

# Section 9. Laboratory Considerations

---

## 9.1 Overview and General Guidance

This section contains information on the laboratory procedures performed in MTN-012/IPM 010.

As transmission of HIV and other infectious agents can occur through contact with contaminated needles, blood, and blood products, all study staff must take appropriate precautions when collecting and handling biological specimens. Sites must have appropriate written safety procedures in place before study initiation. Guidance on universal precautions available from the US Centers for Disease Control can be found at the following website:

<http://www.cdc.gov/hai/>

Laboratory procedures will be performed at various locations in site clinics or laboratories, MTN Network Laboratory (NL), or PRA International laboratory in the Netherlands. Table 9-1 and table 9-2 highlight specimen and storage requirements. Additionally, appendix 9-3 summarizes information for specimen requirements.

Regardless of whether tests are performed in clinic or laboratory settings, study staff that performs the tests must be trained in associated QC procedures prior to performing the tests for study purposes; training documentation should be available for inspection at any time.

All site laboratories will be monitored by the MTN NL which will utilize information from DAIDS monitoring groups (e.g., PNL, IQA, VQA) to monitor and certify laboratories for testing. US Laboratories that are certified by CLIA (Clinical Laboratory Improvement Amendment) will be able to substitute this for some of the documentation requirements required of other labs. Valid CLIA certificates must be provided in these cases.

**Table 9-1**  
**Overview of Laboratory Testing Locations, Specimens, and Methods for MTN 012**

| Assay or Process                                    | Testing Location                     | Specimen Type                            | Tube/ Container                                | Size of Tube Recommended <sup>2</sup> | Kit/Method/Special arrangement  |
|---|--------------------------------------|--|--|---------------------------------------|---|
| Urine NAAT for gonorrhea and Chlamydia              | MTN Network Lab Regional or site lab | Urine                                    | Plastic screw top Cup, Urine Preservative Tube |                                       | BD Probetec or Genprobe Aptima  |
| Dipstick Urinalysis <sup>1</sup>                    | Clinic/Local lab                     | Urine                                    | Plastic screw top cup                          |                                       | FDA approved test   |
| HIV antibody screen and Western Blot                | Clinic/Local Lab                     | Plasma or whole blood (serum acceptable) | EDTA or plain tube                             | 4 mL                                  | FDA approved tests  |
| Complete blood count with Differential and Platelet | Local Lab                            | Whole Blood                              | EDTA tube                                      | 4 mL                                  | Not specified   |
| Chemistries (AST, ALT, Creatinine)                  | Local Lab                            | Serum                                    | Plain or serum separator                       | 4 mL                                  | Not specified   |
| Blood Dapivirine level                              | PRA International (Netherlands lab)  | Plasma                                   | EDTA Tube                                      | 10 mL                                 | PRA International (Netherlands lab)                                   |
| Plasma Archive                                      | Clinic/Local Lab                     | Plasma                                   | EDTA Tube                                      | 10 mL                                 | Store frozen plasma until study team requests shipping and/or testing |
| Syphilis Serology                                   | Local Lab                            | Serum or Plasma                          | EDTA tube, plain or serum separator            | 4 mL                                  | Not specified   |

<sup>1</sup> Perform Urine Culture as indicated if local standard of care. Dipstick tests are glucose, blood, protein, leukocytes, and nitrites.

<sup>2</sup> Draw the suitable tube size or number of tubes to assure that minimum volumes are met.

**Table 9-2**  
**Overview of Specimens for Storage and Shipment**

| Specimen               | Additive | Ship to:        | Shipping schedule                                    |
|------------------------|----------|-----------------|--|
| Plasma for storage     | EDTA     | MTN Network Lab | Store at site until notified by MTN <sup>1</sup>     |
| Blood Dapivirine level | EDTA     | MTN Network Lab | Store at site until conclusion of study <sup>1</sup> |

<sup>1</sup>At the time of shipment, the MTN NL will furnish shipping instructions and addresses.

Sites are responsible to ensure that specimen volumes collected do not exceed what is described in the informed consent process. The MTN NL may request details of collection containers and volumes for this purpose. These blood draws will vary by site. Ideally, one method, type of test kit, and/or combination of test kits will be used for each protocol specified test throughout the duration of the study. If for any reason a new or alternative method or kit must be used after study initiation, site laboratory staff must perform a validation study of the new method or test prior to changing methods. The MTN NL must be notified before the change (for non-CLIA certified labs) and can provide further guidance on validation requirements. Similarly, all labs (including CLIA certified labs) must contact the MTN NL in cases of changes to normal ranges.

Provided in the remainder of this section is information intended to standardize laboratory procedures across sites. Adherence to the specifications of this section is essential to ensure that data derived from laboratory testing will be considered acceptable to all regulatory authorities across study sites. This section of the MTN-012/IPM 010 SSP manual gives basic guidance to the sites but is not an exhaustive procedure manual for all laboratory testing. This section must be supplemented with site Standard Operating Procedures (SOPs).

## **9.2 Specimen Labeling**

All containers into which specimens are initially collected (e.g., urine collection cups, blood collection tubes) will be labeled with SCHARP-provided Participant ID (PTID) labels. Study sites will be provided with pre-printed labels or a template that can be used to generate labels. The date the specimens are collected should also be included on the label. If the date is handwritten, it should be in indelible ink (such as a Sharpie pen).

When specimens are tested at the local lab, any additional labeling required for on-site specimen management and chain of custody will be performed in accordance with site SOPs. The stored plasma specimens will be entered into LDMS and labeled with LDMS-generated labels.

## **9.3 Procedures for Specimens that can not be evaluated**

Specimens will be redrawn or recollected if it is found that they can not be evaluated per site SOPs. Sites will monitor specimen management problems as part of ongoing Quality Assurance. In cases where additional specimens need to be recollected either due to a laboratory error (lost or broken specimen or clerical error) or clinic error (clerical error), a protocol deviation form may be required per the MTN Manual of Operations: <http://www.mtnstopshiv.org/node/187>.

## **9.4 Use of LDMS**

The Laboratory Data and Management System (LDMS) is a program used for the storage and shipping of laboratory specimens. It is supported by the Frontier Science Foundation (FSTRF). LDMS must be used at all sites to track the collection, storage, and shipment of specimens in MTN-012/IPM 010: plasma archive and plasma samples for Dapivirine levels.

Detailed instructions for use of LDMS are provided at: <https://www.fstrf.org/ldms> (may require a password).

All sites will be required to maintain the current version of LDMS and monitor updates relating to use of the LDMS. It is crucial to be aware of proper label formats to ensure that specimens are correctly labeled. Sites will be responsible to back up their LDMS data (frequency determined by site) locally and to export their data to FSTRF (at least weekly).

Questions related to use of LDMS in MTN-012/IPM 010 may be directed to the MTN Network Laboratory or LDMS Technical (User) Support. Usual business hours for LDMS User Support are 7:30 am - 6:00 pm (ET) on Monday and Fridays and 7:30 am - 8:00 pm (ET) on Tuesdays, Wednesdays, and Thursdays. During business hours, please contact LDMS User Support as follows:

Email: ldmshelp@fstrf.org  
 Phone: +716-834-0900, ext 7311  
 Fax: +716-898-7711

Each site must export its LDMS data to Frontier Science (FSTRF) on a weekly basis. Exported data are used by the MTN SDMC (Statistical Data and Management Center) to generate a monthly specimen repository report and to reconcile data entered in LDMS with data entered on study case report forms. Any discrepancies identified during the reconciliation are included in a monthly discrepancy report for each site. Sites are expected to resolve all discrepancies within two weeks of receipt of the report. The MTN NL is responsible for reminding sites to adhere to the two week timeframe and for following up with sites that do not resolve discrepancies within two weeks. The MTN SDMC reviews the discrepancy reports for critical samples (e.g., plasma needed for confirmatory HIV testing) that appear to be missing, and works with the NL and site staff to undertake appropriate corrective action. All corrective action should be documented in paper-based clinic and/or laboratory records as appropriate, and entered in the details section of LDMS. The NL and SDMC will discuss and document any items that, although resolved, appear ‘irresolvable’ in LDMS.

**Table 9-3**  
**LDMS Specimen Management Guide to Logging in MTN 012 Specimens**

| Test                  | Primary | Additive | Derivative | Sub Add/Derv | Primary Volume | Aliquot Volume      | Units |
|-----------------------|---------|----------|------------|--------------|----------------|---------------------|-------|
| Plasma for storage    | BLD     | EDT      | PL1/2      | N/A          | Variable       | 1-2 <sup>1</sup>    | mL    |
| Plasma for Dapivirine | BLD     | EDT      | PL1/2      | N/A          | Variable       | 1.25-2 <sup>2</sup> | mL    |

<sup>1</sup> Prepare as many 1mL to 2 mL aliquots as possible with a total volume of all aliquots  $\geq$  to 4 mL.

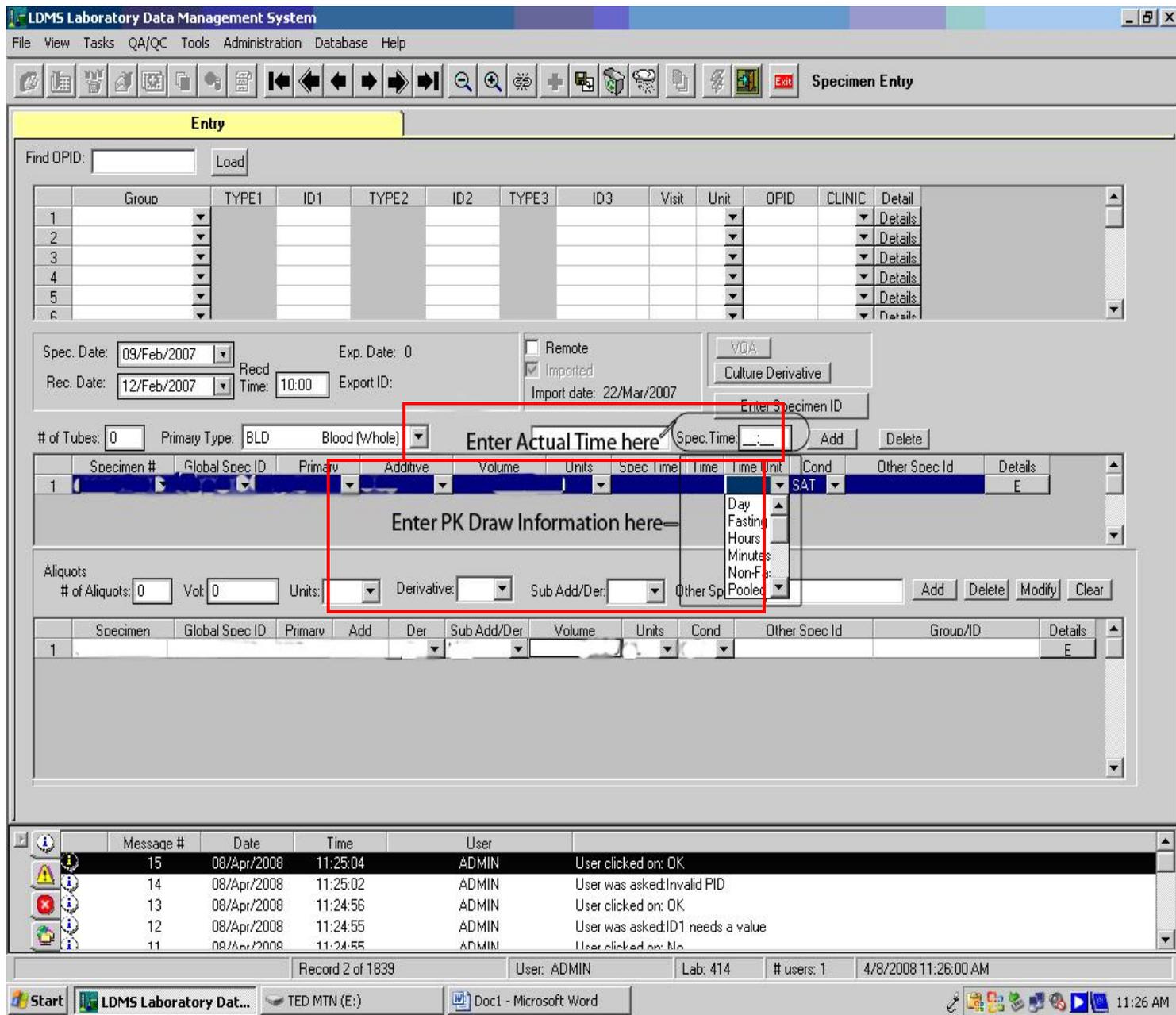
<sup>2</sup> Prepare two tubes with a minimum of 1.25 mL (up to 2mL) and label one as “primary sample” (to send to NL) and the other as “back-up sample” (stored at site).

The table above should be used as a guide when logging in MTN 012 specimens. Please use the LDMS codes listed above when logging in specimens for each test listed. Tests that are listed as local do not require that a sample be logged into the LDMS. See Appendix 9-1 for a copy of the LDMS tracking sheet.

#### Logging in PK Samples

- Enter the actual time in the Specimen Time area (See Image 1)
- Enter the PK time point information in Time and Time Unit area (See Image 1)

IMAGE 1: LDMS Entry Screen



## 9.5 Urine Testing

The urine tests performed at each study visit will depend on the visit and the clinical presentation of the participant. In general, at study visits when urine testing is required, a single specimen will be collected and then aliquots will be made for each test when possible. When doing multiple tests from one specimen, the correct order is separation of urine for the Chlamydia and Gonorrhea first and then the urine dipstick last.

### 9.5.1 Specimen Collection

- The participant should not have urinated within one hour prior to urine collection.
- Provide the participant with a sterile, plastic, preservative-free screw-top urine collection cup labeled with a SCHARP-provided PTID label.
- Participants should withdraw foreskin if present.
- Collect the first 15-60 ml of voided urine in a sterile collection cup. (Not mid-stream).
- Instruct the participant to screw the lid tightly onto the cup after collection.
- At visits when dipstick urinalysis is required, aliquot 5-10 ml for these tests and store the remaining urine at 2-8°C or introduce the urine immediately into the Urine Preservation Tube (UPT) for subsequent chlamydia and gonorrhea testing.

### 9.5.2 Dipstick Urinalysis

Dip the urinalysis test strip into an aliquot of urine. Perform this test according to site SOPs and the package insert. Assess and record results for glucose, blood, protein, leukocytes and nitrites. If leukocytes or nitrites are positive, perform a urine culture according to local SOP. To avoid overgrowth of bacteria, refrigerate specimen before and during transport to laboratory.

Notify the NL immediately if any kit inventory or quality control problems are identified, so that appropriate action can be taken.

### 9.5.3 Chlamydia and Gonorrhea Testing

Note: Testing for Chlamydia and Gonorrhea is done at screening and when clinically indicated only.

This testing will be done using the GenProbe Aptima or Becton Dickinson ProbeTec NAAT Methods by the local laboratory.

Instructions for transferring urine into the UPT:

Collect urine as noted above.

- Open the UPT kit and remove the UPT and transfer pipette. Label the UPT with the participants PTID number and date.
- Hold the UPT upright and firmly tap the bottom of the tube on a flat surface to dislodge any large drops from inside the cap.
- Uncap the UPT and use the transfer pipette to transfer enough urine to fill the tube to the level indicated on the tube between the black lines. Do not under fill or overfill the tube.
- Cap tightly and invert the tube 3-4 times to ensure that the specimen and reagent are mixed.
- The specimen can now remain at 2-30°C for 30 days.
- Results will be sent to the clinic for reporting on the STI Laboratory Results case report form..

### 9.6 Blood Specimens for HIV testing, Syphilis, Hematology, Chemistries, Blood Dapivirine, and Plasma Archive

The blood tests performed at each study visit vary depending on the visit and potentially the clinical presentation of the participant. Perform all tests according to site SOPs and package inserts.

### 9.6.1 Specimen Collection and Initial Processing

Label all required tubes with a SCHARP-provided PTID label at the time of collection. After collection:

- Allow plain tubes (no additive or serum separator tubes) to clot, then centrifuge per site SOPs to yield serum for syphilis and chemistries.
- EDTA Tubes should be gently inverted at least eight times after specimen collection to prevent clotting. EDTA tubes are used for hematology, HIV testing, plasma archive, and Dapivirine Level. If whole blood for hematology testing and plasma are to be taken from the same tube, the hematology must be completed before the tube is centrifuged and aliquoted. If whole blood is to be used for multiple tests, ensure that the tube is well mixed before removing any specimen.

### 9.6.2 HIV Testing

EDTA plasma (whole blood and serum are also acceptable) will be tested for HIV using tests that have been validated at the study site. All HIV testing in laboratories must be done under Clinical Laboratory Improvement Amendment (CLIA) certification. All tests and associated QC procedures must be documented on local laboratory log sheets or other laboratory source documents.

HIV infection status will be assessed using an FDA-approved HIV immunoassay per the MTN-012/IPM 010 HIV testing algorithm (see appendix 9-2 in this section of this MTN-012/IPM-010 SSP or appendix II of the MTN-012/IPM-010 protocol). If the screening test is negative, the participant will be considered HIV-seronegative. If the screening test is positive or indeterminate, an FDA-approved Western Blot (WB) or Immunofluorescent Antibody (IFA) test will be performed on the original screening sample (Sample 1). If there is insufficient sample to perform WB or IFA, then additional blood must be recollected and must still be regarded as screening Sample 1 per the algorithm. If the WB or IFA is negative or indeterminate, contact the NL for guidance. If the WB or IFA is positive for the screening visit, patient is considered seropositive and will not be eligible for enrollment. If the WB or IFA is positive for any other visit, a second specimen (Sample 2) will be drawn for confirmatory testing. If the WB or IFA is negative or indeterminate, the site should contact the NL for further instructions.

Notify the NL immediately if any kit inventory or quality control problems are identified, so that appropriate action can be taken.

### 9.6.3 Syphilis Testing

Syphilis testing will be performed using an FDA approved rapid plasma reagin (RPR) screening test followed by a confirmatory test for *Treponema pallidum*. Any FDA approved *Treponema pallidum* confirmatory test can be used such as the microhemagglutinin assay for *Treponema pallidum* (MHA-TP), *Treponema pallidum* hemagglutination assay (TPHA), *Treponema pallidum* particle agglutination (TP-PA), or fluorescent treponemal antibody (FTA-ABS). All positive RPR results must have a titer obtained and reported. RPR tests may be performed on either serum or plasma. Serum is the specimen of choice for syphilis confirmatory tests, however other sample types may be allowed according to the particular tests package insert. All testing and QC procedures must be performed and documented in accordance with study site SOPs.

For reactive RPR tests observed during screening, a confirmatory test result must be received. If a confirmation test is positive, then the participant will not be eligible for enrollment. Appropriate clinical management should include repeat RPR tests at quarterly intervals following syphilis diagnosis to

confirm treatment effectiveness. If the RPR titer does not decrease four-fold or revert to seronegative within three months after treatment, treatment should be repeated.

Please consult the MTN NL with any questions related to Syphilis testing to confirm treatment effectiveness and/or interpretation of unusual test results.

Questions related to result interpretation vis-à-vis eligibility and enrollment in the study should be directed to the MTN-012/IPM 010 Protocol Safety Physicians ([mtn012safetymd@mtnstopshiv.org](mailto:mtn012safetymd@mtnstopshiv.org)).

#### 9.6.4 Hematology Testing

Complete blood counts will be performed at all sites according to protocol at the Screening and Final Clinic Visits.

Each of the following must be analyzed and reported:

- Hemoglobin
- Hematocrit
- Platelets
- White blood cell count with differential
- Red blood cell count

These tests will be performed on EDTA whole blood per local site SOP's.

#### 9.6.5 Serum Chemistries

Liver Function

- Aspartate aminotransferase (AST)
- Alanine transaminase (ALT)

Renal Function

- Creatinine (Calculated creatinine clearance is determined each time serum creatinine is done). Formula (for males):  $\text{mL/min} = (140 - \text{age in years}) \times (\text{weight in kg}) / 72 \times (\text{serum creatinine in mg/dL})$ . The [Creatinine Clearance Calculator](#) is located at the MTN website in the Study Implementation Materials section of the MTN-012/IPM protocol.

These chemistry tests will be performed on serum per local SOP's.

#### 9.6.5 Plasma archive

For plasma archive, collect blood into a labeled 10 mL EDTA Vacutainer tube using either an indwelling venous catheter or direct venipuncture. Plasma will be stored at  $\leq -70^{\circ}\text{C}$  and batched onsite until the MTN-012/IPM 010 study team requests shipping and/or testing.

- LDMS will be used to label and track the specimens.
- If at room temp, freeze within 4 hours. If refrigerated or on ice after collection, freeze within 24 hours.
- Prepare as many 1mL to 2 mL aliquots in cryovials as possible with a total volume of aliquots greater than or equal ( $\geq$ ) to 4 mL. If less than 4 mL of plasma are available, store that plasma and inform the MTN NL for instruction.
- The MTN NL will send instructions to the site when shipping and/or testing is required.

### 9.6.6 Plasma Dapivirine Level

At the Final Clinic Visit, collect blood into a labeled 10 mL EDTA Vacutainer tube using either an indwelling venous catheter or direct venipuncture.

1. Mix blood sample with the anticoagulant using gentle inversions (8 to 10 times).
2. Centrifuge the sample at approximately 3000 rpm (1500 x g) for 10 minutes. The centrifugation should be completed within 2 hours of blood collection.
3. Use a pipette to aliquot approximately 1.25-2.0 mL of the resulting plasma into two separately labeled 5 mL polypropylene tubes or 2 mL cryovials. One of these will serve as the primary sample; the second will serve as a back-up in case the primary samples are accidentally destroyed during shipment to MTN NL or PRA, the bioanalytical lab in the Netherlands.
4. Prepare two storage boxes and label one as “primary samples” and the other as “back-up samples”. Transfer the tubes from each participant in chronological order into the storage boxes. All samples will be tracked in LDMS.
5. Store the boxes with samples at  $\leq -20^{\circ}\text{C}$  until shipped to MTN NL. MTN NL will ship all primary samples as one batch to PRA at conclusion of study.
6. Prior to shipping, prepare a shipment box (a foam chest) filled with dry ice sufficient for a 24 hour period with an appropriate shipping label.

NOTE: Remember to only ship one set of samples to MTN NL. The back-up samples will be shipped to PRA in a separate shipment, at the direction and with the prior approval of MTN NL, after confirmation that the original samples arrived safely at PRA.

**Appendix 9-1  
LDMS Tracking Sheets**

**MTN-012/IPM 010 LDMS Specimen Tracking Sheet (non-DataFax)**

*For login of MTN-012/IPM 010 stored specimens into LDMS*

|                            |                                   |                      |                                 |                      |                      |
|----------------------------|-----------------------------------|----------------------|---------------------------------|----------------------|----------------------|
| <b>Participant ID</b>      |                                   | <b>Visit Code</b>    | <b>Specimen Collection Date</b> |                      |                      |
| <input type="text"/>       | <input type="text"/>              | <input type="text"/> | <input type="text"/>            | <input type="text"/> | <input type="text"/> |
| <small>Site Number</small> | <small>Participant Number</small> | <small>Chk</small>   | <small>dd</small>               | <small>MMM</small>   | <small>yy</small>    |

| # of TUBES<br>or<br>SPECIMENS | PRIMARY<br>SPECIMEN  | PRIMARY<br>ADDITIVE  | ALIQOT<br>DERIVATIVE | ALIQOT<br>SUB ADDITIVE/<br>DERIVATIVE | NOTES FOR LAB  |
|-------------------------------|--|----------------------|----------------------|---------------------------------------|--|
| <input type="checkbox"/>      | Blood (BLD)<br><i>Plasma</i><br><br>Collection Time:<br>____ : ____<br><i>hour : min</i>           | EDTA<br>(purple top) | PL1/2                | N/A                                   | Prepare as many 1mL to 2 mL aliquots as possible with a total volume of aliquots greater than or equal to 5mL. If at room temp, freeze within 2 hours. If refrigerated or on ice after collection, freeze within 24 hours of collection. |
| <input type="checkbox"/>      | Blood (BLD)<br><i>Dapivirine level</i><br><br>Collection Time:<br>____ : ____<br><i>hour : min</i> | EDTA<br>(purple top) | PL1/2                | N/A                                   | Transport to lab and process within 2 hours. Prepare 2 tubes and label one as "primary sample" and the other as "back-up sample". Freeze immediately after centrifugation.   |

Comments: \_\_\_\_\_

Initials: \_\_\_\_\_ LDMS Data Entry Date:    /    \_\_\_\_\_  
Sending Staff      Receiving Staff      dd      MMM      yy      LDMS Staff

Note about LDMS Tracking Sheet: The minimum volume for plasma archive has been changed to 4 mL. The printed tracking sheets at the sites do not reflect this change.

## MTN-012/IPM 010 LDMS Specimen Tracking Sheet (non-DataFax)

*For login of MTN-012/IPM 010 stored specimens into LDMS*

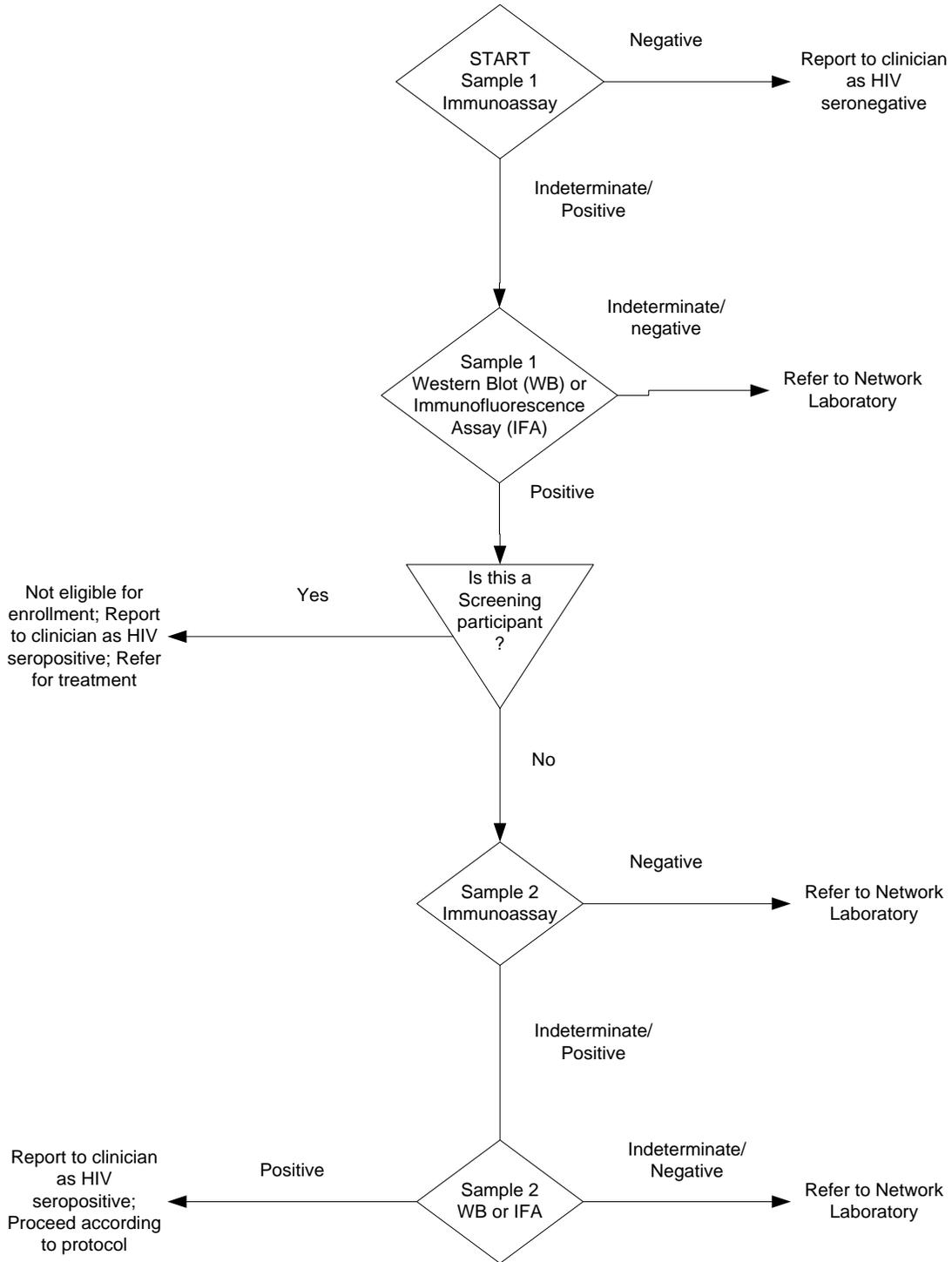
**Purpose:** This non-DataFax form is used to document collection and entry of MTN-012/IPM 010 blood specimens into the Laboratory Data Management System (LDMS).

**General Information/Instructions:** A copy of this form accompanies enrollment plasma and PK blood specimens (in their original specimen collection containers) to the LDMS entry laboratory. Once the specimens have been entered into LDMS, this form is kept on file at the LDMS entry laboratory. If the site chooses, a copy of this completed form may be made once the specimens have been entered into LDMS and the copy kept in the participant's study notebook. This is not required, however. Because this form is a non-DataFax form, this form should NOT be faxed to SCHARP DataFax.

### **Item-specific Instructions:**

- **Visit Code:** Record the visit code of the visit at which the LDMS specimens were collected.
- **NUMBER OF TUBES COLLECTED:** In the box to the left of each additive type, record the total number of tubes collected. If no LDMS specimens of the primary specimen type were collected, record "0."
- **Initials – Sending Staff:** The clinic staff person who completed the form and/or who is sending the LDMS form and specimens to the LDMS entry lab, records his/her initials here.
- **Initials - Receiving Staff:** The laboratory staff person who received this form (and the LDMS specimens accompanying the form), records his/her initials here.
- **LDMS Data Entry Date:** Record the date the LDMS specimens listed on this form were entered into LDMS.
- **LDMS Data Entry Date - LDMS Staff:** The LDMS laboratory staff person who entered the specimens into LDMS, records his/her initials here.

**Appendix 9-2  
ALGORITHM FOR HIV ANTIBODY TESTING  
FOR SCREENING AND ENROLLED PARTICIPANTS**



**Appendix 9-3  
Specimen Requirements Overview**

**MTN-012/IPM 010 LAB SPECIMEN PROCESSING GUIDELINES- Urine Specimens**

| Assay               | Primary Specimen | Additive/Container   | Minimum Volume        | Testing Specifications                        | Handling Requirements                                      |
|---------------------|------------------|--|-----------------------|---|--|
| NAAT for GC/CT      | Urine            | Collect in a Urine Container (no additive) and transfer to Urine Preservative Tube | 4 ml                  | MTN NL or Locally: batched 2-3 times per week | Follow package insert directions for handling requirements |
| Dipstick Urinalysis | Urine            | Urine Container- No additive   | Enough to cover strip | Locally in real time                          | Room temp-analyze within 2 hours of collection             |
| Culture             | Urine            | Urine Container (Sterile) - No additive  | N/A                   | Locally in real time                          | Locally Defined  |

**MTN-012/IPM 010 LAB SPECIMEN PROCESSING GUIDELINES- Blood Specimens**

| Assay                   | Primary Specimen | Additive/Container   | Minimum Volume         | Testing Specifications                      | Handling Requirements  |
|-------------------------|------------------|--|------------------------|---|--|
| Creatinine, AST and ALT | Blood            | Plain Tube-No additive or Serum separator tube (locally defined) | Locally defined        | Locally in real time                        | Locally Defined  |
| Syphilis Serology       | Blood            | Plain Tube-No additive or Serum separator tube (locally defined) | Locally defined        | Locally in real time                        | Locally Defined  |
| Full Blood Count        | Blood            | EDTA Tube  | Locally defined        | Locally in real time                        | Locally Defined  |
| HIV-1 Test              | Blood            | EDTA Tube  | Locally defined        | Locally in real time                        | Locally Defined  |
| Dapivirine Level        | Blood            | EDTA Tube  | 1.25 mL plasma/aliquot | Stored and shipped for analysis in batches. | Transport to lab and process within 2 hours. Prepare two tubes and label one as "primary sample" and the other as "back-up sample". Freeze immediately after centrifugation.   |
| Plasma Archive          | Blood            | EDTA Tube  | 4 mL plasma            | Stored and shipped for analysis in batches. | Prepare as many 1mL to 2 mL aliquots as possible with a total volume of aliquots $\geq$ to 5mL. If at room temp, freeze at -20°C within 2 hours. If refrigerated or on ice after collection, freeze within 24 hours. |