What is a Blood Gas?

Why is it Important?

How is a Blood Gas Obtained?

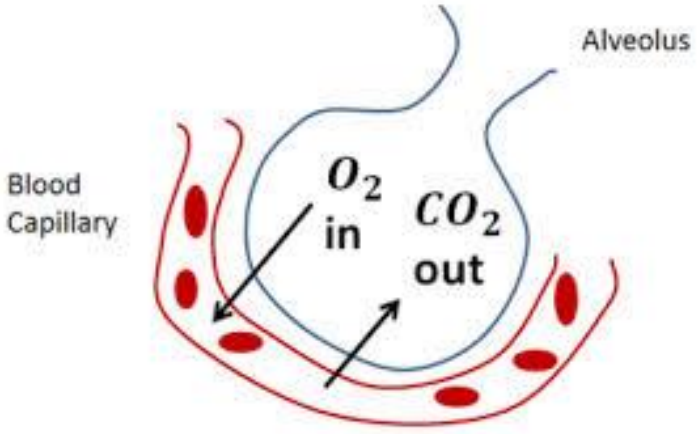
1. A Blood Gas sample is drawn from an artery instead of a vein.
2. The blood is most often taken from the radial artery in the wrist, because there are 2 arteries that supply blood to the whole hand.

After a pulse is found, a blood sample is taken from the artery

A.D.A.M.

Why do We Use Blood from an Artery?

- The blood in the arteries has come from the heart and lungs where the oxygen and carbon dioxide are exchanged.
- The Blood Gas test on arterial blood shows how well the lungs are doing their job.



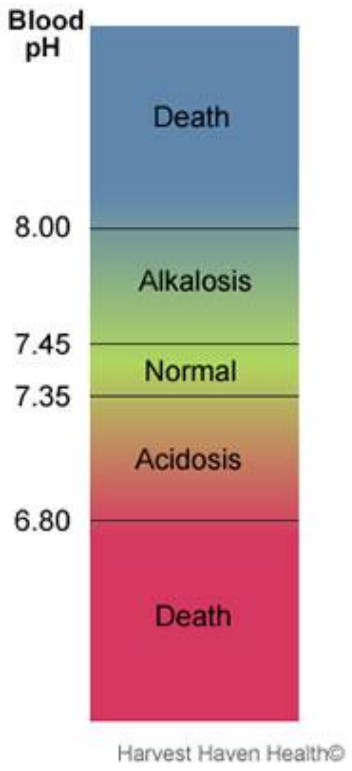
What is Measured?

- The measurement of how much oxygen is in the blood is a very important part of blood gas analysis, but there is much more.

- The pH and carbon dioxide are also very important parts of a Blood Gas test.

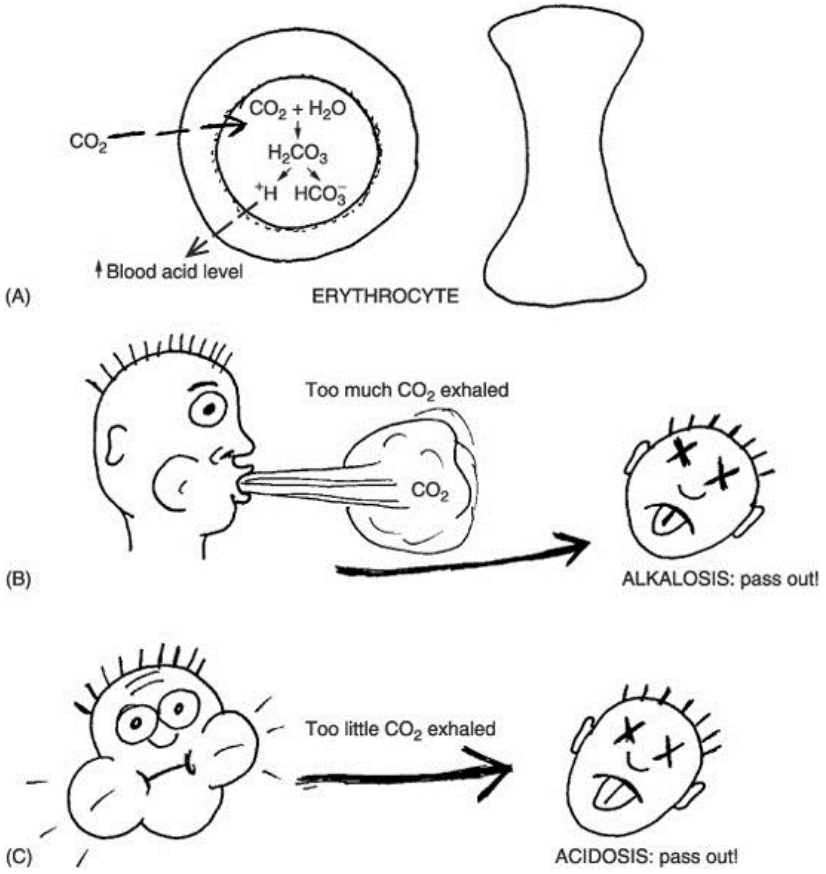
Significance of pH

- If a person is healthy, the pH of the blood should be around 7.35 – 7.45
- It is very important to keep it in this range.
- People can die when the pH is too high or too low.



Breathing and pH

- If you don't breathe enough the pH gets too low
- If you breathe too much the pH gets too high.



How to Treat pH

- If the person isn't breathing enough, they must be placed on a ventilator to make them breathe more and hopefully save their lives.

Why the Measure of Oxygen is Important

- The oxygen in the blood is called pO2 in a Blood Gas Test
- pO2 is carried through the blood to the body by attaching to hemoglobin cells.
- If the pO2 is normal, but the Hb is low, then the body cannot adequately use the pO2 that is available.
- The amount of hemoglobin that has oxygen attached is called oxygen saturation.
- Oxygen Saturation can also be monitored on the finger.

Blood Gas Test Results

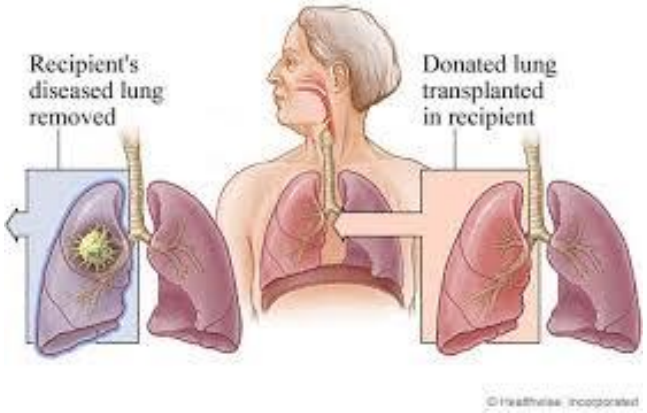
- A Blood Gas Test is most often done in an emergency situation.
- It is crucial that the results be accurate so the doctors and respiratory therapists can use them to save the patient's life.

Blood Gases and Lung Disease

- Emphysema: The pCO2 would probably be too high and the pO2 too low. This is because the patient cannot blow out all their air and it becomes trapped in their lungs.
- The Blood Gas results must be carefully monitored to make sure the pCO2 doesn't go to a deadly level.

Blood Gases and Lung Diseases

- Patients that need lung transplants usually have Pulmonary Fibrosis, Cystic Fibrosis, or Emphysema
- In order to qualify for a lung transplant the patient must be in danger of dying without it.
- The patient's Blood Gas results must be monitored often to judge when they will be ready for the transplant



Blood Gas Test and Babies

- Premature babies may have lungs that haven't developed fully.
- Babies' condition change very rapidly and must have accurate monitoring close by.
- If a premature baby has too much oxygen given to them for too long, they may become blind.

Conclusion

- Blood Gas Test results are used to save lives in adults and babies
- Blood Gas results must be obtained from analyzers that are built with precision to guarantee accurate results

Patient Result	Reference Range
pH 7.384	7.35 – 7.45
pCO2 40	35 - 45
pO2 80	80 - 100
HCO3 25	23 - 27
BE +5	-2 – (2)