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- The upper airway includes the nose, mouth, jaw, oral cavity, pharynx, and larynx. Its function is to warm, filter, and humidify air as it enters the nose and mouth.
- The lower airway includes the trachea and lungs and its function is to exchange oxygen and carbon dioxide.
- Adequate breathing for an adult features a normal rate of 12 to 20 breaths/min, a regular pattern of inhalation and exhalation, adequate depth, bilaterally clear and equal lung sounds, and regular and equal chest rise and fall.
- Inadequate breathing for an adult features a respiratory rate of fewer than 12 breaths/min or more than 20 breaths/min, shallow depth (reduced tidal volume), an irregular pattern of inhalation and exhalation, and breath sounds that are diminished, absent, or noisy.
- Patients who are breathing inadequately show signs of hypoxia, a dangerous condition in which the body's tissues and cells do not have enough oxygen.
- Patients with inadequate breathing need to be treated immediately. Emergency medical care includes airway management, supplemental oxygen, and ventilatory support.
- Basic techniques for opening the airway include the head tilt–chin lift maneuver or, if trauma is suspected, the jaw-thrust maneuver.
- One basic airway adjunct is the oropharyngeal or oral airway, which keeps the tongue from blocking the airway in unconscious patients with no gag reflex. If the oral airway is not the proper size or is inserted incorrectly, it can actually cause an obstruction.
- Another basic airway adjunct is the nasopharyngeal or nasal airway, which is usually used with patients who have a gag reflex and is better tolerated than the oral airway.
- Suctioning is the next priority after opening the airway. Rigid tonsil-tip catheters are the best catheters to use when suctioning the pharynx; soft plastic catheters are used to suction the nose and liquid secretions in the back of the mouth.
- The recovery position is used to help maintain the airway in patients without traumatic injuries who are unconscious and breathing adequately.
- You must provide immediate artificial ventilations with supplemental oxygen to patients who are not breathing on their own. Patients with inadequate breathing may also require artificial ventilations to maintain effective tidal volume.
- Handle compressed gas cylinders carefully; their contents are under pressure. Always make sure the correct pressure regulator is firmly attached before transporting a cylinder. The pin-indexing safety system features a series of pins on a yoke that must be matched with the holes on the valve stem of the gas cylinder. Pressure regulators reduce the pressure of gas in an oxygen cylinder to between 40 and 70 psi. Pressure-compensated flowmeters and Bourdon-gauge flowmeters permit the regulated release of gas measured in liters per minute.
- When oxygen therapy is complete, disconnect the tubing from the flowmeter nipple and turn off the cylinder valve, then turn off the flowmeter. As long as there is a pressure reading on the regulator gauge, it is not safe to remove the regulator from the valve stem. Keep any possible source of fire away from the area while oxygen is in use.
- Nasal cannulas and nonrebreathing masks are used most often to deliver oxygen in the field. The nonrebreathing mask is the delivery device of choice for providing supplemental oxygen to patients who are breathing adequately but are suspected of having or are showing signs of hypoxia. With a flow rate set at 15 L/min and the reservoir bag preinflated, the nonrebreathing mask can provide more than 90% inspired oxygen. If the patient will not tolerate a nonrebreathing mask, apply a nasal cannula.
- When you are providing artificial ventilation, remember that ventilating too forcefully can cause gastric distention. Slow, gentle breaths during artificial ventilation and the use of cricoid pressure can help to prevent gastric distention. Patients who have a tracheal stoma or a tracheostomy tube need to be ventilated through the tube or the stoma.

- The methods of providing artificial ventilation include mouth-to-mask ventilation, two-person bag-mask device ventilation, manually triggered ventilation device, and one-person bag-mask device ventilation. The manually triggered ventilation device is not a recommended ventilation device by most standards. Combined with your own exhaled breath, mouth-to-mask ventilation will give your patient up to 55% oxygen; a bag-mask device with an oxygen reservoir and supplemental oxygen can deliver nearly 100% oxygen.
- CPAP is a noninvasive method of providing ventilatory support for patients in respiratory distress or suffering from sleep apnea.
- Foreign body airway obstruction usually occurs during a meal in an adult or while a child is eating, playing with small objects, or crawling about the house. The earlier you recognize an airway obstruction, the better. You must learn to recognize the difference between airway obstruction caused by a foreign object and that caused by a medical condition.
- Foreign body airway obstructions are classified as being mild or severe. Patients with a mild airway obstruction are able to move adequate amounts of air and should be left alone. Patients with a severe airway obstruction cannot move any air at all and require immediate treatment. Perform abdominal thrusts on conscious adults and children with a severe airway obstruction. If the patient becomes unconscious, open the airway and look in the mouth (do not perform blind finger sweeps), attempt to ventilate the patient, and perform chest compressions if ventilations are unsuccessful.
- Check for loose dental appliances in a patient before assisting ventilations. Loose appliances should be removed to prevent them from obstructing the airway. Tight-fitting appliances should be left in place.

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- There may be cases in which an EMT may find it necessary to be familiar with skills normally practiced at the AEMT and paramedic level. These skills include advanced airway techniques, intravenous therapy, and cardiac monitoring.
- An advanced airway technique is endotracheal intubation, the insertion of a tube into the trachea to maintain the airway.
- Additional advanced airway care devices include the Combitube, pharyngeotracheal lumen airway, the King LT, and the laryngeal mask airway.
- Intravenous therapy is used to replace fluids in a patient with shock or to administer medications.
- Cardiac monitoring with an electrocardiogram is an advanced skill that the EMT may provide assistance to the AEMT or paramedic.

Assessment in Action

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