

Policy All applicants must have a hemoglobin test for every WIC certification, except infants under 9 months of age and children determined to be within normal range at their last certification. Children must have a hemoglobin test at least once every 12 months.

Procedure

Bloodstick Procedure

Local Agencies (LA) are required to obtain both federal and state laboratory registrations for their sites and employees prior to administration of any hemoglobin test. These registrations are to remain current at all times and will be reviewed periodically by the State Office.

Laboratories are governed by the laboratory director of each agency and should be operated under guidelines specific to their agency to ensure OSHA standards are met

Blood screening may be obtained via referral from a certified laboratory (State Office approval required) or from the participant, via their healthcare provider.

Bloodwork Schedule

Staff are required to adhere to the timeframes for each participant category. The only time a blood testing may be waived is if there is a religious objection (i.e. Christian Scientist) or a medical reason (i.e. hemophilia). Exceptions must be documented.

Pregnant

- Blood work must be collected during the pregnancy.
- Normally collected by WIC staff at the certification visit. Results from an outside source (i.e. doctor's office) are also accepted if it was drawn during the pregnancy. **The hemoglobin test needs to be recorded within 90 days of certification.**

Breastfeeding/Postpartum

- Blood work must be collected during the postpartum period (preferably within four to six weeks-30-45 days- of the termination of the pregnancy.
- Normally collected by WIC staff at the certification visit. Results from an outside source (i.e. doctor's office) are also accepted if it was drawn within the postpartum period.

Infants

- Once between 9-12 months of age.
- Normally collected by WIC staff, but not necessarily at certification. Results from an outside source (i.e. doctor's office) are also accepted if it was drawn after nine months of age for a full-term infant or after six months of age for a premature infant.

Children

- One blood test taken between 12 and 24 months (6 months after infant test).
- Once every 12 months after the child is 18 months old.

- Children 2-5 years old with low hemoglobin must have a blood test at six month intervals.
- Normally collected by WIC staff at certification visit. Results from an outside source (i.e. doctor's office) are also accepted if it was drawn within 90 days of the certification

Participant Category	Timeframes to Collect WIC Bloodwork	Comments/ Recommendations
Pregnant Woman	One blood test taken during the current pregnancy.	Recommended at the earliest opportunity.
Postpartum Woman 0-6 months Breastfeeding Woman 0-12 months	One blood test taken after the termination of the pregnancy.	Recommended 4 to 6 weeks after delivery. However, may be performed at the time of postpartum certification.
Infant <9 months	None	For pre-term or low birth weight infants not fed iron fortified formula, blood tests before 6 months are permitted but not required and should be done only on recommendation from the participants healthcare provider or dietitian.
Infant 9 months or older	One blood test taken between 9 and 12 months.	A blood test taken between 6 and 9 months of age can be used to meet this requirement on a case-by-case basis. Exceptions will be documented in the progress notes of the participants file.
Child 1-2 years	One blood test taken between 12 and 24 months (6 months after infant test). One blood test at or before 12 months cannot fulfill the requirement for the infant <u>and</u> the 12 and 24-month child screening.	For children over 1 year, CDC recommends a blood test 6 months after the infant test, i.e., around 15 to 18 months of age, when anemia is more likely to manifest, and annually thereafter from ages 2 to 5 years.
Child 2-5 years	One blood test every 12 months if blood values are normal. If previous certification blood work resulted in nutritional risk eligibility for low Hgb, blood work is required every 6 months.	

90-Day Extension:

To avoid participants from having duplicate bloodwork, WIC clinics may accept bloodwork done by other providers within 90 days of the date of certification when at least one other nutrition risk factor is present. If the results are not available at the certification appointment, a note must be placed in the chart outlining the method and date by which the results will be reported. In the interim, the participant is placed on monthly pick-up, pending provision of blood work, for up to 90 days. When the information is delivered the date of this blood test must be clearly documented in the client chart and computer file and is reflective of the category the participant is in.

Test Limit

A maximum of four hemoglobin tests are allowed per a one year certification period. WIC can perform one additional hemoglobin test as medically necessary to follow-up on a low level between the original test and the required 6 month follow up test as deemed necessary by the CPA/Nutritionist.

Bloodwork Standards

After the clients Hgb sample has been processed, compare the number from the Hemocue machine or referral form to the Hemoglobin and Hematocrit Standards by altitude for Nonsmokers and Smokers. Clients with a hemoglobin or hematocrit

value below those on the chart will be assigned a risk code. Refer to the chart attached.

After each Hgb sample is taken, staff shall record at minimum the date, household ID, participant's name, and Hgb value on the Hemoglobin Log.

A low hemoglobin/low hematocrit is defined by WIC federal regulations as less than 10% below standard or 1 percentage point below standard. When a participant's hemoglobin/hematocrit lab test is low the CPA or WIC clinic staff must refer this WIC participant to a health care provider for assessment and medical intervention.

Explanation of Test

(See WIC Nutrition Risk Manual – 201 for additional low hemoglobin implications)

Hemoglobin (Hb) and hematocrit (Hct) are the most commonly used tests to screen for iron deficiency anemia. Measurements of Hb and Hct reflect the amount of functional iron in the body. Changes in Hb concentration and Hct occur at the late stages of iron deficiency. While neither an Hb nor Hct test are direct measures of iron status and do not distinguish among different types of anemia, these tests are useful indicators of iron deficiency anemia.

Iron deficiency is by far the most common cause of anemia in children and women of childbearing age. It may be caused by a diet low in iron, insufficient assimilation of iron from the diet, increased iron requirements due to growth or pregnancy, or blood loss. Anemia can impair energy metabolism, temperature regulation, immune function, and work performance. Anemia during pregnancy may increase the risk of prematurity, poor maternal weight gain, low birth weight, and infant mortality. In infants and children, even mild anemia may delay mental and motor development. The risk increases with the duration and severity of anemia, and early damages are unlikely to be reversed through later therapy.

Anemia is one of the most preventable and treatable nutritional deficiencies and is also one of the most common. Anemia during the first trimester is a risk factor for LBW and preterm birth. The greater the severity is of anemia in the pregnant woman, the higher the risk of preeclampsia, preterm delivery, LBW, or miscarriage. Maternal morbidities and LBW are also negatively associated with high hemoglobin levels >13.9 g/dL, which thicken the blood and slow oxygen delivery to tissues, causing cerebrovascular complications.

Iron deficiency and iron deficiency anemia (IDA) both have adverse effects on childhood cognitive and behavioral development. IDA in children occurs mostly between 6 months to 3 yrs. of age when most repeated infections occur. Low hemoglobin levels are also a result from IDA and are a risk factor for lower respiratory tract infections (LRTI). Children younger than 5 years of age suffer about an average of 5-6 episodes of LRTI every year. Anemia has been found to cause more episodes of pneumonia than bronchiolitis symptoms.

It is especially important to prevent an iron deficiency in infants and toddlers as this is a crucial time for growth and development. Anemia is known to have adverse effects on cognitive and behavioral development, which may be irreversible. Preventing anemia is a modifiable risk factor that can be treated with

appropriate nutritional intervention. The WIC nutritionist can play an important role in decreasing the prevalence of this condition in women and children by:

- Providing a high iron food package
- Counseling
- Follow-up hematocrit/hemoglobin testing

Referral:

Local Agencies must have a referral plan established to ensure that all participants with very low hemoglobin values are referred for immediate medical evaluation, either through their primary care provider or, an emergency medical center. Elevated hemoglobin can also be serious; the Local Agencies should work with their Local Agency Medical Officer to determine a referral procedure for both very low and high values. All referrals should be documented in the participant file.

**HEMOGLOBLIN AND HEMATOCRITE STANDARDS BY ALTITUDE FOR NONSMOKERS
 AND SMOKERS***
 From 1998 CDC Guidelines

AREA AND ELEVATION	HCT/HGB NS AND S	BLOOD VALUES FOR HEMOGLOBIN AND HEMATOCRIT						Infants 6-24 mo	Children 2-5 yrs
		Women							
		Pregnant weeks gestation:			Nonpregnant				
Less than 3000 feet	Hemoglobin g%	0-13	14-29	30-40	12-14 yrs	15-17 yrs	≥18 yrs		
Henderson Las Vegas Pahrump Mesquite	Nonsmoker	11.0	10.5	11.0	11.8	12.0	12.0	11.0	11.1
	Smoker								
	<1 pack/day	11.3	10.8	11.3	12.1	12.3	12.3		
	1-2 packs/day	11.5	11.0	11.5	12.3	12.5	12.5		
	≥2 packs/day	11.7	11.2	11.7	12.5	12.7	12.7		
	Hematocrit %								
	Nonsmoker	33.0	32.0	33.0	35.7	35.9	35.7		
Smoker									
<1 pack/day	34.0	33.0	34.0	36.7	36.9	36.7			
1-2 packs/day	34.5	33.5	34.5	37.2	37.4	37.2			
≥2 packs/day	35.0	34.0	35.0	37.7	37.9	37.7			
3000-3999 feet	Hemoglobin g%								
Alamo Beatty Fallon Lovelock Stillwater	Nonsmoker	11.2	10.7	11.2	12.0	12.2	12.2	11.2	11.3
	Smoker								
	<1 pack/day	11.5	11.0	11.5	12.3	12.5	12.5		
	1-2 packs/day	11.7	11.2	11.7	12.5	12.7	12.7		
	≥2 packs/day	11.9	11.4	11.9	12.7	12.9	12.9		
	Hematocrit %								
	Nonsmoker	33.5	32.5	33.5	36.2	36.4	36.2		
Smoker									
<1 pack/day	34.5	33.5	34.5	37.2	37.4	37.2			
1-2 packs/day	35.0	34.0	35.0	37.7	37.9	37.7			
≥2 packs/day	35.5	34.5	35.5	38.2	38.4	38.2			

4000-4999 feet	Hemoglobin g%								
Battle Mountain	Nonsmoker	11.3	10.8	11.3	12.1	12.3	12.3	11.3	11.4
Babbit	Smoker								
Caliente	<1 pack/day	11.6	11.1	11.6	12.4	12.6	12.6		
Carlin	1-2 packs/day	11.8	11.3	11.8	12.6	12.8	12.8		
Carson City	≥2 packs/day	12.0	11.5	12.0	12.8	13.0	13.0		
Dayton									
Dresslerville	Hematocrit %								
Dyer									
Fernley	Nonsmoker	34.0	33.0	34.0	36.7	36.9	36.7	33.9	34.0
Gabbs	Smoker								
Gardnerville	<1 pack/day	35.0	34.0	35.0	37.7	37.9	37.7		
Hawthorne	1-2 packs/day	35.5	34.5	35.5	38.2	38.4	38.2		
Imlay	≥2 packs/day	36.0	35.0	36.0	38.7	38.9	38.7		
McDermitt									
Mina									
Minden									
Montello									
Orvada									
Panaca									
Reno									
Schurz									
Silver Springs									
Wendover									
Winnemucca									
Yerington									

*Risk code 201 if value is below the standard.

AREA AND ELEVATION	HCT/HGB NS AND S	BLOOD VALUES FOR HEMOGLOBIN AND HEMATOCRIT						Infants 6-24 mo	Children 2-5 yrs
		Women			Nonpregnant				
		Pregnant weeks gestation:							
5000 -5999 feet	Hemoglobin g%	0-13	14-29	30-40	12-14 yrs	15-17 yrs	≥18 yrs		
Duckwater	Nonsmoker	11.5	11.0	11.5	12.3	12.5	12.5	11.5	11.6
Elko	Smoker								
Goldfield	<1 pack/day	11.8	11.3	11.8	12.6	12.8	12.8		
Jackpot	1-2 packs/day	12.0	11.5	12.0	12.8	13.0	13.0		
Lund	≥2 packs/day	12.2	11.7	12.2	13.0	13.2	13.2		
Mountain City									
Owyhee	Hematocrit %								
Topaz									
Wells	Nonsmoker	34.5	33.5	34.5	37.2	37.4	37.2	34.4	34.5
	Smoker								
	<1 pack/day	35.5	34.5	35.5	38.2	38.4	38.2		
	1-2 packs/day	36.0	35.0	36.0	38.7	38.9	38.7		
	≥2 packs/day	36.5	35.5	36.5	39.2	39.4	39.2		

6000-6999 feet	Hemoglobin g%								
Austin	Nonsmoker	11.7	11.2	11.7	12.5	12.7	12.7	11.7	11.8
Beowawe	Smoker								
Ely	<1 pack/day	12.0	11.5	12.0	12.8	13.0	13.0		
Eureka	1-2 packs/day	12.2	11.7	12.2	13.0	13.2	13.2		
McGill	≥2 packs/day	12.4	11.9	12.4	13.4	13.4	13.4		
Pioche									
Round Mountain	Hematocrit %								
Ruth									
Steline	Nonsmoker	35.0	34.0	35.0	37.7	37.9	37.7	34.9	35.0
Tonopah	Smoker								
Virginia City	<1 pack/day	36.0	35.0	36.0	38.7	38.9	38.7		
Zepher Cove	1-2 packs/day	36.5	35.5	36.5	39.2	39.4	39.2		
	≥2 packs/day	37.0	36.0	37.0	39.7	39.9	39.7		

*Risk code 201 if value is below the standard.