Up2Date – November 2013

CPAP versus BiPap

Being pre-hospital and intra-facility provider's means that we must be prepared for a variety of patient presentations. Respiratory emergencies might be one of the most common conditions that we see. With RSI and intubation, we have the option of intubation for most of our patients. However sometimes that is not the right treatment for the patient, or perhaps they just need a bridge to get them through the acute phase of their disease process. Remember that intubation is an invasive process, and not always in the best interest of the patient. Some patients may take several days to wean off of a ventilator, putting them at risk for VAP (Ventilator Acquired Pneumonia) and other co-morbidities. (Just as an aside, hospitals across the country are no longer being reimbursed for hospital acquired infections – VAP is one of those. If the patient is a Medicare patient, and acquires an infection from a process that is hospital created, that hospital owns **all** of the expenses related to the patient s stay once that infection is discovered).

Another advantage of non-invasive airway support is that it can be used for our DNR/DNI patients.

Two non-invasive options that we have as pre-hospital providers are CPAP or BiPap. So what is the difference? While both are non-invasive means of providing breathing support, and can be incredibly useful in CHF, COPD and Asthma exacerbation. The biggest difference is when and how the airway pressure is provided to the patient.

CPAP- ***Continuous Positive Airway Pressure*** is one of the most common forms of noninvasive support that we can provide to our patients. CPAP pressures are generally set at 5-10 cm H20 and will continue to deliver this CONTINUOUS set pressure throughout the respiratory cycle. The patient will always have 5-10 cm of positive pressure keeping the airway and lung structures open. While our new vents do have the CPAP option, however for now, we can use the O2RESQ CPAP device. Simply attach the tubing to the oxygen tank and set the pressure. Once this is complete, place the mask securely over the patients face. Check for air leaks. Your patient may require some coaching at first, as CPAP and BiPap can both make your patient feel claustrophobic.

BiPap is a bit different from CPAP in that it provides two levels of positive pressure (bi-level ventilation). Generally patients on BiPap will have settings of 15-20 cm H20 during inspiration and 5 cm H2O during the exhalation phase. BiPap requires more equipment as well as a machine that can deliver the different levels of pressure. BiPap is generally used in home and in hospital, rarely in the pre-hospital realm.

The purpose and benefits to both CPAP and BiPap is that they help to present airway structure collapse. Continuous pressure in the airways will force them to stay open, ideally improving oxygenation and decreasing work of breathing. Both CPAP and BiPap provide consistent support so if the patient is able to relax and breathe, ideally their respiratory function will improve and not require intubation.

Considerations for Med Evac Transport on CPAP-

1. Since patients react differently to CPAP, they should be set up and trialed on CPAP briefly before transport. You do not want to try it in the aircraft, and discover that they will not tolerate it, requiring intubation.
2. CPAP can only be used on adult patients who are awake, cooperative and able to follow commands. We do not have CPAP for pediatric use at this time.

References:

Sullivan, R.J. (2005) Prehospital Use of CPAP Retrieved October 27, 2013 from http://www.emsworld.com/article/10323777/prehospital-use-of-cpap?page=2

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