



RespiratoryPlus

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Written Instructions Sheet – Arterial Blood Gas Sampling

Adapted from the Raven Medical Management Inc., Pulmonary Function Diagnostics Quality Manual 2024.

Arterial Blood Gas Sampling measures the levels of oxygen, carbon dioxide, and other parameters in the arterial blood to assess lung function and overall acid-base balance. These tests help in adjusting respiratory support and guiding treatment for various medical conditions.

Preparing for ABG testing is essential for maximizing the value of the results in your overall health planning and ensuring a safe experience. This information sheet outlines the steps and recommendations to prepare for your upcoming test.

1. Pre-Examination

Before any testing sessions, you will engage in an initial consultation with our team to discuss your condition(s), expectations, and any concerns you have about the upcoming test. This is an opportunity to share your complete medical history, including medications, allergies, and any relevant mental health conditions.

This form of healthcare is a medical service, and you will need to bring your healthcare card and photo identification to complete our registration process and ensure our compliance with the Health Information Act.

2. Environmental Considerations

Arterial blood gas testing takes place in a controlled setting designed to optimize outcomes. RespiratoryPlus will ensure that the environment for the test is comfortable, safe, and conducive to performance.

- You should arrive **20 minutes** before your appointment and be prepared to spend about **30 – 45 minutes** performing this test.
- If you do not speak (or speak very little) English, please bring your adult interpreter with you.
- Wear comfortable clothing.

3. Physical Preparations

Before an arterial blood gas (ABG) test, certain activities and conditions should be avoided to ensure the accuracy of the results. Here are the key things to avoid:

- Heavy Exercise:** Strenuous physical activity can affect blood gas levels, particularly oxygen and carbon dioxide levels. It is advisable to rest for at least **30 minutes** before the test.
- Certain Medications:** Some medications can influence blood gas levels. RespiratoryPlus shall conduct a review and discussion with you about all of medications you are taking and advise you any need to be temporarily discontinued before the test.
- Smoking** and/or vaping, and/or water pipe use, or from inhaling secondhand smoke for at least **30 minutes to an hour** prior to testing as smoking can alter the levels of oxygen and carbon monoxide in the blood.
- High Oxygen Therapy:** If you are receiving supplemental oxygen, inform the healthcare provider. They may need to stop the oxygen therapy for a certain period before the test, usually about **20 minutes**, to get a baseline reading without supplemental oxygen.
- Changes in Ventilation Settings:** For patients on mechanical ventilation, changes to ventilator settings should be avoided before the test unless directed by a healthcare provider.



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- **Eating Large Meals:** While not as critical as the other factors, eating a large meal can affect metabolic rate and potentially influence blood gas results. It is best to have a light meal or fast as recommended by your healthcare provider.

By avoiding these activities, you help ensure that the ABG test results accurately reflect your respiratory and metabolic status. Always follow specific instructions given by your healthcare provider, as they may have additional or modified guidelines based on your individual health condition.

4. During the Test

You will be positioned comfortably, usually lying down. The area where the blood will be drawn, typically the wrist or the groin, will be cleaned and numbed with a local anesthetic if necessary. A healthcare provider will insert a thin needle into an artery to draw a small sample of arterial blood. Pressure will be applied to the puncture site after the procedure. The collected blood sample will be immediately analyzed for oxygen, carbon dioxide, pH levels, and other parameters using specialized equipment.

4.1. Patients Receiving Supplemental Oxygen

If you are receiving supplemental oxygen, additional procedures will be included in the performance of the test described above. Specifically, you can expect the technologist to obtain a baseline measurement of your oxygen saturation with the oxygen on. Then you will be asked, or assisted, to take the oxygen off to perform the testing maneuver. The technologist will continuously monitor your oxygen level via finger oximeter.

Your oxygen tank is kept in close proximity in case of urgent use. When necessary, an oxygen tank from the RespiratoryPlus Laboratory is provided for the remainder of the visit. Oxygen flow will be titrated as per your needs.

The Technologist will put the oxygen back on if any of the following occur: cyanosis, SpO₂ decreasing at a steady rate, or labored breathing. Once you have rested and your breathing and SpO₂ have stabilized, testing may be continued.

Once testing is completed, you will be put back onto your oxygen at the flow you normally use. You will be provided space to rest. The Technologist will ensure that your vitals have returned to normal before you will be allowed to leave the facility.

4.2. Potential Risks and Discomforts

Overall, the benefits of ABG testing for diagnosing, managing, and monitoring health typically outweigh the minimal risks associated with the tests, but it's important to understand the common, potential, and significant risks. RespiratoryPlus has prepared the following evidence respecting the potential risks and discomforts of the test:

- Some individuals may feel mild discomfort or pain at the puncture site during the procedure.
- Some patients might experience minor bleeding or bruising at the puncture site.
- In the event that you are administered a bronchodilator as part of the treatment process or event response, you should be aware of the following potential complications:
 - Tachycardia: Increased heart rate can occur as a side effect of bronchodilators. This may lead to palpitations or discomfort.
 - Tremors: Some individuals may experience mild tremors or shakiness in their hands or other parts of the body.



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- Hypokalemia: In rare cases, bronchodilators might cause a decrease in blood potassium levels, leading to muscle weakness or irregular heartbeats.
- Nausea or Vomiting: Certain individuals may experience gastrointestinal discomfort or nausea after bronchodilator use.
- Headaches: Some patients may experience mild to moderate headaches as a result of the medication.
- Hypertension: In some cases, bronchodilators can temporarily increase blood pressure.
- Allergic Reactions: Though rare, allergic reactions such as skin rash, itching, or swelling may occur. Severe allergic reactions like anaphylaxis are extremely rare but should be mentioned.
- Cough or Respiratory Irritation: Paradoxically, bronchodilators can sometimes cause a temporary increase in cough or irritation in the airways.
- Given the nature of ABG testing and the attention of the health professional, it may not be possible to maintain a 2-meter distance between them and the patient who is testing, and/or any potential third individual (e.g., translator, parent, etc.).
- There is a possibility your appointment may take longer than expected to arrange due to additional precautionary measures.

Most patients will not experience any adverse symptoms at all. These symptoms (if they occur) are normally mild, last for only a few minutes, and disappear with appropriate medical response. If you, or your child, experience any symptoms, you will be treated immediately. RespiratoryPlus will ensure that all medications or devices that may be required to treat you are readily available.

5. After the Test

The Technologist will let you know when the test is complete.

- Immediately after the test:
 - The healthcare provider will apply firm pressure to the puncture site, usually the wrist, to stop any bleeding. This pressure is maintained for at least 5 minutes, and longer if you are on blood thinners or have a clotting disorder. Afterward, a bandage or a small dressing will be applied.
 - You might experience temporary discomfort or pain at the puncture site. This can feel like a sharp pain when the needle is inserted and may linger as a dull ache afterward.
 - The healthcare provider will check for signs of complications such as bleeding, bruising, or swelling at the puncture site.
- Short-Term Aftercare
 - You will be advised to avoid heavy lifting or strenuous activity with the affected arm for a few hours to prevent reopening the puncture site.
 - It is common to have some tenderness, bruising, or minor swelling at the puncture site for a day or two. Over-the-counter pain relievers, like acetaminophen, can help alleviate discomfort if needed.
- It is important to watch for signs of complications, such as:
 - Increased pain, swelling, or redness at the puncture site.
 - Persistent bleeding or signs of infection (e.g., warmth, pus).
 - Changes in sensation or color in the hand or fingers of the affected arm.
- Seek medical advice from your healthcare provider if you experience:
 - Severe pain or swelling that doesn't improve.
 - Numbness or tingling in the hand or fingers.



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- Significant changes in color (pale, blue, or mottled appearance) of the hand or fingers.
- Signs of infection like fever, increasing redness, or pus at the puncture site.

A report will be sent directly to your doctor within 1 week. Your doctor will share the results with you. Talk to your doctor if you have any questions or concerns about the outcome of the test.

While the puncture can be uncomfortable, complications are rare, and the test is generally well-tolerated. Patients can typically resume their normal activities soon after the test, with minor precautions to ensure proper healing of the puncture site. If you have any questions or need further guidance, please reach out to our team.

Thank you for trusting RespiratoryPlus to support you through your healing journey.