

**KCMC Biotechnology  
Laboratory, Microbiology**

**STANDARD  
OPERATING  
PROCEDURE**

**Effective Date**  
**22 Aug 2006**

**SOP-Number**  
**MIC.012.02**

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**Date**  
**22 August 2006**

**Title: BLOOD AND URINE SPECIMEN COLLECTION FOR ISAAC 002 AND 003 STUDIES**

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**This SOP has been read and understood by:**

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<b>Annual Review</b>	
<b>By</b>	<b>Date</b>

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**Document History:**

<b>Version Number</b>	<b>Reason for Changes</b>	<b>Date</b>
MIC.012.02	Addition of urine collection	

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**PURPOSE**

Procedures for collection and transport of blood and urine specimens for the ISAAC febrile illness studies (002 and 003).

**PRINCIPLE**

Accurate documentation of patient and study information, proper skin disinfection for obtaining blood for cultures to minimize contamination with skin bacteria, and obtaining sufficient blood and urine for other tests are essential for quality data. ISAAC Laboratory Request forms must be fully completed and adequate samples obtained for all tests listed. Specimens should be transported to the lab as soon as possible or properly stored until transport can occur to assure sample integrity.

**SCOPE**

This Standard Operating Procedure applies to the collection of blood and urine samples for the ISAAC 002A, 002B, and 003 by Clinical Officers and KCMC physicians.

**STANDARD PRECAUTIONS**

Standard precautions should be observed when obtaining and handling patient samples. Wear gloves to prevent exposure to bloodborne pathogens.

**PERSONAL INJURIES**

All injuries incurred with “sharps” (e.g. needles, lancets), no matter how minor, must be reported immediately so appropriate follow-up procedures can be initiated if necessary. Refer to SAF.001 BIOHAZARD SAFETY for a detailed description of post-exposure procedures.

1. Apply pressure to wound to curtail bleeding if necessary and apply a bandage.
2. Report any injury involving sharps to a Study Coordinator and report to the Casualty Department for treatment and evaluation for post-exposure prophylaxis.

**LAB REQUEST FORM COMPLETION**

1. Select Lab Request form appropriate for study in which patient is enrolled.
2. Record the study number printed on the Screening Teleform.
3. Enter all patient information on the spaces provided:
  - Name
  - Study ID#
  - KCMC medical record number
  - Date of birth and/or age

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Gender

KCMC ward location

4. Record the collection date and time.
5. Enter the initials of the specimen collector.

**BLOOD SAMPLES - VENIPUNCTURE**

**Materials**

70% alcohol solution (ethanol or isopropanol)

Povidone iodine solution

Gloves

Tourniquet

Cotton wool balls

Butterfly needle

Syringe with needle (size dependent on volume of blood required – refer to Lab Request form)

EDTA (purple top) vacutainer tube - a sufficient number for study and appropriate size (listed on individual lab request forms)

Plain (red top) vacutainer

Blood culture bottles (for ISAAC 002 A/B and 003)

Pens for labeling

**Preparation of collection tubes**

1. Inspect collection containers for the following:
  - Breakage
  - Intact/gray sensors on bottom of blood culture bottles
2. Refer to ISAAC Lab Request Form for the following:
  - Bottles or tubes to be filled
  - Draw priority (order in which bottles/tubes should be filled)
  - Amount of blood required in each tube
3. Line up bottles and tubes in the order of draw sequence listed on ISAAC Lab Request Form and mark on each the required volume.
4. Disinfect the rubber bungs on blood culture collection bottles/tubes (BacT/ALERT, MycoFLYTIC, Isolator) using 70% alcohol wipe or a cotton ball saturated with 70% alcohol.

**Patient Preparation**

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1. Verify patient's identity by asking them to state their full name (or obtain information from parent/guardian).
2. Explain to the patient/parents/guardian why the blood is being drawn and what the procedure will be. Never tell the patient what disease or condition a specific blood test will detect.
3. Have patient sit or lie down for the procedure and make them feel comfortable. If patient is a child, it may be preferable to have the parent/guardian hold the child.
4. Explain possible side effects of the procedure e.g. pain on needle insertion, bruising.

**Venipuncture procedure:**

***NOTE: If at any time during the venipuncture procedure the patient displays any adverse reaction (e.g. lightheadedness, fainting, nausea, convulsions) discontinue the procedure immediately and contact a member of the ward medical team for assistance.***

1. Put on gloves.
2. Apply a tourniquet 3-4 inches above the site selected. Ideally, the tourniquet should not be applied for longer than 1-2 minutes. Leaving it on for an extended period may result in localized stasis and hemoconcentration that can cause erroneous results for some laboratory tests.
3. Find a suitable vein\*. Having the patient squeeze their fist to increase the blood accumulation may help in locating a suitable site.

NOTE: Antecubital veins are the preferred choice but blood may also be collected from veins on the hand, wrist or lower on the arm. If a suitable vein is not available, contact a member of the ward medical team for assistance.

4. Soak a cotton ball with 70% alcohol and scrub the venipuncture site vigorously for 30 seconds.
5. Soak a cotton ball with povidine iodine and apply in concentric circles away from the venipuncture site covering an area of 3-5 cm.
6. Allow the iodine to dry thoroughly (this is essential for disinfection) Do not repalpate the vein after disinfecting the site. If you do, repeat the disinfection.
7. Position the arm so it is resting on a table or bed alongside the patient. The arm should be supported firmly and not bent at the elbow. If necessary, place a pillow under the arm to provide additional support.

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8. Remove the butterfly from the package and attach the syringe to the butterfly.
9. Anchor the vein by using thumb to draw the skin taut, about 1-2 inches below the site.
10. Smoothly insert needle with the bevel side up.
11. If blood does not flow, calmly make the following adjustments:
  - Change the position of the needle; pull back if it has penetrated too far, or advance the needle if it is not fully inserted in the vein.
  - Make sure the bevel of the needle is up.
  - Loosen the tourniquet which may be on too tight stopping the blood flow.
- NOTE: If first attempt is unsuccessful repeat the process on another site using a NEW butterfly. A clean, sterile needle must be used for each new collection attempt. If the second attempt fails, do not attempt another. Contact a member of the ward medical team for assistance with the venipuncture.
12. Release the tourniquet as soon as the blood begins to flow. Do not allow the tourniquet to be continuously in place more than 2 minutes.
13. Collect the proper amount of blood for tests. Always inoculate blood culture bottles first. Refer to instructions below.
14. Gently invert EDTA tubes to mix anticoagulant and prevent clotting.
15. Remove the needle and apply pressure to the site with a cotton ball. The patient may also apply pressure while elevating the arm to assist clotting.
16. Check site to make sure that bleeding has stopped and apply a bandage.
17. Discard syringe/butterfly in appropriate Sharps container. **NEVER RECAP NEEDLES.**
18. Discard other materials in appropriate trash receptacle.
19. While still with the patient label each collection tube with the following information:
  - Study ID#
  - Date and time of collection
  - Initials of collector
20. Before leaving the patient make sure the patient is stable and shows no sign of distress following the procedure.

**Inoculation of blood culture bottles and vacutainer tubes**

Refer to Lab Request form for required volumes and priority.

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1. Inoculate blood culture bottles first.
2. Insert needle into rubber stopper. Blood will immediately begin to flow into the bottle; there is no need to depress the syringe plunger. Watch the syringe carefully and when the desired volume has been added, immediately remove the needle and move to the next bottle or tube.
3. After blood has been added to the blood culture bottles proceed with filling the required EDTA and plain vacutainer tubes.
4. On the lab request form check off the tubes collected in the “confirm collection” column and enter initials in the space provided at the bottom of the column.

**URINE SPECIMENS**

**Materials**

Urine specimen jar  
Pen for labeling  
ISAAC Lab Request form appropriate for study

**Patient Preparation**

1. Verify identity of patient by asking their full name (or asking parent/guardian).
2. Explain to the patient/parent/guardian the purpose of obtaining the urine specimen.
3. Show patient the specimen jar and indicate the amount of urine required.
4. Accompany them to the toilet facility and assist if needed.

**Collection Procedure:**

**Wear gloves if required to assist patient with collection procedure.**

**Females:**

1. Instruct patient to wash their hands with soap and water.
2. Instruct patient to squat over the toilet or bedpan.
3. Instruct the patient to begin urinating into the toilet or bedpan. The midportion of the flow of urine should be collected in the specimen container, then finish urinating into the toilet or bedpan.
4. While still with the patient label urine container with the following information:  
ISAAC study ID number

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Date/time of collection

Initials of collector

**Males:**

1. Instruct patient to wash their hands with soap and water.
2. If patient is uncircumcised instruct them to withdraw the foreskin to expose the urethral meatus.
3. Instruct the patient to begin urinating. The midportion should be collected in the container without contaminating the outside of the container. Any excess can pass into the toilet or bedpan.
- a. While still with the patient label urine container with the following information:
  1. ISAAC study ID number
  2. Date/time of collection
  3. Initials of collector

**SPECIMEN TRANSPORT**

1. Place bottles and tubes in a plastic resealable "Biohazard" bag.
2. Insert Lab Request Form in side pocket. Do not put form in same section as specimens.
3. Place bag in sturdy, non-breakable carrier box labeled "BIOHAZARD" for transport to the Biotechnology Laboratory.
4. Transport immediately or within 1 hour to KCMC Biotechnology Laboratory/Microbiology section and hand over to technician or supervisor. Do not leave specimens unattended.

**SPECIMEN STORAGE**

If specimens are collected during times the laboratory is closed, store the specimens as follows until transport to the laboratory can occur:

BLOOD CULTURE BOTTLES/ISOLATOR TUBES – Room Temperature

PLAIN TUBES – Room Temperature

EDTA TUBES – Refrigerate

URINE – Refrigerate (within one hour of collection)

**REFERENCES**



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ISAAC Study Protocols 002A and B, 003. Duke University, Durham, NC.

**APPENDICES** – ISAAC Laboratory Request forms