A is for Airway

A is for airway. Health professionals always start with an assessment of the airway. Otherwise, all of our efforts are in vain. Dorland's Medical Dictionary defines the airway as the route for passage of air into and out of the lungs. Normally air travels through the nasal cavity, nasopharynx, oropharynx, laryngopharynx, larynx, trachea, left and right primary bronchi, and finally into the tiny air sacs of the lungs, called alveoli, where oxygen and carbon dioxide are exchanged.

The airway is critical to supply our bodies with oxygen. Appropriate oxygen levels are vital to support cell respiration. This is the process of chemical and physical change which goes on continually in the human body: build-up of new tissue, replacement of old tissue, conversion of food to energy, disposal of waste materials, reproduction - all the activities that we characterize as "life."

The blood vessels in the alveoli of the lungs are so small that blood cells pass through in single file. The process of respiration allows for the exchange of oxygen and carbon dioxide, a waste product, through the thin cell wall of each alveolus. Thus, oxygen is transported to all tissues of the body by combining with hemoglobin, a component of the red blood cell.

Assessment of adequate oxygenation includes: respiratory rate, depth and character; oxygen saturation and often arterial blood gas (ABG) measurements. A complete blood count (CBC) including the number of red blood cells and the amount of hemoglobin in the red blood cell is also standard of care in the medical assessment of adequate respiratory function.

The human brain is the most vulnerable organ if there is an obstruction to air flow. The brain represents only 2% of the human body weight but it receives 20% of the total oxygen consumption and 25% of the body's glucose consumption. The brain is extremely sensitive to oxygen deprivation and brain cells begin to die within 4 minutes in the absence of oxygen. Two commonly used terms to describe lack of oxygen are hypoxia and anoxia and these only differ by the amount of lack of oxygen. Hypoxia is a lack of adequate oxygen. Anoxia is a lack of any oxygen.

Common causes of upper airway obstruction are allergic reactions which cause swelling and narrowing of the airway, burns, foreign bodies lodged in the airway such as food, strangulation, traumatic injuries such as a crushed trachea, viral and bacterial infections, tonsil or pharyngeal abscess and throat cancer.

Symptoms of an obstructed airway can present as anxiety, agitation, panic, cyanosis (bluish discoloration of the skin), confusion, loss of consciousness, choking and difficulty breathing such as wheezing or gasping for air.

Quick action is required to prevent brain damage by removing the foreign object using the Heimlich maneuver or surgical extraction. Additional treatments may include the administration of life saving drugs to reduce swelling and to relax the muscles of the airway, introduction of an artificial airway (endotracheal intubation) or the creation of an artificial air passage (tracheostomy). All of these measures are accompanied by the administration of supplemental oxygen to quickly increase the oxygen content within the red blood cells.

The lower airway may also become obstructed, most often, due to chronic conditions such as chronic obstructive pulmonary disease (COPD), asthma, mucus plugs, tumors or cancer.

A is for assessment, action, and adequate gas exchange to ensure the processes of life continue.

Next month….B is for bacteremia.