Oxylator ® EMX Protocols

(Always Consult the Supplied Oxylator Technology Operating Manual)

Use of the EMX Oxylator ®: Both ALS and BLS technicians may use the EMX effectively.

Indications: The EMX Oxylator is designed to be used at any time a Bag-Valve-Mask would be used. It should be used as an alternative to the BVM when it is available. The Oxylator can be the preferred device used with a cuffed facemask (BVM mask, pocket mask), Combitube, ET tube, or Quick-trake type device. It may also be used on patients who are typically on ventilators in the home or in a skilled care facility.

Procedure:

BLS

1. Connect the EMX directly to the facemask (BVM mask / "rigid" pocket mask).
2. Assure that the pressure setting of the "pop-off" is at 20 cmH_2O. **ALWAYS RESET TO 20 cmH_2O After Use.**
3. With the O_2 tank FULLY turned on, depress the Oxygen Release Button (**the gold button marked O_2**), then turn ¼ turn "clockwise" to lock. This allows a constant flow of ~500 ml of 100% O_2 / second.
4. Place the mask on the patient's face. Make sure that you have a good seal and an open airway. The Oxylator will ventilate the patient, and chest rise and fall will begin to occur. The Oxylator will cycle on and off. If a "stuttering" sound is heard or rapid cycling occurs, then turn the Oxygen Release Button off ("counter-clockwise" ¼ turn), and check for airway blockage or head extension. Try again with the initial settings to make sure that repositioning or opening of the airway has been successful. If no change, you should then begin to adjust the pressure settings upward from 20 cmH_2O, turning off the Oxylator between adjusted increments of 5 cm H_2O, until cycling occurs and the inhalation time achieves 1½ to 2 seconds. Observe for chest rise and fall, and color improvement.

ALS

1. Use established procedures to intubate the patient. Confirm placement and secure the tube according to local protocol.
2. Set the Oxylator's pressure at **35** cmH_2O to start. **ALWAYS RESET TO 20 cmH_2O After Use.**
3. Attach one end of a disposable airway extension (an extension that does not have a one-way valve) to the Oxylator and the other end to the ET tube.
4. Depress the Oxygen Release Button as above, then turn ¼ turn "clockwise" to lock. This allows a constant flow of ~ 500 ml of 100% O_2 / second. The Oxylator will ventilate the patient, and chest rise and fall will begin to occur. The Oxylator will cycle on and off. If cycling does not occur despite adequate oxygen flow (or too long a cycle), check for ET tube cuff leak, location, or inadequate cuff seal. If a "stuttering" sound is heard or rapid cycling occurs, turn the Oxygen Release Button off ("counter-clockwise" ¼ turn), and check for airway blockage or "kinked" tube. If there is no obvious obstruction to oxygen flow into the lungs, you should begin to adjust the pressure settings upward from 35 cmH_2O, turning off the Oxylator between adjusted increments of 5 cm H_2O, until "stuttering" ceases and/or the inhalation time achieves 1½ to 2 seconds for adults, and 1 second for children down to 10 Kg. Observe for chest rise and fall, and color improvement, using "manual" ventilation mode, if necessary.
5. Reconfirm a proper and secure tube placement.

Pulmonary Edema

1. Set the Oxylator's "pop-off" pressure to 20 cmH_2O to start.
2. Let the patient know what you are doing, and that the Oxylator will assist their breathing.
3. Place the mask over the bridge of their nose and work it down onto their face.
4. When a seal is obtained the Oxylator will assist the patient's ventilations while maintaining a minimal amount of PEEP.

CPR

When performing CPR using the one or two rescuer standard 30:2 ratio in a pre-intubated patient (per AHA guidelines), it is necessary to pause for two ventilations. If only one rescuer is present, use the Oxylator's "manual" mode of ventilation. If two rescuers are present, use the automatic mode of ventilation with one of the rescuers maintaining proper mask seal at all times. Adjust the cmH_2O pressure settings to achieve a proper inflation of the lungs (1.5 to 2 seconds). After the Oxylator has finished the 2nd ventilatory cycle, administer 30 compressions, pausing compressions once again for two complete ventilatory cycles, then beginning 30 compressions once again, etc.

When performing CPR using continuous chest compressions with asynchronous ventilations on the intubated patient, set the Oxylator EMX to 20 cmH_2O, then engage the Oxylator EMX's automatic mode, and begin continuous chest compressions.

If (while using the "automatic" or "hands-free" ventilation mode) the operator observes an **inhalation phase of greater than 2 seconds in an adult or greater than 1 second in a child**, then the operator is instructed to use the "manual" mode of ventilation to achieve 1½ to 2 seconds of inspiration. In adults, this scenario may present itself when a compliant and/or large lung is encountered or on children intubated with uncuffed tubes.

Should the patient regain spontaneous respirations with adequate ventilation, turn the automatic mode off by turning the gold O_2 button ¼ turn "counter-clockwise". Immediately turn the black INH knob all the way on by turning to the left until it stops. This allows the Oxylator to deliver ~15 LPM, similar to having the patient on a NRB or flow-by. You may assist the patient's inhalation depth by depressing the Oxylator's gold O_2 button. When the patient inhales on his or her own, press the gold O_2 button for an assist of approximately one second. When the patient begins to exhale, the Oxylator will shut down and allow passive exhalation, either when the O_2 button is released or after pop-off pressure is attained.

Common Pitfalls

1. Tank not turned on fully or capacity is below 50 PSI	Results in longer than normal Inhalation ("I") time due to reduced flow.
2. ET cuff not fully inflated	Results in longer than normal "I" time, or no "automatic" cycling at all. If using a Combitube, inadequate inflation of the proximal cuff is the most common cause of long cycle due to air leaks.
3. Oxylator BPM "speeds-up" suddenly	Check lung fields, possible right mainstem or developing tension pneumo
4. Oxylator BPM slowly "speeds-up"	Check lung fields, possible filling of lung field with fluids or compliance is falling.
5. Abdomen begins to swell	Check tube placement. If using Combi-Tube, consider changing to the other lumen.
6. Won't cycle in "automatic" mode on pediatric patient	Uncuffed tube? If Oxylator will not cycle, then use gold button for "manual" ventilations.