BiPAP: Administration & Management of the Patient on Non-Invasive Ventilation

Quick Links:

Site Applicability

VGH. UBCH, GFS

Practice Level

RN, RT

Goal

- To provide guidelines for the assessment, monitoring and care of patients receiving Bilevel Positive Airway Pressure (BiPAP®) therapy.
- To provide guidelines for communication among the healthcare team regarding care of patients receiving BiPAP® therapy.

Policy Statement

1. **BiPAP® must be ordered by a staff physician.**
2. **CCOT consultation is mandatory for BiPAP® patients at Vancouver General Hospital.** The BiPAP® therapy can be initiated prior to CCOT assessment if necessary.
3. **The physician ordering BiPAP must fill out the Pre-Printed Order** (PPO #649)
4. The RN will inform the unit leadership team (PCC,CNE, Charge Nurse) that BiPAP® has been ordered on a patient so that staffing needs can be assessed.
5. RN assignment only. The RN must retain primary responsibility for the patient—assessment and plan of care. LPN may assist in terms of observation and monitoring in a collaborative setting but may not assume primary care for the patient.
6. If special care or stepdown unit bed not available the assignment must be adjusted for acuity and continuous observation.
7. **GFS:** a Respirology Consult is required. Do not contact the CCOT.
8. **UBCH:** CCOT not available at present. Contact attending MD or after hours MD.

Need to Know

NOTE: Patients who are on BIPAP are generally very ill and have a high potential to become unstable, from both a respiratory and cardiovascular aspect. They are at risk for acute deterioration.

BiPAP® is a form of non-invasive positive pressure ventilation, and is a technique that can improve gas exchange by keeping alveoli open with positive pressure. It is considered non-invasive because the patient does not need to be intubated to receive this therapy.

BiPAP® delivers two levels of positive airway pressure, both inspiratory (IPAP) and expiratory (EPAP) through a face or nasal mask. When the machine senses patient inspiration it delivers a set amount of pressure (ranging from 5-25 cm H2O), which decreases the amount of muscular effort necessary for respiration. The IPAP level refers to the total amount of pressure during inspiration.

On expiration the machine will also supply a level of pressure (ranging from 5-15 cm H2O) to keep the airway and alveoli open. This can help prevent or treat atelectasis, and decrease fluid accumulation in the alveoli. The EPAP level refers to the total amount of pressure during expiration.

BiPAP® is designed to reduce a patient's work of breathing and to improve gas exchange. Oxygen can also be administered via the BiPAP® set up; on some machines the oxygen is tee'd in through a flowmeter, and on others, the FiO2 is set internally in the machine. BiPAP® can reduce both respiratory rate and heart rate, and improve arterial blood gases, by helping to decrease levels of CO2 in the blood and to increase O2 levels.

Full face masks are often used with BiPAP® since patients in respiratory difficulty tend to breathe through their mouths. However, nasal masks may be used with patients who have central sleep apnea or who are more comfortable with this interface.

BiPAP® is not the same as CPAP (Continuous Positive Airway Pressure). CPAP only delivers one level of pressure and is most often used in conditions such as obstructive sleep apnea.

INDICATIONS

- Hypercapnic Respiratory Failure
- Hypoxemic Respiratory Failure
- Impending Respiratory Failure
- Exacerbation of COPD
- Neuromuscular Disorders (e.g. Guillain-Barre , myasthenia gravis, ALS or MS)
- Sleep-Related Breathing Disorders
- Congestive Heart Failure
- Occasionally a patient who is not a candidate for intubation/mechanical ventilation will be placed on BiPAP® to ease work of breathing and to provide comfort.

Relative Contraindications

- Excessive secretions
- Poor ability to protect airway
- Hemodynamic Instability/Lethal Arrhythmias
- High risk of aspiration
- **Uncooperative or agitated patient** (pt may be unable to keep mask on)
- Decreased level of consciousness
- Pneumothorax
- Inability to wear/tolerate mask d/t trauma or surgery (e.g. facial fractures)
- Unstable spinal injury

Absolute Contraindications

- The presence of an artificial airway such as a tracheostomy tube or endotracheal tube. Consult the RT or CCOT.
- Any patient that does not have an adequate respiratory drive to breathe.
- Respiratory Arrest/Impending respiratory Arrest

Complications of BiPAP® Therapy:

- **Cardiovascular/Hemodynamic Instability and/or Pneumothorax:**
  - BiPAP® therapy involves higher than normal airway pressures during both inspiration and expiration, and increase the amount of intrathoracic pressures. Some of the complications of intrathoracic pressures include pneumothorax, tension pneumothorax and decreased cardiac output.
  - Monitor the patient for signs of hemodynamic instability, including hypotension, arrhythmias (if possible), heart rate, respiratory rate (high or low), and oxygen saturation. If the patient has a pneumothorax, breath sounds on the affected side will be very diminished, and in fact may not be audible at all. A patient with a large or tension pneumothorax will be very short of breath and will have compromised respiratory status.
  - If you suspect that your patient has developed either pneumothorax or hemodynamic instability contact the CCOT immediately or call a Code Blue.
- **Respiratory Failure:**
  - While BiPAP® is used to treat respiratory failure, it sometimes is not enough to prevent further worsening of the patient's condition. For this reason continuous O2 saturation monitoring is vital. Assess for changing respiratory rate (<10 or >30), oxygen desaturation below parameters set by the MD, restlessness and/or agitation, and decreasing level of consciousness.
  - The CCOT or ward RT may perform an arterial blood gas at this time to determine whether the patient's oxygen or carbon dioxide levels are within normal limits. If you believe that your patient is experiencing increased work of breathing or worsening respiratory failure, contact the CCOT immediately or call a Code Blue as necessary.

- **Gastric Distention, Vomiting and Aspiration:**

  Airway pressures delivered by the BiPAP® may cause forced opening of the esophageal sphincter and result in gastric distension. Gastric distention can in turn increase the risk of vomiting. Aspiration risk increases with vomiting, or with the intake of food or fluids while the BiPAP® is in use. BiPAP® patients **must be NPO** due to the high risk of gastric distension, vomiting and aspiration with this therapy. Sips with PO meds may be permitted (consult physician). **Unless otherwise indicated the patient's HOB should be elevated at least 30° and preferably 45°.**

  Some patients require BiPAP for longer term therapy (e.g. Guillain Barré, myasthenia gravis); for longer-term therapy (>3 days) consult RD regarding ongoing nutritional management.

  Wall suction unit complete with tubing and a yankuer catheter must be set up and immediately available to all BiPAP patients at all times.

  The patient should be awake enough to remove their own mask if they begin to vomit; for this reason restraints are contraindicated. If restraints are necessary the patient must be observed continuously. The patient should not be overly sedated. All BiPAP® masks have a safety release for easy mask removal in the event of vomiting. Be sure your patient knows how to remove the mask quickly if necessary. If the patient does begin to vomit, remove the mask immediately and orally suction the patient. Apply O2 if desaturation occurs and contact the RT.

- **Air Leak:**

  When BiPAP® is initiated the RT will ensure that the mask is the right fit, and that the straps are properly adjusted. However, patient movement or changes in position can affect the fit of the mask. An air leak is the result.

  An air leak can:

  - Impair BiPAP® effectiveness
  - Make it difficult for the patient to trigger a breath
  - Result in mucosal drying, especially around the eyes
  - Be heard or felt around the mask. It can also cause the machine to alarm.

  If an air leak occurs, ensure that the mask is fitted snugly around the nose/mouth and that the straps are fitted properly. Reapplying the mask will usually resolve the air leak issues.

  Call the RT if you are unable to re-establish a good seal.

- **Skin Breakdown:**

  The BiPAP® mask can be very irritating to the skin around the mouth and nose, and the gases delivered through the mask causes dryness to the mucous membranes, increasing the risk of skin breakdown. The skin across the bridge of the nose is especially susceptible to skin breakdown. Remove the mask every two hours and give mouth care while noting areas of irritation/breakdown. If you do note this, contact the RT, as a differently sized mask may be necessary.

  Monitor the patient carefully when BiPAP® is removed for mouth care, and reapply mask immediately if respiratory distress increases or SpO2 decreases. If BiPAP is required to maintain Oxygen levels consider using a secondary oxygen source while the mask if off for mouth care.

Equipment and Supplies

BiPAP® can be utilized with or without a heated, humidified circuit. There are different circuit configurations required depending on whether there exists an indication for humidity. The circuitry may also differ with the type of BiPAP® machine used. The RT will determine the patient's needs and gather the supplies required for each individual BiPAP® administration.

Heated humidity should be considered for BiPAP® Vision or Critical Care Ventilators on noninvasive mode if the patient is expected to require BiPAP® for greater than 6 hours. This is recommended to prevent the drying of secretions that occurs with dry gas delivery and positive pressure ventilation.

Ensure your patient has oropharyngeal suction and continuous pulse oximeter set up at the head of bed. The RT will gather the following equipment:

- BiPAP® machine
- Corrugated tubing
- Whisper swivel (machine specific)
- Appropriately sized mask (nasal or full face)
- Headgear
- 100% oxygen tee-in (optional and machine specific)

Practice Guideline

ASSESSMENT AND MONITORING

Frequency and type of monitoring may depend upon the indications for BiPAP® therapy (e.g. sleep disorder vs. acute respiratory distress). All BiPAP® patients must be assessed frequently for complications (e.g. aspiration, pneumothorax, or cardiac instability) but those using the machines for chronic conditions such as neuromuscular disorders or sleep disordered breathing may require less frequent monitoring.

Consult with MD/NP/CCOT or check PPO for patient-specific quidelines. If there is a discrepancy between the PPO and these guidelines, please follow the PPO. Clarification with the physician is recommended.

Vital Signs:

- BP, HR, RR **2 h minimum and prn.**
- **When the BiPAP® is first applied vital signs should be taken q1h x 2 hours until patient is assessed as tolerating the intervention, and more stable. While the**

  BiPAP is being applied the patient should be observed continuously x 15 m ins either by CCOT or the primary RN.
- **Continuous pulse oximetry**

Note: Patients who are designated by a physician as receiving BiPAP for comfort measures (e.g. not appropriate for intubation/mechanical ventilation) may require less frequent vital signs (e.g. q4h), but will still require frequent assessment for development of complications. Consult with physician for parameters.

Regardless of patient's acuity, there should be a visual assessment q1h (e.g. hourly rounds) for assessment of comfort and complications.

Assessment:

- Physical assessment q4h **minimum and prn, especially with change in condition, e.g. decrease in level of consciousness, vomiting/aspiration, change in vital signs, cardiac instability.**
- Respiratory assessment
  - work of breathing
  - auscultation
  - chest expansion
- Cardiac assessment
  - hemodynamic stability
- Assess for mucosal or skin breakdown q2h & perform oral care at this time
- Assess LOC/ability to tolerate BiPAP® mask q2h and prn
- Keep HOB elevated >30-45º
- Patient NPO except for sips with meds

- Triggering/cycling the machine (the patient's respiratory effort is triggering a response from the machine)
    - Put your hand on the patient's abdomen to detect respiratory efforts. Patient effort should coincide with machine breath. Check for leaks around mask if the machine is not cycling with patient effort, or call the RT
- Check functioning and setting of alarms (RT specific)

The RT will check a baseline ABG prior to therapy, 30 minutes after initiation and PRN thereafter as ordered by the physician.

Guidelines for Titration of Therapy (RT specific)

- Increase IPAP in increments of 2 cmH20 to reduce respiratory rate and/or stabilize PaCO2 by augmenting alveolar ventilation.
- Increase EPAP in increments of 2 cmH20 to increase functional residual capacity and improve PaO2.
- Communicate with physician and check PPO for parameters.

COMMUNICATION

- The nurse caring for the BiPAP® patient should communicate frequently with the unit PCC/CNE about the patient's condition and needs for the oncoming shift. The assignment may need adjusting if the patient's condition deteriorates, or improves.
- The CCOT will follow and reassess BiPAP® patients as needed.
- The ward RT will also assess and monitor the patient q12H and PRN.
- **During BiPAP® therapy the patient's condition may deteriorate. Contact the CCOT immediately if this situation occurs, or call a Code Blue as necessary. Do not wait for the next scheduled visit.**

TROUBLESHOOTING

- **from O2 Therapy Manual, Respiratory Services (2003).**
- There are several built in alarms on BiPAP® machines. If your patient's machine alarms, assess for these common reasons:
    - **High Pressure Limit:** this alarm will usually ring when the pressure limit set by the RT is exceeded, often by a kink in the tubing or by it being caught in the bedrails. A coughing patient may also trigger this alarm. Ensure that the tubing is free from kinks or other obstructions.
    - **Low Pressure Limit:** this alarm rings when the pressure within the system drops below the preset limit. This is usually caused by a disconnection in the system; for example, the mask may be too loose. Ensure that all connections within the system are tight and that the face mask fits snugly.

- **Apnea:** this alarm will ring when the patient has a period of apnea that lasts longer than the time preset by the RT. This alarm may also ring if there is a large air leak in the circuit or the mask. Assess the underlying reason for this alarm, e.g. is the patient sedated? Has their level of consciousness decreased? Are they in respiratory or cardiac distress? Call the RT or CCOT if this alarm keeps ringing and treat the patient as necessary as other resources are called for assistance.

- **If you cannot fix the source of any alarm after troubleshooting please contact the RT.**

Expected Client/ Family Outcomes

- **Acute:** The patient will experience an improvement in respiratory status without complications.
- **Palliative:** The patient will experience greater comfort with respirations.

PATIENT / CLIENT / RESIDENT EDUCATION:

- **Instruct patient to inform nursing staff immediately if they experience increased work of breathing, shortness of breath, nausea or chest pain.**
- Communicate frequently with the patient re: BiPAP® therapy. A proper mask fit and good synchronization with the machine improves patient compliance with the device. Many patients will be relieved to have improvement in their symptoms. However, the therapy may be an uncomfortable and unfamiliar intervention for some patients so clear and open communication about its importance is vital. The patient and family may also be experiencing anxiety about their clinical condition.

Site Specific Practices

- **GFS:** Do not contact the CCOT if a patient is being placed on BiPAP® therapy. A respiratory consult is necessary.
- **UBCH:** CCOT not available at present. Contact attending MD or after hours MD.

Documentation

- BiPAP® settings and alarm checks will be documented by the RT.
- Assessment/vital signs to be documented as per hospital policy. See CPD C-390 for documentation guidelines.

Related Documents

- Paper/Electronic Documentation Standards
- VCH Acute Care Oxygen Therapy Education Manual

References

Autio, R (2009). What is BiPAP? CCOT handout.

Cox, C.E., Govert, J.A., Shanawani, S., & Abernethy, A.P. (2005). Providing palliative care for patients receiving mechanical ventilation: Invasive and non-invasive ventilation. Progress in Palliative Care, 13(2), p. 63-69.

Frace, M. (2008). Non-Invasive Ventilation: CPAP and BiPAP on the Medical-Surgical Unit. Med Surg Matters, 17(4), p. 8-10>

Goldring, J.J.P., & Wedzicha, J.A. (2008). Managing acute on chronic respiratory failure: A guide to non-invasive ventilation. British Journal of Hospital Medicine, 69(8), p. 444-449.

Jarvisk, H. (2006). Exploring the evidence base of the use of non-invasive ventilation. British Journal of Nursing, 15(14), p. 756-759.

Kunisaki, K.M., Rice, K.L., & Niewoehner, D.E. (2007). Management of acute exacerbations of chronic obstructive pulmonary disease in the elderly. An appraisal of published evidence. Drugs and Aging, 24(4), p. 303-324.

Respiratory Services Department, Vancouver Hospital (2003). Oxygen Therapy and Respiratory Care Reference Manual.

Sawkins, D. (2001). Non-invasive positive pressure ventilation. Nursing Times, 97(26), p. 52-54.

Stoltzfus, S. (2006). The role of non-invasive ventilation: CPAP and BiPAP in the treatment of congestive heart failure. Dimensions of Critical Care Nursing, 25(2), p. 66-70.

Revised By

PROGRAM/UNIT: Respiratory Therapy (Professional Practice/BiPAP Task Group)

CPD Lead: Practice Lead, Professional Practice Nursing

Task Group / Individual Names:

CNE, Acute Medicine

PCC, Chest Centre

CNE, Chest Centre

CNE, ACE

CNE, Cardiac Sciences,

PCC, Cardiac Sciences

Operations Coordinator Respiratory Services

Practice Leader Respiratory Services

Endorsed By

Vancouver Acute Interprofessional Advisory Council (VAIAC)

Vancouver Acute Nursing Practice Advisory Council (VANPAC)

Vancouver Acute Medical Advisory Council (VAMAC)

Vancouver Acute Operations Directors

Approved for Posting

Professional Practice Director, Nursing VA

Date of Revision

Original publication date: August 2009

Alternate Search Terms

BiPAP

NiPPV

Respiratory failure

CCOT

Ventilation

noninvasive ventilation

Appendix A:

Appendix A: Complications of BiPAP Therapy

Complication	Cause	Treatment/Interventions
Cardiovascular/Hemodynamic Instability	• Higher than normal airway pressures during inspiration and expiration increase intrathoracic pressure • This can decrease cardiac output	• Monitor for signs of instability: • Hypotension • Arrhythmias • Tachycardia or bradycardia • Altered respiratory rate • Decreased oxygen saturation • **Call CCOT or a code blue if your patient experiences severe cardiovascular instability**
Pneumothorax or Tension Pneumothorax	• Higher than normal airway pressures during inspiration and expiration increase intrathoracic pressure • This can cause a pneumothorax	• Monitor for signs of instability: • Hypotension • Arrhythmias • Tachycardia or bradycardia • Altered respiratory rate • Decreased oxygen saturation • Breath sounds on the affected side will be severely diminished or not audible • A patient with a large or tension pneumo will have impaired respiratory status • **Call CCOT or a code blue if your patient experiences severe respiratory instability**
Respiratory Failure	• Patient may deteriorate despite initiation of BiPAP therapy • RT may perform an Arterial Blood Gas to determine whether serum O2 and CO2 levels are within normal limits	• Continuous O2 saturation monitoring is mandatory • Assess for changing respiratory rate (<10 or >30) • Assess for dropping O2 sats below parameters set by MD • Assess for decreased LOC, restless and agitation, increased work of breathing • **Contact CCOT or call a code blue if the patient's respiratory failure worsens**
Gastric Distension, Vomiting and Aspiration	• Airway pressures delivered by the BiPAP may cause forced opening of the esophageal sphincter→this can result in gastric distension • This can in turn increase the risk of vomiting	• **BiPAP patients must be NPO d/t the high risk of vomiting and aspiration** • Sips may be permitted with meds (consult physician) • HOB to be elevated 30-45% unless clinically contraindicated • **Wall suction unit complete with tubing and yankauer catheter must be set up and immediately available at all times** • Restraints are contraindicated→ pt must be able to remove mask if they begin to vomit • If the patient begins to vomit, remove the mask, orally suction them and apply supplemental O2 if necessary. Contact the RT.

Complication	Cause	Treatment/Interventions
Air Leak	• Can occur if the patient moves or changes position→the fit of the mask may be compromised. • Air leak can impair BiPAP effectiveness & make it difficult for the patient to trigger a breath • Can result in mucosal drying, especially around the eyes	• Assess for air leaks around the mask, you will be able to hear/feel it • Ensure that the mask fits snugly around the nose and mouth and that the straps are fitted properly. Reapplying the mask usually resolves air leak issues • Contact the RT if you cannot resolve the air leak.
Skin Breakdown	• Caused by irritation d/t high air flow and the pressure on the bridge of the nose by the mask • The gases delivered also are quite drying to mucous membranes	• Remove the mask every 2 hours and inspect for irritation/skin breakdown • Perform oral care at this time. • Monitor the patient closely for signs of oxygen desaturation or respiratory distress→reapply mask immediately if this occurs. • Consider having an alternate O2 source available while performing mouth care

Appendix B:

Appendix B: Monitoring & Assessment of BiPAP Patients

Assessment	Rationale/Notes
VS q2h minimum & prn • BP, HR & RR • Continuous O2 Sat monitoring • VS q1h x 2 hours when BiPAP first applied→ until patient more stable & tolerating intervention	• Patients are often very acute and can deteriorate quickly • Complications can be life threatening→patient must be observed closely
Visual assessment q1h	• Complications can be life threatening→patient must be observed closely • **When first applied patient should be observed continuously x 15 minutes→**
Physical assessment q4h minimum and prn: • Respiratory assessment: work of breathing, auscultation, chest expansion • Cardiac assessment: hemodynamic stability • Skin/mucous membrane breakdown q2h • Oral care q2h • Assess LOC/ability to tolerate BiPAP q2h • HOB elevated 30-45º • Triggering/cycling of BiPAP machine: place hand on abdomen to detect respiratory effort.	• As above • Monitor closely for complications and effects of BiPAP therapy • Keep NPO except for sips with meds (consult with MD→some pts chronically on BiPAP may have differing diet orders. Consult physician.)

NOTE: Patients who are designated by MD as receiving BiPAP for comfort measures may require less frequent VS but will still require frequent assessment for complications. Consult MD for parameters.

Vancouver Coastal Health
Promoting wellness. Ensuring care.

VA Professional Practice Nursing
~ Promoting best nursing practice ~
http://www.vcha.ca/programs_services/pp_nursing/page_12942.htm

BiPAP: FAQs

Developed by Roger Autio, RN, CCOT

What is BiPAP?

BiPAP stands for bi-level positive airway pressure, and is a non-invasive form of positive pressure ventilation. It is delivered by a specialized face mask and machine. BiPAP is considered a non-invasive form of ventilation because the patient does not need to be intubated to receive the benefits of positive pressure.

Supplemental oxygen can be provided through the BiPAP set up.

What is the difference between BiPAP and CPAP?
BiPAP delivers two levels of pressure when they breathe, while CPAP (continuous positive airway pressure) delivers only one. CPAP is often used by patients with sleep apnea.

What are the benefits of BiPAP?
BiPAP will deliver inspiratory positive airway pressure (IPAP) when it senses that the patient is making an inspiratory effort. IPAP is usually set at 8-10 cm H2O. IPAP decreases work of breathing by allowing the respiratory muscles to rest during inspiration.

Upon expiration the BiPAP machine will deliver end positive airway pressure (EPAP), which is usually set at 5-8 cm H2O. Exhaling against this pressure ensures that the alveoli and airways remain open, which improves gas exchange, lung compliance, and can prevent or reverse atelectasis.

Who Receives BiPAP?
Patients who have or are at risk of developing respiratory failure may benefit from BiPAP. Some of the conditions that may necessitate BiPAP therapy include congestive heart failure, pneumonia, severe post-operative atelectasis, some neuromuscular disorders (e.g. Guillain-Barre and myasthenia gravis), and more rarely, those with sleep related breathing disorders. You may also see patients who are not candidates for intubation receive BiPAP to ease work of breathing and provide comfort.

Complications of BiPAP Therapy
While BiPAP is less invasive than intubation and may not necessitate a trip to the ICU, there are ***life threatening*** complications associated with this intervention. Assess and monitor these patients frequently. See the PPO for vital signs frequency, and refer to CPD B-035 for more detail and nursing responsibilities related to BiPAP Therapy.

1. **Air Leak**—patient movement, changes in position & patient condition may mean that the fit of the mask changes. A poor fitting mask often results in an air leak, which can be detected by hearing and/or feeling air leaking around the mask. It can lead to less effective BiPAP and drying of the eyes. If you detect an air leak, attempt to re-adjust the mask. If you cannot regain a proper seal please contact the RT.

2. **Skin Breakdown/Dry Mucous Membranes**—patients receiving this therapy are at a high risk of developing irritation and skin breakdown where the mask meets the face, particularly on the bridge of the nose. Mucous membranes can also dry out quickly due to the gases delivered at high pressures. Assess the patient q2h for signs of skin breakdown by removing the mask. Perform oral care at this time and then promptly reapply the mask. Consult the RT if the mask is causing irritation or breakdown.

.../2

BiPAP: FAQs

Complications of BiPAP Therapy (continued from page 1)

3. **Gastric Distension/Vomiting/Aspiration**—this is a serious complication of BiPAP therapy, and is caused by the high airway pressures being delivered on inspiration and expiration. **All patients on BiPAP therapy must be NPO (sips with meds may be permitted-consult physician. Remove the mask before giving).** Unless contraindicated the patient's HOB should be elevated at least 30□-45□. The patient should also be awake and alert enough to remove the mask themselves if they begin to vomit, as they are at very high risk of aspiration. **Restraints are contraindicated:** patients must be able to remove the mask if they vomit.

4. **Pneumothorax and Cardiovascular Instability—**the higher than normal airway pressures delivered by BiPAP therapy can cause high intrathoracic pressures. This can cause **pneumothorax, tension pneumothorax, and decreased cardiac output (resulting from decreased venous flow to the heart).** Monitor patients closely for signs of hemodynamic instability or pneumothorax—dropping O2 saturations, hypotension, tachycardia or tachypnea, contact the MD or CCOT. Call a code blue if the patient becomes pulseless or stops breathing.

5. **Respiratory Failure**—patients may deteriorate further even though they are receiving BiPAP therapy. Closely monitor the patient for signs of worsening respiratory failure, including O2 desaturation <92% (or other parameter as ordered by MD), respiratory rate increasing >20 or decreasing <10, restlessness, agitation or decrease in level of consciousness. Contact the CCOT immediately. NOTE: patients who are DNACPR or on comfort care may experience deterioration that is expected. Consult with physician re: care parameters when BiPAP applied.

What Else do I Need to Know About BiPAP?
At VGH, CCOT consults are mandatory for BiPAP patients. At GFS, a Respirology consult is necessary. UBCH staff should consult with attending or after hours MD.

The PPOs must be filled out by the CCOT or attending MD, and include vital signs frequency. Consult the physician if you have questions regarding the patient's plan of care.

Where Can I Find Out More?
See CPD B-035 BiPAP: Administration and Management of the Patient Using Noninvasive Ventilation.

Contact:
Nancy Edge, Practice Initiatives Lead Nursing
VA Professional Practice
nancy.edge@vch.ca
604-875-4111 local 61314

June 18, 2009

Placement of BiPAP Patients