

Airway Management

1. Universal Patient Care

Basic Care Guidelines

2. Maintain oxygen saturation of 94-98%
3. Consider positive airway pressure (CPAP/BiPAP)
4. Maintain a patent airway:
 - a. Suction as needed
 - b. Insert appropriate airway device (NPA, OPA, or SGA) if indicated
5. Use bag-valve-mask ventilation in settings of respiratory failure or arrest

Advanced Care Guidelines

6. Monitor EtCO₂:
 - a. Patients without primary pulmonary pathology:
 - i. Maintain EtCO₂ of 35-40 mmHg
7. When less invasive methods are ineffective or inappropriate:
 - a. Consider endotracheal intubation; refer to [Endotracheal Intubation](#)
8. Patients who cannot be oxygenated/ventilated effectively using any of the above interventions:
 - a. Consider needle cricothyroidotomy; refer to [Needle Cricothyroidotomy](#)

Bilevel Positive Airway Pressure

Indications

1. Dyspnea or Hypoxemia secondary to congestive heart failure (CHF)
2. Chronic obstructive pulmonary disease (COPD)
3. Shortness of breath without improved oxygenation with the use of less invasive adjuncts

Contraindications

1. Pneumothorax
2. Tracheostomy
3. Respiratory arrest
4. Agonal respirations
5. Unconsciousness
6. Shock associated with cardiac insufficiency
7. Penetrating chest trauma

Precautions

1. Impaired mental status
2. Facial anomalies (facial trauma or stroke obtundation)
3. Active GI bleeding or history of recent gastric surgery
4. Nausea or vomiting
5. Excessive secretions

Procedure

1. Place patient in a sitting position
2. Explain procedure to patient
3. Connect ventilator circuit and oxygen hose
4. Place mask on patient's face and secure with manufacturer's head strap
5. Ensure placement of EtCO₂ adapter in circuit
6. Set breath rate to 12, adjust as needed
7. Initiate at 10/5, titrate as needed to a maximum of 16/10
8. Monitor for mental status, tolerance, and decompensation

Mechanical Ventilation (VOCSN)

Interfacility Transfer Procedure

1. For intubated patients:
 - a. Leave patient on hospital vent and transport RT with patient
 - b. Initiate hospital vent settings, adjust as needed to meet target vital signs
 - i. Must have two paramedics if placing on ICAS Vent

ICAS Vent Procedure

1. Must have two paramedics
2. Suggested guidelines (titrate each setting per patient as needed according to physiology and/or pathology that's present):
 - a. Verify ETT or Supraglottic airway tube placement
 - b. Establish continuous ETCO₂ monitoring
 - c. Assess effectiveness of sedation; refer to [Medication-Assisted Intubation](#)
 - d. Calculate ideal body weight using IBW chart or Broselow tape
 - e. Tidal Volume 6-8 mL/kg, titrate as needed
 - f. Breathing Rate:
 - i. Adult: 10-18 breaths per minute
 - ii. Pediatrics: 16-20 breaths per minute
 - g. Peep 5 cmH₂O
 - i. Pneumonia, ARDS, pulmonary edema: 7-12 cmH₂O
 - ii. Severe refractory bronchospasm: 0 cmH₂O
 - h. Inspiratory/Expiratory ratio:
 - i. 1:1-1:4
 1. May need longer expiratory phase for asthma/COPD
 - i. FiO₂ 100% initially, titrate down while maintaining SpO₂ of 93%-96%
 - j. Maintain Plateau Pressure of less than 30 cmH₂O
 - k. Maintain EtCO₂ 35-45 mmHg, monitor waveform capnography
3. If unable to maintain SPO₂ or ETCO₂:
 - a. May need to use 100% FIO₂ and manual ventilation

VOCSN Troubleshooting

If unable to clear alarms, troubleshoot, or mechanical failure, switch to BVM manual ventilations as soon as possible with ETCO₂ and waveform capnography monitoring.

D.O.P.E.

1. Dislodgement of airway tube
2. Obstruction of airway tube or ventilator tubing
3. Pneumothorax
4. Equipment failure

Consider auto-PEEP in patients with obstructive lung disease

1. If accumulating CO₂, consider disconnecting vent to allow chest to exhale fully

High Pressure Alarm:

1. Check for obstruction:
 - a. Assess need for suction
 - b. Check for kinks in the tubing
2. Assess the need for further sedation:
 - a. Coughing/gagging/biting
3. Bronchospasm
4. Tube in right bronchus
5. PEEP set too high
6. Pmax set too low
7. Wet filter increasing resistance

Low Pressure Alarm:

1. Check to make sure the patient is still connected to the vent
2. ET tube cuff balloon is not adequately inflated
3. Connections are loose
4. Tidal Volume set too low
5. Water condensation in the circuit
6. Esophageal Intubation
7. Chest wounds/drains allowing air to escape

Ideal Body Weight Chart (VOCSN)

Female					Height		Male				
Tidal Volume			IBW lbs	IBW kg	ft/in	in	IBW lbs	IBW kg	Tidal Volume		
6 ml/kg	7 ml/kg	8 ml/kg							6 ml/kg	7 ml/kg	8 ml/kg
270	315	360	99	45	< 5' 0"	< 60"	110	50	300	350	400
270	315	360	99	45	5' 0"	60"	110	50	300	350	400
288	336	384	106	48	5' 1"	61"	115	52	312	364	416
300	350	400	110	50	5' 2"	62"	121	55	330	385	440
312	364	416	115	52	5' 3"	63"	126	57	342	399	456
330	385	440	121	55	5' 4"	64"	130	59	354	413	472
342	399	456	125	57	5' 5"	65"	137	62	372	434	496
354	413	472	130	59	5' 6"	66"	141	64	384	448	512
372	434	496	137	62	5' 7"	67"	145	66	396	462	528
384	448	512	141	64	5' 8"	68"	150	68	408	476	544
396	462	528	146	66	5' 9"	69"	157	71	426	497	568
414	483	552	152	69	5' 10"	70"	161	73	438	511	584
426	497	568	157	71	5' 11"	71"	165	75	450	525	600
438	511	584	161	73	6' 0"	72"	172	78	468	546	624
450	525	600	165	75	6' 1"	73"	176	80	480	560	640
468	546	624	172	78	6' 2"	74"	181	82	492	574	656
480	560	640	176	80	6' 3"	75"	187	85	510	595	680
492	574	656	181	82	6' 4"	76"	192	87	522	609	696