

*What you need to know about the*  
**Arterial Blood Gas (ABG)**

**What is it?**

An arterial blood gas is a special blood test to measure how much oxygen and carbon dioxide are in your blood.

**What should you expect?**

This test requires up to 1-1/2 cc of arterial blood which is the blood coming directly from your heart and lungs. Regular blood samples are usually venous blood but this blood has already been through the muscles and organs of your body and for this reason cannot be used to assess how effectively your lungs are working.

If you are on supplemental oxygen you will probably need to be off your oxygen at least 10 minutes before the test begins and remain off until the blood sample is obtained.

The blood sample is usually taken from a small artery in your wrist called the radial artery. You will need to sit with your forearm out flat so that your wrist is easy to get at. The staff person performing the test should first test the collateral circulation to your hand by compressing your wrist on both sides for a short time and then releasing the side opposite the radial artery. This is called an Allen's test and will determine whether the ulnar artery (the other artery that goes to your hand) is working properly.

The spot the sample will be taken from will be scrubbed with an alcohol or a betadine pad to sterilize it. The staff person taking the sample will need to feel the area carefully in order to accurately locate the artery. A special syringe will be used to take the blood sample. After the sample has been obtained the site will be compressed for several minutes before a band-aid is placed on it.

This blood test is usually no more uncomfortable than a regular blood test. The radial nerve is located near the radial artery however, and this blood test may thus be painful. You should be able to request an injection of lidocaine (or similar local anesthetic) before the arterial blood sample is taken if this is a concern.

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This test is considered safe. There is a very minor risk of blood clots to the hand but this is exceedingly rare. The area the blood sample is taken from may ache for a while but this is normal.

**What is a normal measurement?**

Depending on the laboratory instrument used to analyze the arterial blood sample there are a number of different values that can be measured. At a minimum:

1. PO<sub>2</sub>: the partial pressure of oxygen. Normal values are 90 and above;
2. PCO<sub>2</sub>: the partial pressure of carbon dioxide. Normal values are 35 to 45;
3. pH: the acidity/alkalinity of the blood. Normal values are 7.35 to 7.45.

Other values that are usually measured can include:

1. SaO<sub>2</sub>: the oxygen saturation. Normal values are 95 and above;
2. COHb: the amount of carbon monoxide in the blood. Normal values are 2 or less.

**What affects test quality?**

PO<sub>2</sub> and SaO<sub>2</sub> will be underestimated and PCO<sub>2</sub> will be overestimated if a venous blood sample is obtained instead of an arterial blood sample.

PO<sub>2</sub> and SaO<sub>2</sub> will be overestimated and PCO<sub>2</sub> will be underestimated if air is not removed from the syringe after the blood sample is obtained.

Carbon monoxide levels will be elevated if you smoke cigarettes. Since carbon monoxide takes space in your bloodstream that should have been occupied by oxygen, elevated carbon monoxide levels can cause SaO<sub>2</sub> and PO<sub>2</sub> to be further reduced.