Trainer Edition

Arizona WIC Training

Hematology Guidebook

WIC ARIZONA

ARIZONA DEPARTMENT OF HEALTH SERVICES

Contents

What Will You Learn?

In this guidebook, you will learn how to perform hemoglobin screening safely and accurately. You will also learn how to explain the risks of anemia to participants, and offer ways to improve iron status through dietary choices.

After completing the Hematology LMS Course and guidebook, you will be able to:

- Identify which participants require blood testing
- Describe important functions of hemoglobin
- Explain how anemia is associated with low hemoglobin
- Identify the appropriate lancet to use with different participants
- Identify proper safety precautions to take in order to obtain hemoglobin blood values
- Identify the steps to take to determine a participant's hemoglobin value

Items Needed for This Course

- Pen or pencil
- Local Agency Referral List
- Access to the Arizona WIC Laboratory Procedure Manual, either a hard copy or on the website https://azdhs.gov/documents/prevention/azwic/manuals/azwic-lab-manual.pdf. [Navigate to azwic.gov: WIC Home →Local Agencies →WIC Manuals →Arizona WIC Laboratory Procedure Manual]. To save paper, you do not need to make copies of or print the policies or procedures.

Recommended Time

- Approximate time it takes to complete the Hematology LMS course: 1-2 hours
- Approximate time it takes to complete the face-to-face activities and discussion: 2-3 hours

Things to Remember

- This guidebook is yours to keep.
- You are encouraged to take notes, highlight, and write in the guidebook.
- As your trainer chooses, you may work in a group or as an individual.
- You are encouraged to ask your trainer(s) for help, ask questions about the information in the course, or ask any questions about additional topics related to hematology training.

TRAINER NOTE: As the trainer, you are assessing trainees for their understanding of hematology competencies for each module. The guidebook training activities are intended to help you assess both trainees' ability to apply basic knowledge and their critical thinking skills. Participation by the trainee in the face-to-face activities and discussions is required in order for you to thoroughly assess their skills and level of competence.

Hematology Course Instructions

- ☐ Log onto https://az.train.org/DesktopShell.aspx
- ☐ Open and complete all modules of the Hematology LMS course and the corresponding Hematology Activities in this guidebook.
- ☐ At your trainer's direction, complete the Hematology LMS course and guidebook, either individually, with other trainees, or with your trainer.
- ☐ Complete the Hematology Post-Test
- ☐ Meet with your trainer at their discretion to discuss each module of the Hematology LMS course and the associated activities in this guidebook, either after each module or after all modules have been completed.

TRAINER NOTE:

Trainer Steps:

- ☐ **At your discretion, trainees may work in groups or as individuals.**
- ☐ **At your discretion, you may review answers with trainees periodically as they complete activities of the Hematology Guidebook, or after they have fully completed it. Please answer all questions the trainees may have and clarify any incorrect answers.**
- ☐ **"Possible responses" provided throughout the guidebook are suggested responses and are often not the only answers.**
- ☐ **If training more than one person at a time, be prepared for trainees to finish the coursework at different times. In order to have trainees review the face-to-face portions together, prepare a list of things that trainees who finish first can do during downtime (e.g., ask you questions for more clarification, check email, clinic observation, etc.).**

Module 1: Hematology Introduction

TRAINER NOTE: It is recommended for you to review the competencies below with trainees.

MODULE 1 COMPETENCIES:

1. Trainees will be able to identify which participants require blood testing and when their next blood test will be required.
2. Trainees will be able to explain why the WIC Program tests its participants for iron-deficiency anemia.
3. Trainees will be able to describe what hemoglobin is and its most important functions in the body.
4. Trainees will be able to explain how anemia is associated with low hemoglobin.
5. Trainees will be able to explain what anemia is and the consequences of untreated anemia.

Module 1: Activity 1

TRAINER NOTE: Allow trainees time to read through the activity and answer the questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Directions:
Complete the following table to indicate if/when bloodwork is required for each situation.

Correct responses: (Module 1, Slide 2)

Participant	Is Bloodwork Required Now?	When Will Next Hgb Test be Required?
8-month-old certifying infant	**No**	**During 1-year Certification appointment**
11-month-old certifying infant	**Yes**	**15 months of age (6 months after initial test)**
16-month-old certifying infant	**Yes**	**22 months of age (6 months after initial test)**
2-year-old with below-normal Hgb recorded 3 months ago during Certification appointment	**No**	**In 3 months (since last Hgb test was below normal)**
3-year-old with normal Hgb recorded 1 month ago during Certification appointment	**No**	**In 11 months during next Certification appointment**
Certifying pregnant woman	**Yes**	**30 days postpartum**
Postpartum woman certifying her 7-day-old infant	**No**	**After at least 23 more days**

Module 1: Activity 2

TRAINER NOTE: Allow trainees time answer the questions below. Discuss the questions together to check for understanding and consider other appropriate responses.

1. Why do we screen WIC participants for iron-deficiency anemia?

Possible response: (Module 1, Slide 6)

- **Iron-deficiency anemia is the most common type of anemia in the world. The groups most likely to develop iron-deficiency anemia include children and women of childbearing age. Since these are the same groups of people commonly participating in the WIC Program, we can help to reduce the prevalence of iron-deficiency anemia by testing hemoglobin and providing referrals and education to those with low hemoglobin values.**

2. What is hemoglobin and what are its most important functions in the body?

Possible response: (Module 1, Slide 7)

- **Hemoglobin is a protein found in red blood cells. It is used to bring oxygen to cells throughout the body, and is also used to bring carbon dioxide back to the lungs.**

3. How are low hemoglobin levels associated with anemia?

Possible response: (Module 1, Slide 8)

- **Without enough hemoglobin, the body isn't able to build enough healthy red blood cells, resulting in anemia.**

4. What is anemia and what are the risks associated with it?

Possible response: (Module 1, Slides 8 & 18)

- **Anemia is a medical condition caused by a lack of healthy red blood cells. People with anemia are at a higher risk of infections, decreased work performance, difficulty learning, growth retardation, prematurity, low birth weight, infant mortality, and insufficient breastmilk.**

Module 2: Masimo Pronto

TRAINER NOTE: It is recommended for you to review the competencies below with trainees.

MODULE 2 COMPETENCIES:

1. Trainees will be able to determine which participants require hematology to be completed via capillary sampling, and which can be tested using the Masimo Pronto.
2. Trainees will be able to identify the main features of the Masimo Pronto as well as interpret the messages it displays.
3. Trainees will be able to describe the steps to take when selecting and appropriately placing a participant's finger inside the Masimo Pronto.
4. Trainees will be able to identify the steps to take to determine a participant's hemoglobin value using the Masimo Pronto.

Module 2 Questions

1. Complete the following table by identifying (with a checkmark) which participants are able to have their hemoglobin measured with the Masimo Pronto, and which will need to have their hemoglobin measured via capillary sampling.

Possible responses: (Module 2, Slide 3)

Participant	Masimo Pronto	Capillary Sampling
Pregnant Woman	✓	
2-Year-Old Child	✓	
10-Month-Old Child		✓
22-Month-Old Child		✓
Breastfeeding Woman	✓	

2. Explain the main features of the Masimo Pronto device and how to interpret normal display messages seen during a test, including: PI, Hb, Low SIQ Indicator, Battery Level Indicator, Spot Check Progress Indicator.

Possible responses: (Module 2, Slide 4)

- **PI: Perfusion Index, indicator of blood circulation. PI should be 1.0 or higher to complete a test.**
- **Hb: Hemoglobin, indicates numerical value of hemoglobin result in g/dL.**
- **Low SIQ Indicator: Low Signal IQ light appears when device's signal strength is too low to complete a test.**
- **Battery Level Indicator: Shows approximate charge remaining for batteries. Low battery level does not affect accuracy of test results, but may take longer to complete readings.**
- **Spot Check Progress Indicator: Bars light up from bottom to top to indicate the progress of a test. Test is complete when the topmost bar lights up.**

3. Briefly describe the steps in choosing a finger and appropriate placement in the finger sensor when performing a hemoglobin blood test using the Masimo Pronto.

Possible responses: (Module 2, Slide 7)

- **Choose a middle or ring finger; thumbs for small children are acceptable.**
- **Use digit gauge to determine whether the child sensor or adult sensor is needed.**
- **Align sensor with finger, making sure it reaches the end of the sensor and fits snugly.**
- **Do not place the sensor on an anatomically disfigured finger or a finger with a tight ring.**

4. Order the following steps (Step 1 to Step 16) for obtaining a hemoglobin blood value using the Masimo Pronto. (Refer to the AZ WIC Laboratory Procedure Manual.)

Step 5_	Position the participant comfortably seated with their arm extended, (but lower than their heart), with their palm facing down.
Step 3_	Explain the procedure to the Authorized Representative in simple terms.
Step 14_	Immediately record the value obtained, so that it can be entered into the HANDS medical screen.
Step 6_	Measure the participant's finger using the sensor size gauge.
Step 12_	Press power button to activate the Masimo Pronto.
Step 1_	Prior to any lab testing, have the AR read and sign the "Consent" signature type using the signature pad.
Step 7_	If necessary, disconnect the sensor, remove the patient cable, and connect the correct size sensor.
Step 8_	Remove anything from the participant's arm that can impede blood flow. Select the participant's testing finger. For adults, you may use the middle, or ring finger of either hand. For children, you may use the middle, ring finger or thumb of either hand.
Step 15_	Remove the sensor from the participant's finger.
Step 10_	Place the participant's selected finger inside the sensor. Make sure the fingertip is inserted all the way and touching the finger stop inside the sensor.
Step 9_	Cleanse the site thoroughly with an alcohol pad.
Step 11_	Cover the sensor with a hand, or cloth to shield the sensor from excessive light.
Step 16_	Turn off the Masimo Pronto by holding down the Power Button for 2 seconds.
Step 2_	The selected location for using the Pronto device should be a comfortable area, free of excessive noise or distractions, such as a private office space.
Step 4_	Perform Hand Hygiene (either by washing hands or using an alcohol-based hand sanitizer).
Step 13_	Press SpHb button when ready to view SpHb results.

Module 3: Capillary Sampling

TRAINER NOTE: It is recommended for you to review the competencies below with trainees.

MODULE 3 COMPETENCIES:

1. Trainees will be able to determine appropriate lancet sizes to use for fingersticks.
2. Trainees will be able to determine appropriate lancet sizes to use for heelsticks.
3. Trainees will be able to identify the steps to take to determine a participant's hemoglobin value via capillary sampling.
4. Trainees will be familiar with what to do in the event that a microcuvette doesn't completely fill or there are air bubbles present.

Module 3 Questions

1. A woman has dark fingernail polish and you are unable to get a reading with the Pronto. When you complete the screening using the HemoCue, which lancet does your agency recommend using? (Refer to the AZ WIC Laboratory Procedure Manual.)

Possible responses:
- **Lancet with length of 2.4 mm or less**

2. You decide to perform a heel puncture on a 9-month-old child to complete the anemia screening. Which lancet does your agency recommend using? (Refer to the AZ WIC Laboratory Procedure Manual.)

Possible responses:
- **Lancet with length of 2.0 mm or less**

3. Order each of the following steps (1-18) for performing a capillary sampling hemoglobin test based on its description. (Refer to the AZ WIC Laboratory Procedure Manual.)

Step 4	Wash hands with soap and water. If a sink is unavailable, cleanse with an alcohol-based hand cleanser or hand wipes.
Step 16	If any blood spills on the Hemoglobin Analyzer, work surfaces, or skin, clean with a 10% bleach solution or disinfectant spray immediately.
Step 10	When performing a fingerstick, apply gentle pressure near the participants finger joint. When performing a heelstick, grasp the heel between your thumb and forefinger with your other fingers underneath the infant's calf. Apply a small amount of pressure to flex the foot back.
Step 2	Choose a work area to complete the capillary sampling test.
Step 8	The finger should not be cold, blue, swollen, or calloused. If cold, warm the finger by holding it in your hands, rubbing it for a minute, or by having the participant wash their hands vigorously with warm running water and soap or gently shake their hands.
Step 17	Discard all contaminated materials (i.e., lancets and cuvettes) in a special receptacle usually referred to as a "sharps" container. Throw away other potentially-infectious trash that is saturated with blood in a red, plastic biohazard bag. Waste, such as lint-free tissue, alcohol preps, gloves, bandages, and wrappers that contain blood but are not dripping can be discarded in a regular trash bag.
Step 11	If performing a fingerstick, puncture off the centerline of the participant's fingertip using a lancet. If performing a heelstick, puncture only on the medial or lateral side of the bottom surface of the heel using a lancet.
Step 18	Discard gloves and wash hands after each client and after handling contaminated waste.
Step 12	To ensure accuracy, wipe away the first two drops of blood and collect the third drop. Ensure the drop of blood is big enough to fill the entire cuvette, including the tip. Avoid "milking" the finger.
Step 15	Place dry gauze or lint-free tissue over the puncture site and apply gentle pressure until the wound has stopped bleeding. Elevating the hand or foot above the level of the heart will help to stop the blood flow. Apply the bandage. Do not use bandages on the finger of a child less than two years old to prevent potential ingestion and choking.
Step 3	In simple terms, describe to the participant the steps you will be taking to measure their hemoglobin.
Step 9	Clean the finger or heel with an alcohol pad or warm water and soap. Wipe the site with a tissue or lint-free wipe. Be sure the skin is dry.
Step 6	Choose the finger (middle or ring, but choose a finger that doesn't have a ring on it or have the participant remove the ring). The heel may also be chosen for infants 9-11 months of age that have not yet began to learn to walk.

Step 5	Gather all necessary supplies (i.e., hemoglobin analyzer, lint free wipes or gauze, alcohol prep pad, cuvette, bandage, lancet, 10% bleach solution or disinfectant spray, sharps container, etc.).
Step 14	Measure the hemoglobin value in the microcuvette by following the manufacturer's directions for the hemoglobin analyzer used in your local agency's clinic. Immediately record the value obtained, so that it can be entered in to the HANDS medical screen.
Step 7	When performing a fingerstick, position the participant comfortably stated with their arm extended and palm facing up. When performing a heelstick, position the infant laying comfortably on their back.
Step 1	Prior to any lab testing, have the AR read and sign the "Consent" signature type using the signature pad.
Step 13	Wipe off the flat outside surfaces of the microcuvette using gauze or a lint-free wipe. Avoid wiping the open slit of the microcuvette.

4. What do you do if the cuvette does not fill completely on the first try, or if air bubbles are visible?

Possible responses: (Module 3, Slide 13)

- **Discard the cuvette, wipe the puncture site, and allow a new, larger bead of blood to form before collecting into the cuvette again. If additional blood is not available, a new finger stick must be performed.**

Module 4: Required Actions and Referrals

TRAINER NOTE: It is recommended for you to review the competencies below with trainees.

MODULE 3 COMPETENCIES:

1. Trainees will be able to describe what steps they would take for participants assigned Risk Code 201.2.
2. Trainees will be able to describe what steps they would take for participants assigned Risk Code 201.2.
3. Trainees will be able to describe what steps they would take for participants with a very low hemoglobin value.

Module 4 Questions

1. What steps would you take for a participant assigned Risk Code 201.2?

Possible responses: (Module 4, Slide 4)

- **Complete an assessment to determine if the participant may have low hemoglobin due to inadequate iron, and provide nutrition education accordingly.**
- **Consider offering a referral to a healthcare provider.**

2. What steps would you take for a participant assigned Risk Code 201.1?

Possible responses: (Module 4, Slides 3 and 4)

- **Perform a second hemoglobin test (preferably on the other hand and by another WIC staff member). Record the higher of the 2 values in HANDS.**
- **Offer a referral to a medium or high-risk nutritionist since 201.1 is a medium risk code.**
- **Consider offering a referral to a healthcare provider.**

3. What steps would you take for a participant with a very low hemoglobin value?

Possible responses: (Module 4, Slide 4)

- **Perform a second hemoglobin test (preferably on the other hand and by another WIC staff member). Record the higher of the 2 values in HANDS.**
- **Follow local agency policy to provide an immediate referral to a healthcare provider.**
- **Offer a referral to a medium or high-risk nutritionist since 201.1 is a medium risk code.**

Supplemental Hematology Training

TRAINER NOTE:

- **Instruct trainees to complete all the modules of the Hematology LMS course and Guidebook, and afterwards, facilitate the Supplemental Hematology Training.**
- **To complete Supplemental Hematology Training, meet with the trainee(s) in a WIC clinic lab (preferably the lab the trainee(s) will be using most often).**
- **With the trainee acting in the role of a WIC participant, demonstrate all of the steps necessary to obtain hemoglobin blood values using both a Hemoglobin Analyzer and Masimo Pronto.**
- **Afterwards, have the trainee practice obtaining your (or another trainee's) hemoglobin blood values using both a Hemoglobin Analyzer and Masimo Pronto.**
- **Have the trainee(s) continue practicing until you feel confident in their ability to obtain hemoglobin blood values using both a Hemoglobin Analyzer and Masimo Pronto.**
- **Throughout the Supplemental Hematology Training, answer any questions from the trainee(s), correct any mistakes, and confirm all of the necessary steps for using both a Hemoglobin Analyzer and Masimo Pronto to obtain hemoglobin blood values.**

You will receive Supplemental Hematology Training from your trainer to ensure your confidence when obtaining hemoglobin blood values using both a Hemoglobin Analyzer and Masimo Pronto.

After you've completed all modules of the Hematology LMS course and the associated activities in this guidebook, speak with your trainer to determine when they would like to facilitate Supplemental Hematology Training with you.