ENDOTRACHEAL AND IN-LINE INTUBATION

Indications

- Coma, respiratory and/or cardiac arrest
- Impending airway obstruction/respiratory failure (e.g. burns to the airway, severe asthma, chronic obstructive pulmonary disease (COPD) exacerbation, severe pulmonary edema when the patient develops fatigue and may go into respiratory arrest).
- Patients without a gag reflex should be intubated to prevent aspiration (e.g. drug overdose, bleeding in the gastrointestinal tract).
- Glasgow coma score < 8

Procedure:

1. Observe universal precautions.
2. Continue CPR and bag-valve mask ventilation while preparing to intubate.
3. Set up the suction unit with a rigid tonsil-tip (Yankauer) catheter.
4. Choose the proper size ETT and blade.
5. Assemble the laryngoscope and check the light.
6. Check the ETT cuff for air leaks. Open the top of the ETT package and inflate the cuff through the valve with 10cc of air. Once you are satisfied that there is not a leak, deflate the cuff. Leave the syringe filled with air attached to the valve. Keep the ETT in its package to ensure sterility.
7. Insert a guide (stylet) into the ETT if desired. Be careful not to push the stylet through the tip of the ETT. Make sure that the stylet is recessed at least 1/2 inch from the tip. Bend the proximal end of the stylet over the ETT to prevent it from accidently sliding farther down into the tube.
8. Remove the ETT from its package and lubricate the distal 3 or 4 inches and the balloon. You may use sterile water-soluble lubricating jelly. Estimate the length of the tube needed by placing it alongside the patient's cheek and neck to the level of the cricoid cartilage. (can also estimate 3x size of tube, ie size 7.0 ETT should be inserted approximately 21cm). Then replace the ETT in its package.
9. Pre-oxygenate the patient by bagging with 100% oxygen for 2 minutes.
10. Stop ventilations and remove the face mask.
11. Use your right hand to open the mouth.
12. With the head-tilt/chin-lift maneuver, the sniffing position is achieved. This aligns the airway axis. In trauma, or when cervical spine integrity is questioned, **DO NOT** hyperextend the neck. In-line cervical immobilization should be applied by a second rescuer, who places himself/herself by the side of the patient, below the patient's shoulder level and stabilizes the jaw, neck and head. In this position the rescuer providing cervical spine immobilization will not hinder the intubator's line of vision.
13. While holding the laryngoscope handle in the left hand, insert the blade into the mouth on the right side of the patient, pushing the tongue toward the left. Do not touch the teeth with the blade.
14. Under direct vision, insert the blade down to the base of the tongue and visualize the

epiglottis. A common error is to push the blade down without properly visualizing the epiglottis and then to try to “fish” it out by moving the blade tip with chaotic and random motion. This not only causes trauma, but it also causes the tongue to fall around the blade, occluding landmarks. Use suction as needed. Ideally the intubating time should not be more than 30 seconds. If the intubation is difficult, stop the procedure, ventilate the patient with the BVM, and re-attempt the procedure.

15. Once you visualize the epiglottis, the next step is to identify the vocal cords. If you are using a curved blade, direct it into the vallecula (between the tongue and the epiglottis) and lift up on the handle and blade. **DO NOT USE THE PATIENT’S TEETH AS A FULCRUM!** If you are using a straight blade, pass it below the epiglottis and lift it up. As you lift the epiglottis by either method, the vocal cords will come into view. Once you can see the vocal cords, try not to take your eyes off of them.
16. Insert the tube into the mouth along the right cheek of the patient. Be careful that your hand does not obstruct the view of the tube entering through the vocal cords. (Guide the tube from the side of the face.) You must be able to see the tube entering the trachea. After you achieve some expertise, you can feel the tube pass through the vocal cords. Be aware that the tube has been known to slip down into the esophagus at the last possible moment.
17. Insert the tube until the cuff has entered the trachea completely. Usually, the 22 or 23 cm mark on the tube will be at the patient’s incisors. The average distance between the lips to the carina is 28.5 cm in males and 25.2 in females.
18. Remove the laryngoscope. Secure the tube firmly with your thumb and forefinger. Remove the stylet from the tube. Had your partner ventilate through the tube, watching for the rising and falling of the chest. Auscultate over both ling fields, in the axilla, and the stomach to ensure accurate placement. Attach the ET CO_2 detector.
19. Inflate the cuff until the pilot balloon feels tight and there is no air leak around the balloon (about 7-10 cc of air). Remove the syringe.
20. Tape the tube in place securely. This can be achieved by various means. Commercially available tube holders may also be used and are much quicker than tape.
21. Recheck breath sounds after any manipulation.
22. Check the cuff periodically to ascertain proper seal and when you suspect air leak. Also, if the patient vomits it is prudent to check the cuff to make sure that there is no danger of aspiration.