size)	2
Cold box (small-medium size)	1 (if needed)
Ice packs in vaccine carrier	4 (add additional if needed)
500ml beaker	2
Tissue paper	1 roll
Scissors	1
Cello Tape	1 roll
Laboratory coat (for each lab technician/ phlebotomist)	1
Tote bag to carry supplies (small bag)	1
Portable centrifuge	1
Sterile gauze pieces or cotton	90
Band aids	90
Rubber bands	5
Cotton roll	1 roll
Hand sanitizer (Sterilium 50 ml)	4
Thin waterproof markers	2
Venepuncture	
Tourniquet	2
DispoVan 5ml syringe with needles 23/24G	50
DispoVan 2ml syringe with needles 23/24G	20

BD vacutainer SST Tubes (Gel, yellow top vacutainer tubes) (Product number: 367984)	50
Vacutainer rack/ holder	1
BD Microtainer SST (500ul Gel, yellow top) tubes	10
Needle cutter	1
Sharps container	1
Alcohol swabs/ wipes	1 pack
Cotton swabs	2 packs
DBS	
DBS device	20-30
Desiccants (Note: should be stored in a small Tupperware or Ziploc bag to prevent moisture)	20
Lancets	20-30
Small Ziploc (to keep individual HF device)	50
Medium Ziploc (cluster specific bag)	2
Rubber bands	20