

Oxygen Therapy

(ALERT 82-84, CLSM 8:3)

Terms

Lack of oxygen ⇒

No oxygen ⇒

Hypoxia or anoxia is involved in many first aid situations. There are three main categories:

Airway - occlusion or blockage of the airway

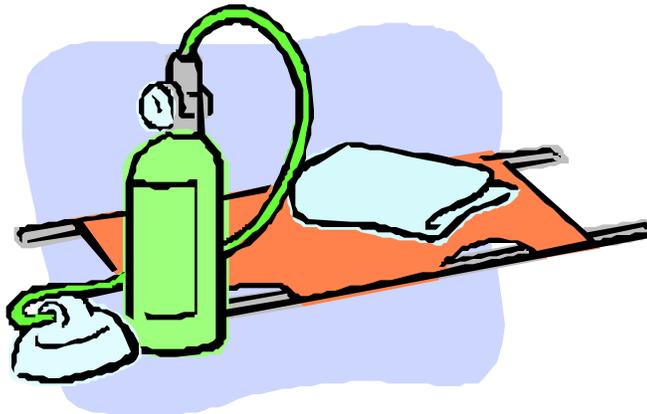
Respiratory - inadequate oxygen exchange at the alveoli

Circulatory - reduction in blood flow to tissue and/or lungs

Oxygen is the fuel of our body cells. Without oxygen, the cells begin to starve and soon to die. Once a cell dies, it can never be revived. As cells die, organs may cease to function, and soon brain cells will begin to die.

Providing as high a concentration of oxygen as possible will best help to prevent this dying process. A patient gets a maximum of 21% oxygen from inspired air, but oxygen therapy can increase this percentage greatly. This is why oxygen delivery is necessary in a first aid setting.

What patients will benefit from oxygen therapy?



Safety

Oxygen is stored in highly _____ cylinders. If the tank or the medical post is damaged, the tank can become a missile strong enough to penetrate a _____. Therefore, oxygen tanks should be handled with care:

- Never leave a cylinder _____
- Never _____ an oxygen unit
- Always keep an oxygen cylinder _____ within a bag

Oxygen also supports combustion. Therefore,

- Never use oxygen near a _____
- Never _____ near an oxygen unit
- Never leave an oxygen unit in _____
- Never use _____ products (grease, vaseline, etc.) around or on an oxygen unit.
(Under pressure, this can be explosive)

In a moist environment (like a pool), corrosion of oxygen equipment is also a concern. Therefore,

- Always _____ oxygen equipment on a regular basis

Cylinder Hazard - A True Story

The anchoring of compressed gas cylinder, to keep them from being knocked over with the accompanying possibility of breaking off the valve, is an accepted safe practice. However, there has been some question regarding what would actually happen if a cylinder valve were knocked off.

While it wasn't requested, we now have first-hand knowledge as to what happened in one case, thanks to a compressed gas cylinder (CO₂) that caused a few moments of frenzied activity in a building under construction..

Six 220-cubic-foot cylinders, part of a fire extinguishing system, had been moved away from their wall supports to allow painters to complete the painting of the area. While moving them back into position, it was noticed that one cylinder was leaking. The painter had the cylinder leaning against his shoulder, and was attempting to scoot it across the floor. At this time, the valve separated from the cylinder and was projected backward, hitting the side of a stainless steel cabinet.

The man suddenly found himself with a jet-propelled, 215-pound piece of steel. He wrestled it to the floor, but was unable to hold it. The cylinder scooted across the floor, hitting another cylinder, knocking it over, and bending its valve. The cylinder then turned 90 degrees to the right and traveled 20 feet, where it struck a painter's scaffold, causing a painter to fall 7 feet to the floor. (The painter received multiple fractures of the leg.) After spinning around several times, it traveled back to its approximate starting point, where it struck a wall.

At this point, the cylinder turned 90 degrees to the left, and took off lengthwise in the room, chasing an electrician in front of it. It crashed-into the end wall 40 feet away, breaking loose four concrete blocks, then turned again 90 degrees to the right, and scooted through a door opening, still chasing the electrician. The electrician ducked into the next door opening, but the cylinder continued its travel in a straight line for another 60 feet, where it fell into a truck well door. The balance of the cylinder pressure was released as the cylinder spun harmlessly around in the truck- well area.

It is surprised that the cylinder valve had not obtained previous damage and it was a matter of chance that it separated from the cylinder at this particular time

This incident illustrates what can happen when a valve is separated from a compressed gas cylinder. This particular cylinder contained pressure of approximately 900 pounds per square inch, but many cylinders are pressurized to 2200 pounds per square inch. If you have any doubts about the need of anchoring compressed gas cylinders, you might think about the 2,200 pounds per square inch, and ask yourself, "What if..."

How to Use Oxygen Tank:

1. Attach the appropriate delivery device

Name	Purpose	Flow Rate	Effectiveness
1.			
2.			
3.			
4.			
5.			

2. Open the cylinder – *Twist medical post one quarter turn counter-clockwise with key*

3. Check the amount of oxygen left –

4. Turn it up to the appropriate flow rate –

5. Let the lines clear, then use the oxygen – *If the tank has not been used for awhile, there may be dust and stale air in the hose.*

6. When done, turn the flow off – *Turn flow gauge down to 0*

7. Check the amount of oxygen left – *Check to see weather the cylinder needs changing (less than ~500psi).*

8. Close the cylinder – *Twist medical post clockwise with key until tight*

9. Bleed out extra oxygen – *Leaving pressure in the regulator may damage it over time*

10. Change the cylinder if necessary - *Ensure that the cylinder is changed if necessary in case of another emergency.*

What do you do if you hear the tank hissing (ie. leaking)?

Important note

Oxygen does not breath for a patient. It simply increases the percentage of oxygen they get with each breath!

Remember that maintaining ABC's is still more important than giving oxygen therapy!