

## CHIMPS Procedures for Blood drawing: Hemoglobin and Glucose determination

### Equipment:

- ◆ Hemocue 301 machine
- ◆ Cuvettes for hemoglobin determination
- ◆ Hemocue Cleaners
- ◆ 4 AA batteries and the plug in cord (need batteries as electricity may go off)
- ◆ Retractable lancets
- ◆ Alcohol swabs
- ◆ 2X2 lint free wipes to wipe off the first drop of blood
- ◆ Glucometer and strips
- ◆ Containers for medical waste

### Overview of Process:

- ◆ Test team members and record their results to serve as living controls for hemoglobin before you go to the site.
- ◆ Set up the blood drawing and testing area to draw the blood with equipment each morning
- ◆ Do hemoglobins on all age groups; do glucose on all adults over 35 years of age.
- ◆ Do the hemoglobin determination first (must be done within 40 seconds of blood draw) followed by the blood glucose
- ◆ Two people with one person drawing the blood in the hemoglobin microcuvette first and then putting blood onto the glucometer strip and second person putting the cuvette into the Hemocue machine and recording the results on the intake form makes for maximum efficiency.
- ◆ Subjects are given the results immediately with short education about dietary changes or needs for medications that can be reinforced in the consultas if they are abnormal.

### Abnormal Hemoglobin readings are levels:

- ◆ Below 11 for girls age 11 and under and for boys age 13 and under
- ◆ Below 12 for females age 12 and over
- ◆ Below 13 for males age 14 and over
- ◆ **Repeat any Hb result below 10.**

### Abnormal Glucose readings:

- A random glucose of 200 or over along with symptoms of diabetes (excessive thirst, urination, or weight loss) is diagnostic of diabetes
- A fasting blood glucose of 126 or over is diagnostic of diabetes
- A definitive diagnosis of diabetes requires a second positive test performed on a different day.
- Individuals with a random glucose close to 200, can return for a fasting glucose if there are any concerns that they may have diabetes from their history.

**Specific Advice and Troubleshooting for Hemoglobin:**

The Hemocue machine comes with clear instructions and should be cleaned easily. Use the electrical plug if electricity is available. Otherwise use and replace batteries as needed.

- Falsely low hemoglobins are caused by not filling the cuvette fully or getting bubbles in the cuvette. Discard cuvette and start again if bubbles are present.
- The main error message that you will get is E 40 indicating that the optics are dirty. When this happens, use the Hemacue cleaner or alcohol swab to clean the optics.
- Error message E01 is the second most commonly encountered and is related to not cleaning the cuvette well of excess blood or malpositioning in the holder.
- Getting the blood to enter the cuvette is difficult unless the patient has a good bead of blood. Be sure that you have squeezed a 2mm or more bead before using the cuvette. Difficulty establishing good capillary action to draw the blood into the cuvette is the main factor impacting time to obtain the sample

**Specific Advice and Troubleshooting for Glucometer:**

- Be sure the machine is turned on and the strip firmly inserted before testing the blood
- Be sure you have enough test strips for the meter you are using.

**Medical Waste Issues:** The used lancets, cuvettes, alcohol swabs are placed directly into plastic bottles/containers that are transported back to the city and disposed of as medical waste.

**Blood collection site:** Use 3<sup>rd</sup> or 4<sup>th</sup> digit on non-dominant hand in children and adults; Big toe works best for age 4 and below with distraction activities. Warming a cold hand by rubbing can improve the blood flow.