



Respiratory Therapy
Pulmonary, Allergy, & Critical Care Medicine

SUBJECT	CONSULT SERVICE HANDBOOK
DATE ISSUED	
AREAS AFFECTED	All Hospital Floors
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APPROVAL	James K. Stoller, M.D.
REVISION DATES	May 2004, 2007, 2008

RESPIRATORY THERAPY CONSULT SERVICE

A survey conducted at The Cleveland Clinic Foundation in 1987 demonstrated that approximately 25% of Respiratory Therapy treatments were ordered inappropriately, that is, either there were no indications for therapy or the wrong therapy was selected. In an attempt to remedy this situation and improve patient care, the Respiratory Therapy Consult Service has been created to assist the physician with evaluating patients' respiratory care needs, determining the indications for respiratory therapy, and selecting the appropriate modalities.

This booklet is designed to inform you about the procedure for ordering a Respiratory Therapy Consult, the process (algorithms) used to determine specific therapies, the evaluation form used in the charts, and the re-evaluation process. If you have any questions regarding this service please feel free to ask any of the therapists or call Respiratory Therapy at 45797 and talk with a Supervisor or the Education Coordinator.

RESPIRATORY THERAPY CONSULT SERVICE NEW EVALUATIONS

- A. A physician may write an order for a Respiratory Therapy Consult by,
 - 1. Writing on a Physician Order Form
 - 2. Using the Computer Physician Order Entry (CPOE) system

- B. Respiratory Therapy Consults are provided for all patients for whom respiratory therapy orders are written with the exceptions of:
 - 1. Post-Cardiac surgery patients
 - 2. Patients admitted to the short stay unit, unless they are admitted to the hospital.

- C. When a physician writes an order for a Respiratory Therapy Consult:
 - 1. An evaluation will be performed according to the Respiratory Therapy Consult Service (RTCS) standardized evaluation guidelines and a care plan written.
 - 2. Discussion between the physician and a Respiratory Therapist concerning the rationale for therapy is encouraged.
 - 3. The RTCS care plan (which will include physician orders for specific medications) will be followed until the indications for therapy are resolved.
 - 4. During the course of therapy, the physician will be called if the patient's clinical status worsens, or if an adverse event occurs.
 - 5. Physician written medication orders will be followed for 24 hours and the patient reassessed. If therapy is not indicated at this time, the physician will be contacted and asked to discontinue treatment.
 - 6. Short-term orders (orders < 24 hour duration) for a single modality (e.g., oxygen, aerosol) will be followed without generating a Respiratory Therapy Consult Service (RTCS) evaluation.

For questions:

Please PAGE #23406 or call ext. 45797

RE-EVALUATIONS

- A. Daily assessment will be made by the Therapist treating the patient and if changes are indicated, they will be presented during Consult Rounds with a Supervisor or a Clinical Specialist. If the changes are in accordance with the Consult Service guidelines/algorithms, they will be instituted at this time.

- B. Changes will be recorded in our management information system (MediServe) and will be available for review in the hospital EPIC system.

CARE PLAN PROCESS

STEP 1

Perform patient evaluation using evaluation guidelines. Determine appropriate Triage number.

STEP II

Determine indications and related therapy using indication guideline sheet.

STEP III

Follow appropriate therapy flow sheet (algorithm):

- a. aerosol therapy
- b. hyperinflation therapy
- c. bronchopulmonary hygiene
- d. oxygen therapy

STEP IV

Write care plan to include:

- a. therapy
- b. frequency
- c. indications
- d. objectives

**THE CLEVELAND CLINIC FOUNDATION
DEPARTMENT OF PULMONARY DISEASE
RESPIRATORY THERAPY EVALUATION**

Date: ____ / ____ / ____ Age: ____

Time: ____ Ht.: ____

Diagnosis: _____

Respiratory Therapist: _____

IMPRINT/LABEL

CHART ASSESSMENT

Clinical Findings	0	x	1	x	2	x	3	x	4	x	Points
Pulmonary Status	(-) History (-) Smoking		Smoking history < 1 pk a day		Smoking history ≥ 1 pk a day		Pulmonary impairment (acute or chronic)		Severe or chronic with exacerbation		
Surgical Status	No surgery		General surgery		Lower abdominal		Thoracic or upper abdominal		Thoracic with pulmonary disease		
Chest X-ray	Clear or not indicated		Chronic changes or x-ray pending		Infiltrates, atelectasis or pleural effusions		Infiltrations in more than one lobe		Infiltrate + atelectasis ± pleural effusion		

LAB TEST: Date: ____ / ____ / ____ Date: ____ / ____ / ____ pH PaCO₂ PaO₂ HCO₃ Sat / FiO₂
WBC ____ Hb ____ Plts ____

PULMONARY FUNCTION TEST: SpO₂ / FiO₂ Vital Signs: HR ____ BP ____ RR ____
Minimal Pred. VC ____
VC ____ PEAK FLOW ____ TEMPERATURE (24 hr max)

PATIENT ASSESSMENT

Clinical Findings	0	x	1	x	2	x	3	x	4	x	Points
Respiratory Pattern	Regular pattern RR 12-20		Increased RR 21-25		Dyspnea on exertion, irregular pattern RR 26-30		Decreased vital capacity* RR 31-35		Severe SOB, use of accessory muscles RR > 35		
Mental Status	Alert, oriented, cooperative		Lethargic, follows commands		Confused, does not follow commands		Obtunded		Comatose		
Breath Sounds	Clear to auscultation		Decreased unilaterally		Decreased bilaterally		Crackles in the bases		Wheezing and/or rhonchi		
Cough Effectiveness	Strong, spontaneous, non-productive		Strong, productive		Weak, non-productive		Weak, productive or weak with rhonchi		No spontaneous cough or may require suctioning		
Level of Activity	Ambulatory		Ambulatory with assistance		Temporarily Non-ambulatory		Bed rest, able to position self		Bed rest, unable to position self		
Oxygen required for SpO ₂ ≥ 92%	No Oxygen		1-3 Liters		4-6 Liters		> 50% < 100%		100%		

Total Points

*VC ≤ to minimal predicted:

Predicted Ideal Body Weight

(males: 50 + 2.4 x inches > 60)

(females 45 + (2.4 x inches > 60)

Multiply above ideal body wt. x 15cc for min. pred. VC

TRIAGE 1 >20	TRIAGE 2 (16-20)	TRIAGE 3 (11-15)	TRIAGE 4 (6-10)	TRIAGE 5 (0-5)
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TRIAGE #

PWO 7197 Rev. 7/06

MINIMUM PREDICTED VOLUMES

<i>Women</i>		
<u>hgt</u>	<u>ibw</u>	<u>pred</u>
4'9"	38	.570
4'10"	40.4	.606
4'11"	42.6	.639
5'0"	45	.675
5'1"	47.4	.711
5'2"	49.8	.747
5'3"	52.2	.783
5'4"	54.6	.819
5'5"	57	.855
5'6"	59.4	.891
5'7"	61.8	.927
5'8"	64.2	.963
5'9"	66.6	.999
5'10"	70	1.05
5'11"	72.4	1.08
6'0"	74.8	1.12
<i>Men</i>		
<u>hgt</u>	<u>ibw</u>	<u>pred</u>
5'5"	62	.930
5'6"	64.4	.968
5'7"	66.8	1.00
5'8"	69.2	1.03
5'9"	71.6	1.07
5'10"	74	1.11
5'11"	76.4	1.14
6'0"	78.8	1.18
6'1"	81.2	1.22
6'2"	83.6	1.25
6'3"	86	1.29
6'4"	88.4	1.32
6'5"	90.8	1.36
6'6"	93.2	1.40
6'7"	95.6	1.43
6'8"	98	1.47

INDICATION GUIDELINES

Indications

A. **Aerosol Therapy**

1. bronchospasm (bronchodilator)
2. history of bronchospasm (beta agonist, anti-cholinergic, steroid)
3. home regimen
4. physician order
5. proteinaceous secretions (mucolytic)
6. inflammation, mucosal edema (steroid, vasoconstrictor)

B. **Bronchopulmonary Hygiene**

1. productive cough
2. history of mucus producing disease
3. rhonchi on auscultation
4. patient is unable to deep breathe and cough spontaneously

C. **Hyperinflation Therapy**

1. atelectasis
2. upper abdominal or thoracic surgery, or COPD & surgery
3. restrictive disease associated with quadriplegia and, or dysfunctional diaphragm

D. **Oxygen Therapy**

1. $PaO_2 < 65$ torr on room air
2. $SpO_2 < 92\%$ on room air
3. clinical signs of hypoxemia*
4. chest pain with cardiac history
5. home O_2
6. post-op care

NOTE: For acute symptoms of hypoxemia or bronchospasm associated with tachycardia, tachypnea, or decreased oxygen saturation, treat the patient with the appropriate oxygen device or a bronchodilator via a SVN first, before completing the entire evaluation process. Bronchodilators may be given q2-q4, ATC and PRN x 24 hours until symptoms subside. In such an acute situation, any immediate physician orders will be followed until a complete RTCS evaluation has been made.

*Increased respiratory rate, increased pulse rate, diaphoresis, confusion, cyanosis

FREQUENCIES (Guidelines)

A.	Aerosols	Indications	Triage
1.	Q2 to Q4, ATC, PRN*	Severe SOB, wheezing, unable to sleep Moderate SOB, wheezing	1 & 2
2.	QID & PRN at night (Q 12 hr. for Serevent)	Hx of asthma, mild wheezing, or facilitate secretion removal	3
3.	PRN Q 6	Intermittent wheezing	4
B.	Bronchopulmonary Hygiene		
1.	Q4 ATC	Copious secretions, SOB, unable to sleep, suspect mucus plug	1
2.	QID & PRN at night	Moderate amounts of secretions	2
3.	TID	Small amounts of secretions + poor cough, history of secretions	3
4.	Q shift WA	Patient unable to deep breathe & cough spontaneously	4
C.	Hyperinflation Techniques**		
1.	Q4 WA & PRN	Patients with severe atelectasis, + low PaO ₂	1
2.	QID	Patients at high risk for, or with persistent atelectasis	2
3.	TID	Patients at risk for developing atelectasis	3
4.	Q shift, WA	Prevention of atelectasis	4
5.	Instruct, D/C, video follow-up	Patients able to perform well on their own	5
D.	Pulse Oximetry ***		
1.	Continuous until stable, then Q4 + PRN in between	Unstable patients	1
2.	QID, + PRN in between	Low PaO ₂ with variances	2
3.	PRN	To titrate FiO ₂	3, 4, or 5
4.	Daily x 2 days	If, after titration, SpO ₂ remains at least 92%, D/C pulse oximetry	4 or 5

Note: *If patient requires more frequent aerosols, please contact supervisor or work leader.

**IS and PEP must be performed by patient on their own Q 1 hr WA.

***Patients not on O₂, with SpO₂ ≥ 92% should have pulse oximetry DC'd and restarted only when clinical signs indicate a need for O₂.

PRN orders (except for oximetry or suctioning) must always accompany a frequency - e.g. Aerosol Q4 WA and PRN.

THE CLEVELAND CLINIC FOUNDATION
DEPARTMENT OF PULMONARY DISEASE

RESPIRATORY THERAPY CONSULT/EVALUATION

Your patient has been evaluated by the Respiratory Therapy Consult Service. Based on the patient's clinical indicators, the Care Plan designated below will be implemented.

IMPRINT/LABEL

Date of Evaluation _____ Allergies: _____

Time of Evaluation _____ Diagnosis(es) _____

CLINICAL INDICATIONS

Post Thoracic Surgery Protocol ☐

Aerosol Therapy	Broncho/Pulmonary Hygiene	Hyperinflation	Oxygen Therapy	Respiratory Monitoring	Suctioning
<input type="checkbox"/> bronchospasm	<input type="checkbox"/> productive cough	<input type="checkbox"/> atelectasis	<input type="checkbox"/> SpO ₂ < 92% or PaO ₂ < 65 torr on room air	<input type="checkbox"/> O ₂ titration (pulse ox.)	<input type="checkbox"/> presence of secretions
<input type="checkbox"/> history of bronchospasm	<input type="checkbox"/> rhonchi on auscultation	<input type="checkbox"/> upper abdominal or thoracic surgery, or COPD & surgery	<input type="checkbox"/> clinical signs of hypoxemia	<input type="checkbox"/> unstable resp. status	<input type="checkbox"/> unable to cough effectively
<input type="checkbox"/> home regimen	<input type="checkbox"/> history of mucous prod. disease	<input type="checkbox"/> restrictive disease associated with quadriplegia and, or dysfunctional diaphragm	<input type="checkbox"/> chest pain with cardiac history	<input type="checkbox"/> ABGs (SpO ₂ < 92% on room air or 4 lpm O ₂)	<input type="checkbox"/> artificial airway
<input type="checkbox"/> physician order	<input type="checkbox"/> patient unable to deep breath and cough spontaneously		<input type="checkbox"/> home O ₂	SpO ₂ /FiO ₂ _____	
<input type="checkbox"/> proteinaceous secretions			<input type="checkbox"/> post-op care	Vital Capacity _____	
<input type="checkbox"/> inflammation/mucosal edema					

CARE PLAN

Aerosol Therapy	Frequency
<input type="checkbox"/> DPI <input type="checkbox"/> Neb <input type="checkbox"/> MDI	
<input type="checkbox"/> DPI <input type="checkbox"/> Neb <input type="checkbox"/> MDI	
<input type="checkbox"/> DPI <input type="checkbox"/> Neb <input type="checkbox"/> MDI	
Broncho/Pulmonary Hygiene <input type="checkbox"/> pos. drainage <input type="checkbox"/> percussion/vibration <input type="checkbox"/> coughing techniques <input type="checkbox"/> incentive spirometry <input type="checkbox"/> CPAP, PEP <input type="checkbox"/> IPPB	
Hyperinflation Oxygen Therapy <input type="checkbox"/> FIO ₂ % _____ <input type="checkbox"/> liters/minute _____ <input type="checkbox"/> Device _____ Monitoring <input type="checkbox"/> pulse oximetry <input type="checkbox"/> ABGs <input type="checkbox"/> resp. mechanics Suctioning <input type="checkbox"/> nasal tracheal <input type="checkbox"/> tracheal	

Comments

PRINT NAME: _____

SIGNATURE: _____ BEEPER NO. _____

Care plan modifications, made in response to changes in the patients' condition, are available for your review through the computerized order entry system.

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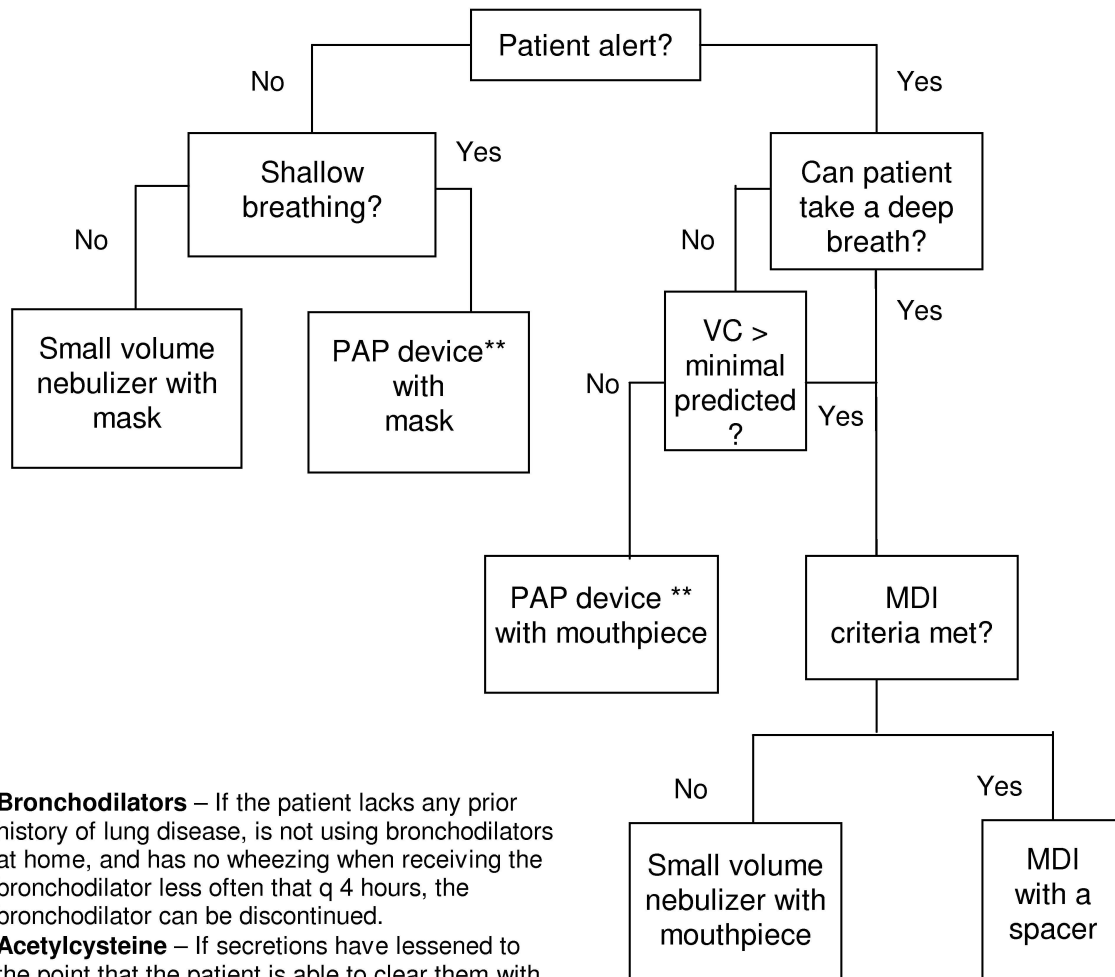
AEROSOL THERAPY*

Indications:

Current, or history of bronchospasm
Inflammation, mucosal edema
Proteinaceous secretions

Type of Medication:

Bronchodilator
Steroid, vasoconstrictor
Mucolytic



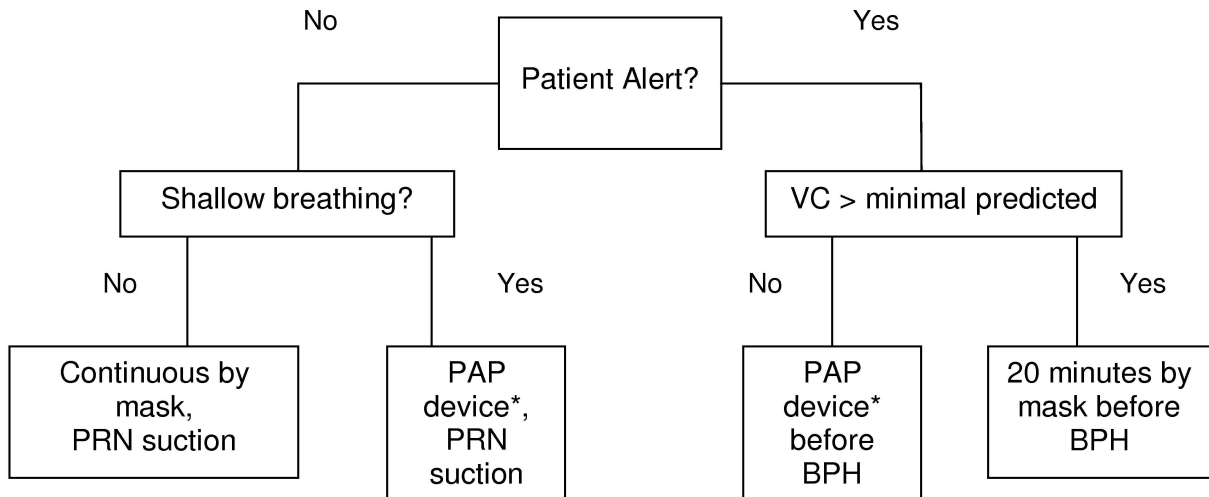
*

- **Bronchodilators** – If the patient lacks any prior history of lung disease, is not using bronchodilators at home, and has no wheezing when receiving the bronchodilator less often than q 4 hours, the bronchodilator can be discontinued.
- **Acetylcysteine** – If secretions have lessened to the point that the patient is able to clear them with a cough, the mucolytic may be discontinued.
- **Anti-inflammatory Medications** – If the patient lacks any prior history of lung disease, is not using an inhaled anti-inflammatory medication at home, and lacks wheezing by examination or by history for at least 24 hours, the anti-inflammatory medication can be discontinued.
(Discontinuation requires a physician order.)

**Appropriate PAP devices:

- PEP (i.e. Thera-PEP)
- Measured PEP (i.e. EZ-PAP)
- Oscillatory device (i.e. Acapella)
- Intermittent CPAP

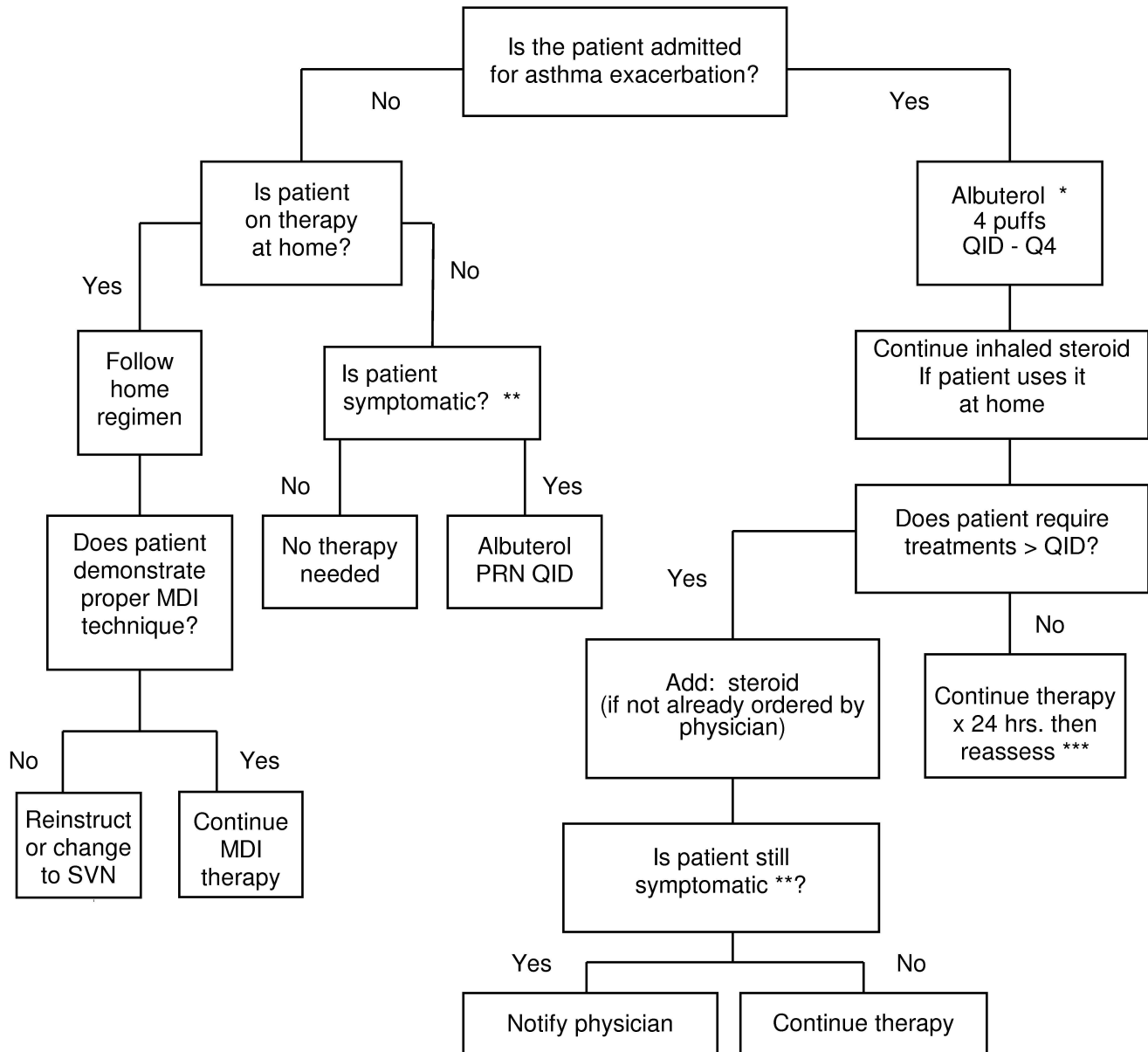
Bland Aerosol (Thick secretions)



*Appropriate PAP devices:

- PEP (i.e. Thera-PEP)
- Measured PEP (i.e. EZ-PAP)
- Oscillatory device (i.e. Acapella)
- Intermittent CPAP

ASTHMA MEDICATION



* Albuterol may be given up to every 1-2 hours if needed. If the patient is unable to use an MDI effectively, use a small volume nebulizer.

** Symptomatic = wheezing, SOB, cough, exercise intolerance, RR > 21.

*** If wheezing subsides and respiratory rate is < 21, decrease albuterol to 2 puffs QID.

ADULT RESPIRATORY THERAPY CONSULT MEDICATION ORDER FORM

THE CLEVELAND CLINIC FOUNDATION

PHYSICIAN'S ORDERS

RECORD ALL ALLERGIES AND INTOLERANCES: (Update MyPractice)

For scanning accuracy, affix patient label
within this outlined box.

NO KNOWN ALLERGIES OR INTOLERANCES

Affix Patient ID Label

DATE TIME

USE BALLPOINT PEN ONLY

ORDER #

RESPIRATORY THERAPY MEDICATION ORDER FORM

Bronchodilators	SVN (small volume nebulizer)	MDI (metered dose inhaler)	Inhalations	DPI (dry powdered inhaler)	Inhalations	*Frequency	**PRN
β adrenergic							
Albuterol	2.5 mg 5.0 mg 15 mg times 1 hour continuous _____ mg/hour continuous	90 mcg	2				
Salmeterol (Serevent®)				50 mcg	1		
Epinephrine (Racemic®)	0.5 ml of 2.25% sol.						
Anticholinergic							
Ipratropium bromide (Atrovent®)	0.5 mg	18 mcg	2				
Tiotropium (Spiriva®)				18 mcg	1		
Anti-inflammatory							
Cromolyn sodium (Intal®)	20 mg	800 mcg	2				
Triamcinolone (Azmacort®)		100 mcg	2				
Fluticasone (Flovent®)		44 mcg 110 mcg 220 mcg	2 2 2	50 mcg 100 mcg 250 mcg	1 1 1		
Beclomethasone (QVAR®)		40 mcg 80 mcg	1 1				
Budesonide (Pulmicort®)	0.25 mg 0.5 mg			90 mcg Flexhaler 180 mcg Flexhaler	1		
Combination Meds							
Fluticasone/Salmeterol (Advair®)				100 250 500 50 50 50 Fluticasone/Salmeterol	1		
Albuterol/Ipratropium (Combivent®)		103 mcg 18 mcg Albuterol Ipratropium	2				
Mucolytic							
Acetylcysteine (Mucomyst®)	10% 20%						
Other:							

** PRN indications

- 1 PRN / frequency - for intermittent wheezing
- 2 PRN / frequency - as used for home regimen
- 3 PRN / frequency - for stridor
- 4 PRN / other _____

- ☐ Patient Transfer; Medication Reorder
- ☐ Frequency Change
- ☐ Stat Treatment

*Frequency - Respiratory Therapy Administration Schedule

PRN ¹	Daily	two times a day	three times a day	four times a day
WA ²	every shift	every 6 hours	every 4 hours	every 2 hours
ATC ³	every shift	every 6 hours	every 4 hours	every 2 hours

¹As needed ²While awake ³Around the clock

Is this the patient's home regimen? Yes No

PRINT NAME _____

SIGNATURE _____ BEEPER No. _____

Respiratory Therapist: _____ Date _____ Time _____ Pager # _____

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ALL ORDERS MUST BE SIGNED BY PHYSICIAN

SCAN ALL NEW ORDERS TO PHARMACY

GUIDELINES FOR PRIMING MDIs

DRUG NAME	# OF SPRAYS TO PRIME	WHEN TO REPRIME
Proventil HFA (albuterol)	4	after 2 wks of no use
ProAir HFA (albuterol)	3	after 2 wks of no use
Ventolin HFA (albuterol)	4	after 2 wks of no use, or if dropped
Atrovent HFA (ipratropium)	2	after 3 days of no use
Flovent HFA (fluticasone)	4	after 7 days of no use, or if dropped
Advair HFA (fluticasone/salmeterol)	4	after 4 wks of no use, if dropped only 2 sprays to reprime
Xopenex HFA (levalbuterol)	4	after 3 days of no use
Symbicort (formoterol/budesonide)	2	after 7 days of no use, or if dropped
Qvar HFA (beclomethasone)	2	after 7 days of no use
Combivent (ipratropium/albuterol)	3	after 24 hrs of no use
Azmacort (triamcinolone)	2	after 3 days of no use
Maxair (pirbuterol)	2	after 48 hrs of no use
Alvesco (ciclesonide)	3	after 10 days of no use
Aerospan HFA (flunisolide)	2	after 2 wks of no use

RECOMMENDED INSTRUCTIONS FOR DRY POWDERED INHALER USE

Pulmicort Flexhaler- (budesonide)

Must be primed before 1st use. To prime, twist the brown grip in one direction & fully back in the opposite direction. Repeat once more. When loading a dose, flexhaler must be in the upright position (mouthpiece up).

Spiriva-(tiotropium)

Do not press green piercing button more than once. Pierce with mouthpiece pointing up. Breathe in medication with the handihaler in the horizontal position.

Asmanex- (mometasone)

No need to prime it. Hold inhaler in the upright (pink on bottom) position, twist cap off in counterclockwise direction. Inhale medication with inhaler in the horizontal position. Cap must be replaced to load the next dose. Cap will not come off if medication is gone.

Advair (fluticasone/salmeterol), Flovent (fluticasone), Serevent (salmeterol) (Diskus)-

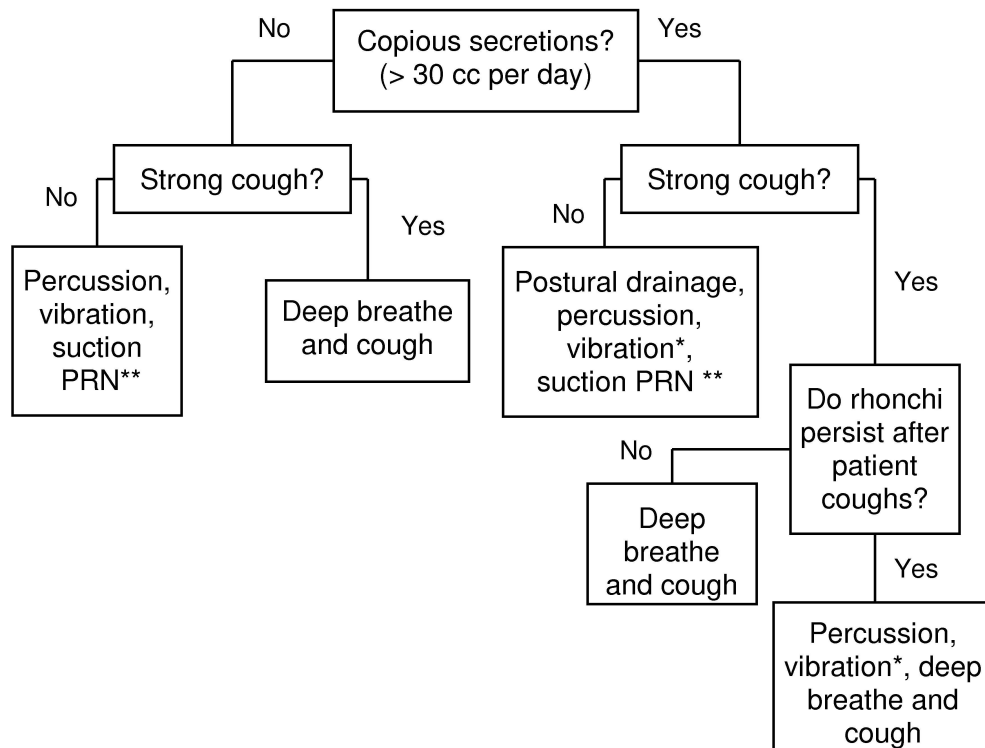
Place Diskus in horizontal position. Slide lever away until it clicks. Inhale the medication with the Diskus in the horizontal position. Tilting the Diskus will cause the medication to fall out. (the patient will not get any medication)

Foradil-(formoterol)

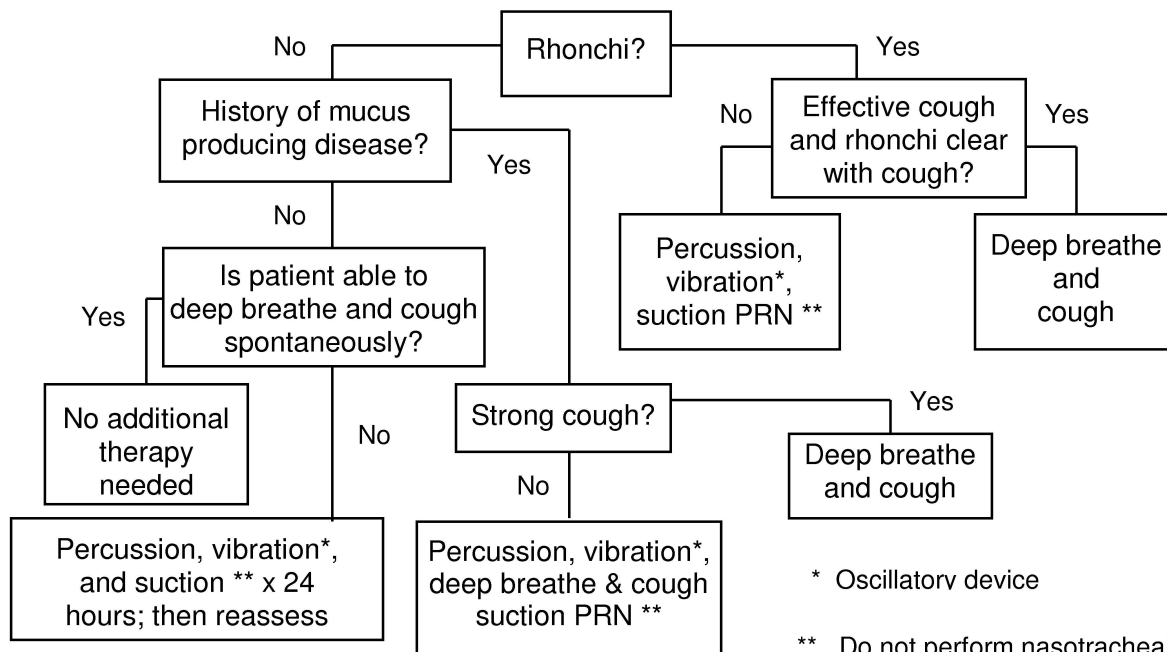
Hold Aerolizer in the upright position. Push both buttons at the same time and only once. With the buttons facing left and right and the aerolizer in the horizontal position, inhale medication.

BRONCHOPULMONARY HYGIENE (bph)

Productive Cough



Non-Productive Cough



* Oscillatory device

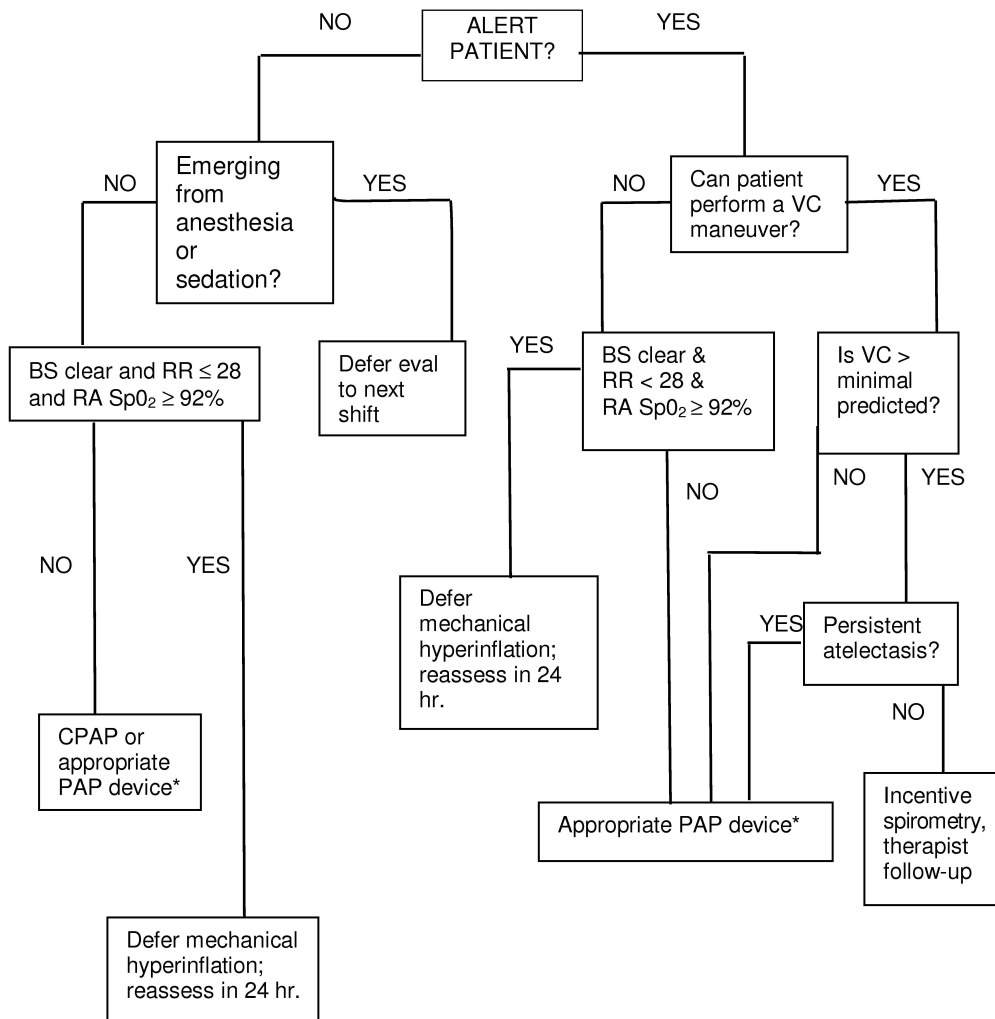
** Do not perform nasotracheal suctioning on a patient with a platelet count < 50,000 or neutropenia.

bph will be discontinued when secretions are no longer present (for 2 consecutive scheduled treatments) or when secretions and/or rhonchi can be cleared with cough.

HYPERINFLATION THERAPY

Indications:

1. Atelectasis
2. Upper abdominal or thoracic surgery, or COPD and surgery
3. Restrictive disease associated with quadriplegia or dysfunctional diaphragm



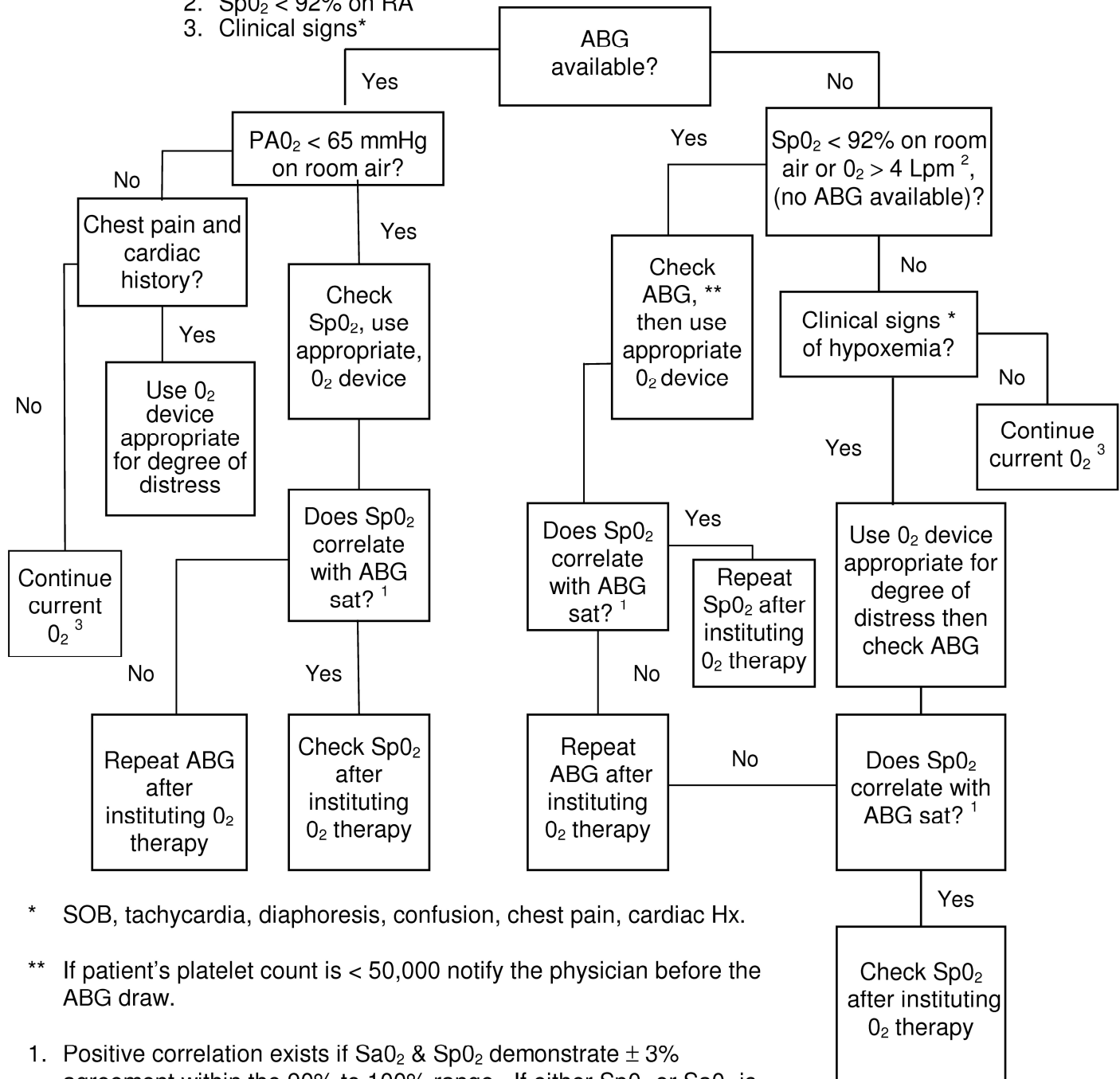
*Appropriate PAP devices:

- PEP (i.e. Thera-PEP)
- Measured PEP (i.e. EZ-PAP)
- Oscillatory device (i.e. Acapella)
- Intermittent CPAP

Hyperinflation therapy will be discontinued when atelectasis has been resolved as evidenced by chest x-ray, and/or when the patient's SpO₂ and respiratory rate return to normal (SpO₂ ≥ 92% on room air) or baseline values for 2 consecutive treatments and breath sounds are clear.

OXYGEN THERAPY

- Indications: 1. $PaO_2 < 65$ on RA
 2. $SpO_2 < 92\%$ on RA
 3. Clinical signs*

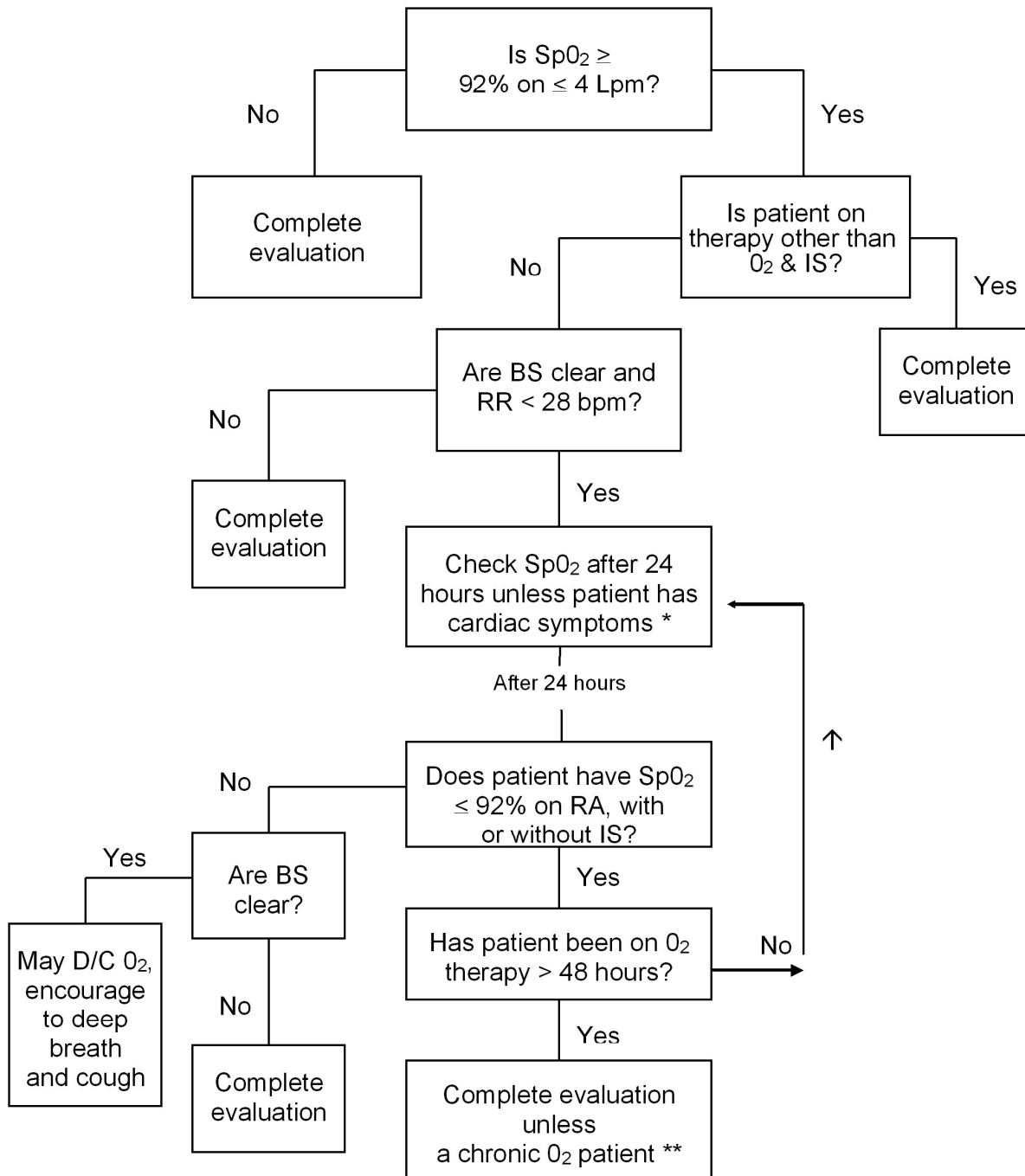


* SOB, tachycardia, diaphoresis, confusion, chest pain, cardiac Hx.

** If patient's platelet count is $< 50,000$ notify the physician before the ABG draw.

1. Positive correlation exists if SaO_2 & SpO_2 demonstrate $\pm 3\%$ agreement within the 90% to 100% range. If either SpO_2 or SaO_2 is less than 90%, titrate therapy using SaO_2 . (May use SpO_2 if $SaO_2 = SpO_2$).
2. Patients on less than 4 Lpm O_2 , increase O_2 as needed to achieve a $SpO_2 \geq 92\%$ (max. 4 Lpm). If patient requires > 4 Lpm, go to Yes in this portion of algorithm and check an ABG.
3. Or no O_2 if saturation is adequate on room air.

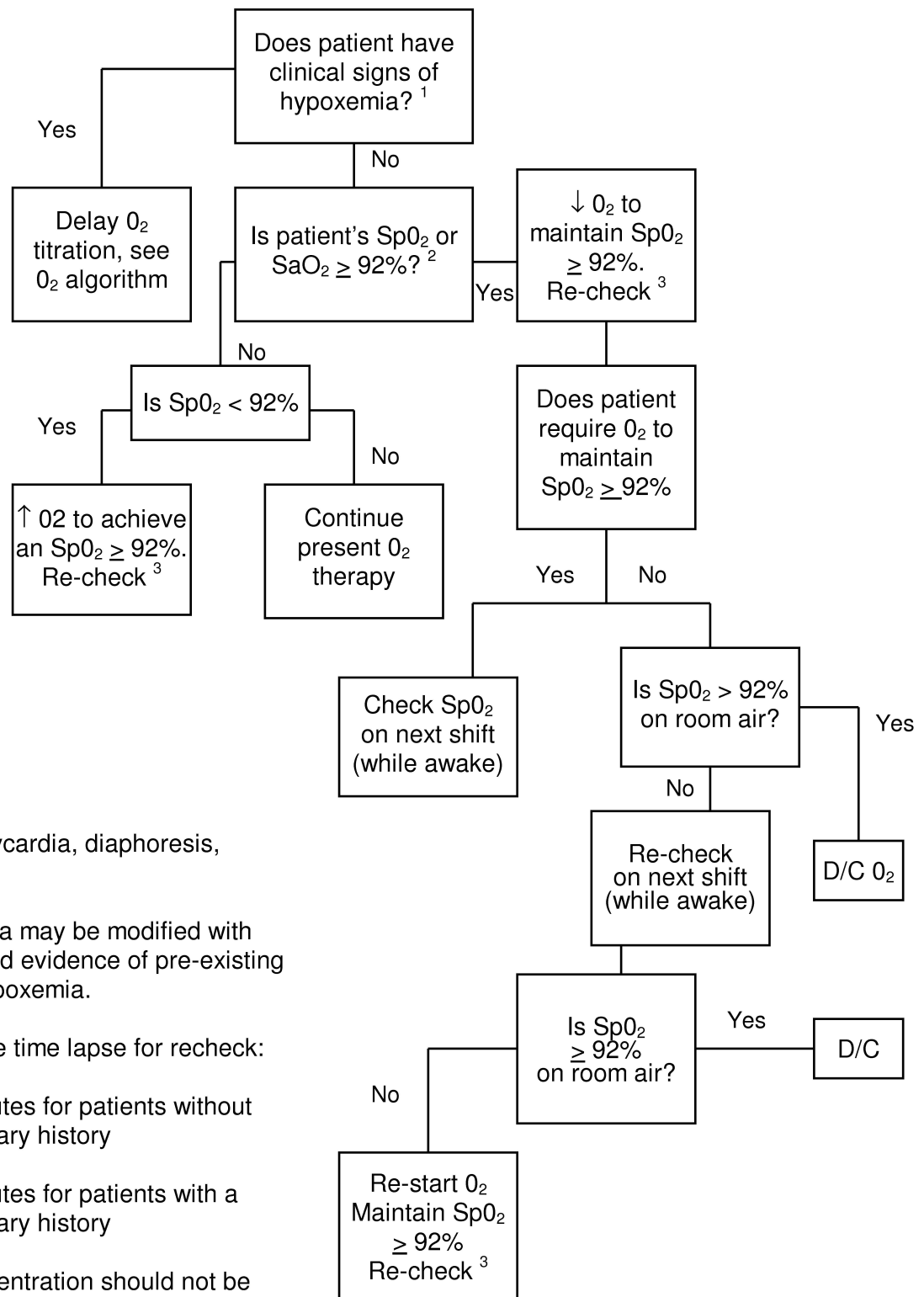
OXYGEN THERAPY ASSESSMENT



* For patients with diagnosed or R/O angina or MI, continue low flow O₂. When O₂ has been on standby longer than 48 hours, reassess.

** If patient required chronic use of supplemental O₂ pre-op, prescribed liter flow in accordance with patient's previous baseline SpO₂.

OXYGEN THERAPY TITRATION



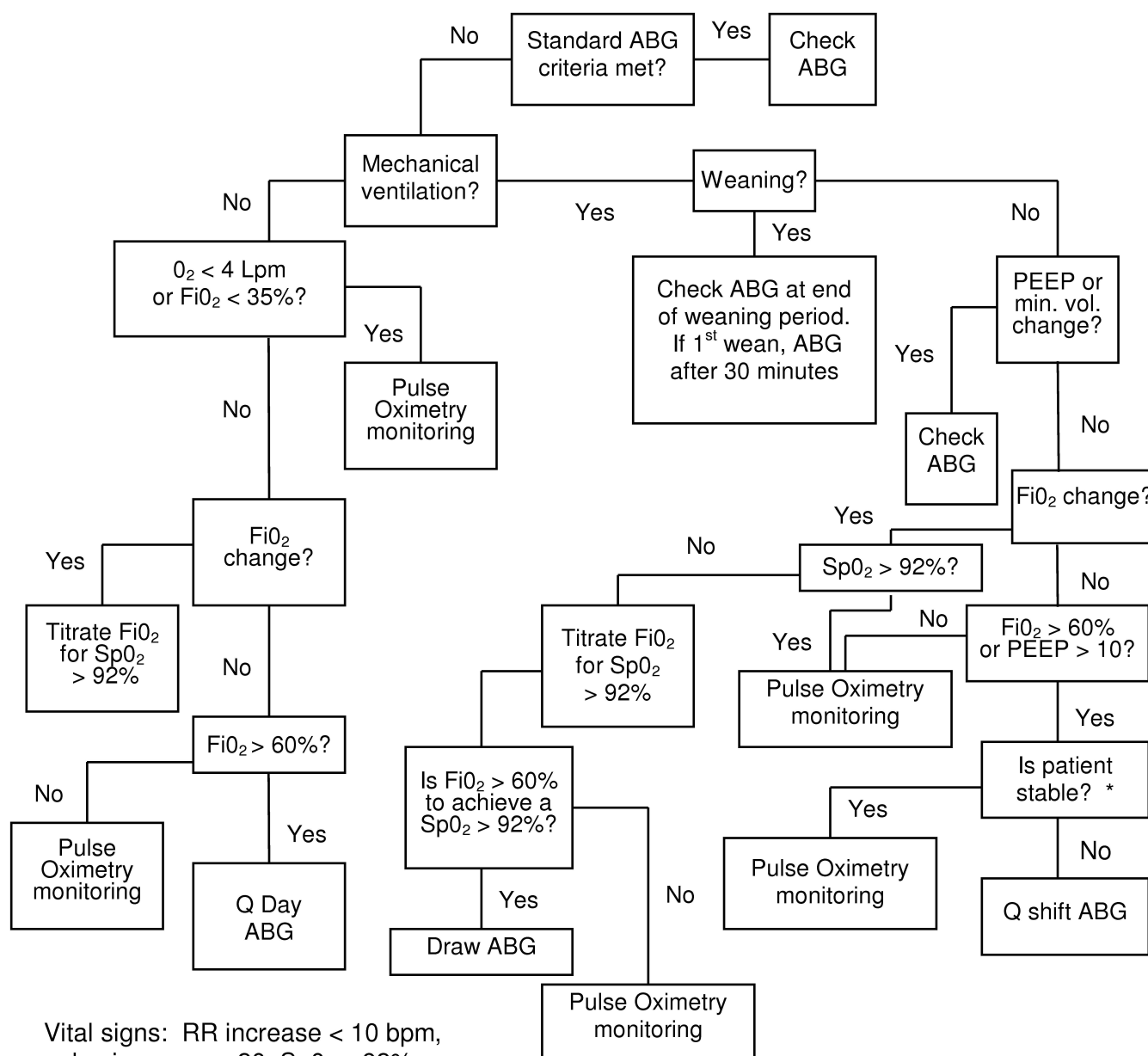
ARTERIAL BLOOD GAS MONITORING

STANDARD ABG CRITERIA:

Baseline ABG for new admissions (If not done previously)
Hemodynamic instability
Pre and Post extubation

** Last ABG shows:

PH > 7.50, or pH < 7.30, PaCO₂ > 55, PaO₂ < 60 torr and/or Sat. < 90%, HCO₃ < 18 mEq/L
(Unless prior criteria established)
Cyanosis
Unexpected dysrhythmias
Unexpected change in mental status
RR > 35 for >15 minutes (in the absence of pulmonary disease)
RR < 6 bpm, paradoxical breathing
acute change in breath sounds



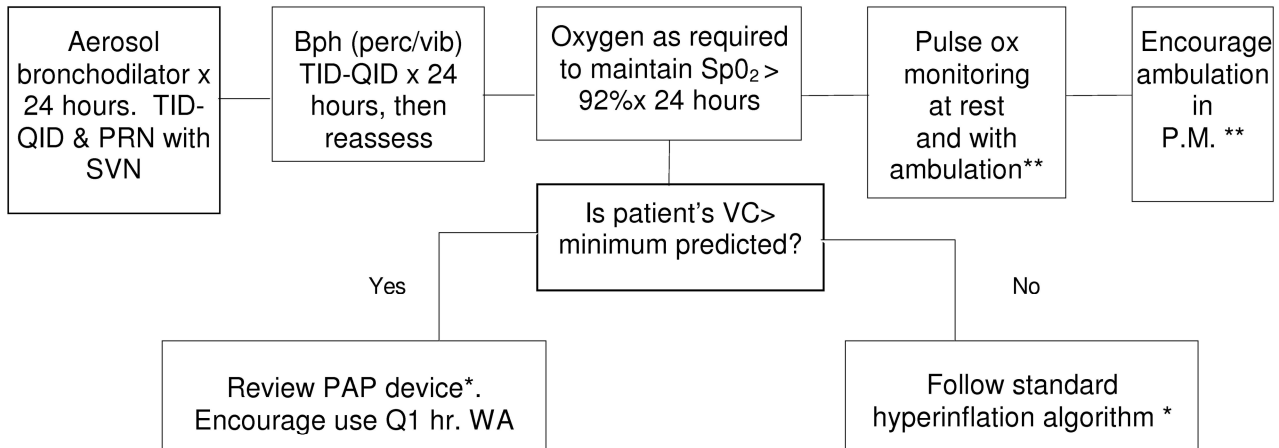
* Vital signs: RR increase < 10 bpm, pulse increase < 20, SpO₂ > 92%

** Draw ABG at least Q shift.

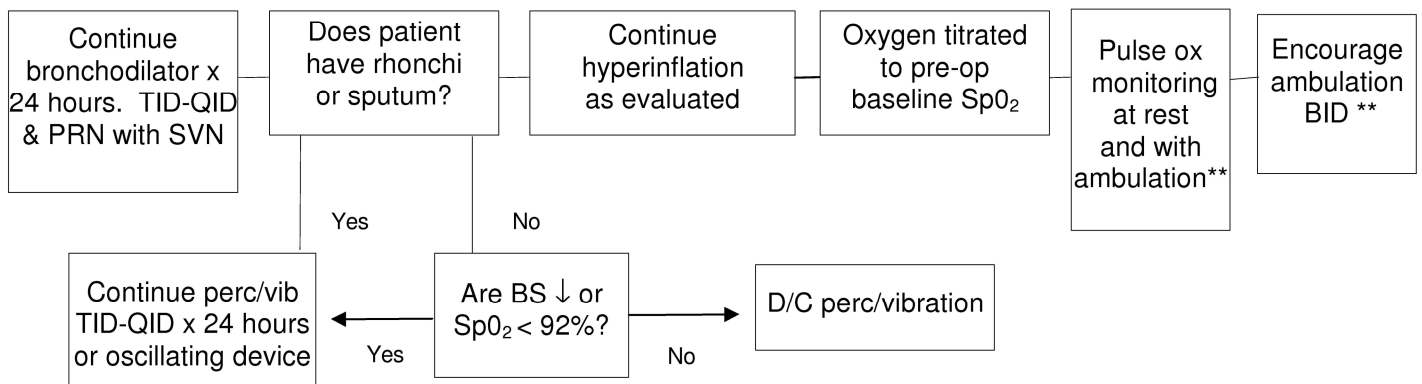
POST-OP THORACIC SURGERY PROTOCOL

(Exclude thoracic laparoscopic hiatal hernia procedures,
mediastinoscopies, and lung biopsies)

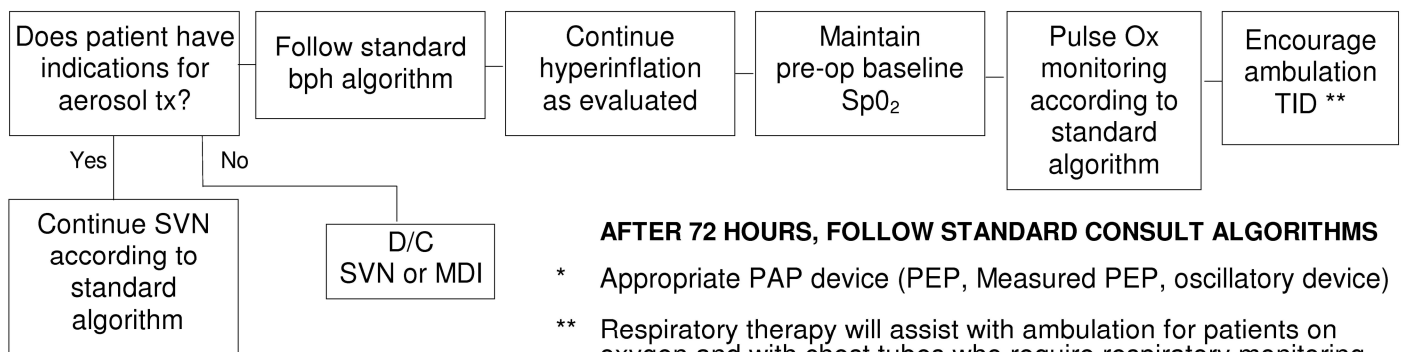
First 24 Hours Post ICU



Second 24 Hours Post ICU



Third 24 Hours Post ICU

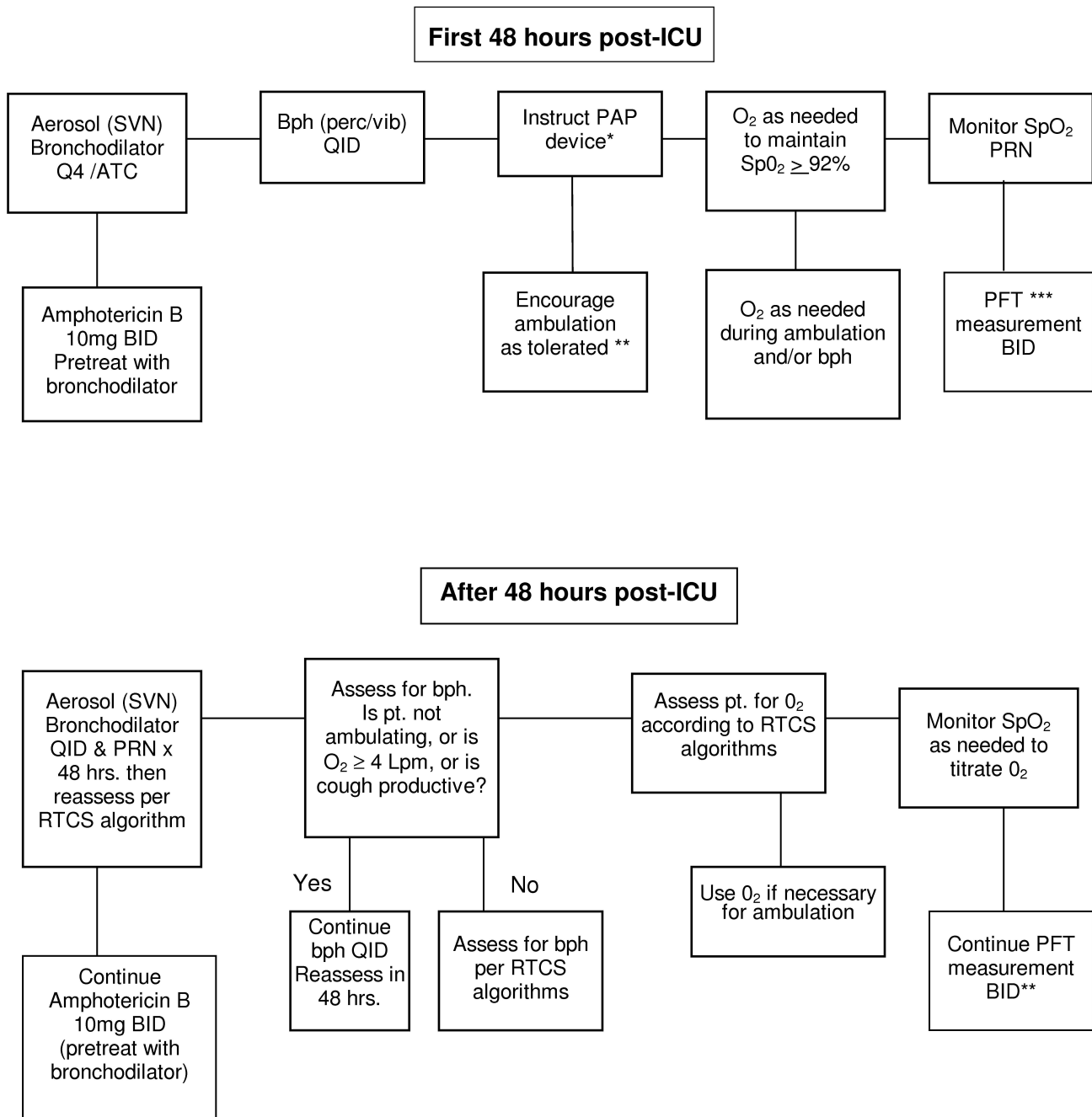


AFTER 72 HOURS, FOLLOW STANDARD CONSULT ALGORITHMS

* Appropriate PAP device (PEP, Measured PEP, oscillatory device)

** Respiratory therapy will assist with ambulation for patients on oxygen and with chest tubes who require respiratory monitoring.

POST-OP LUNG TRANSPLANT PROTOCOL

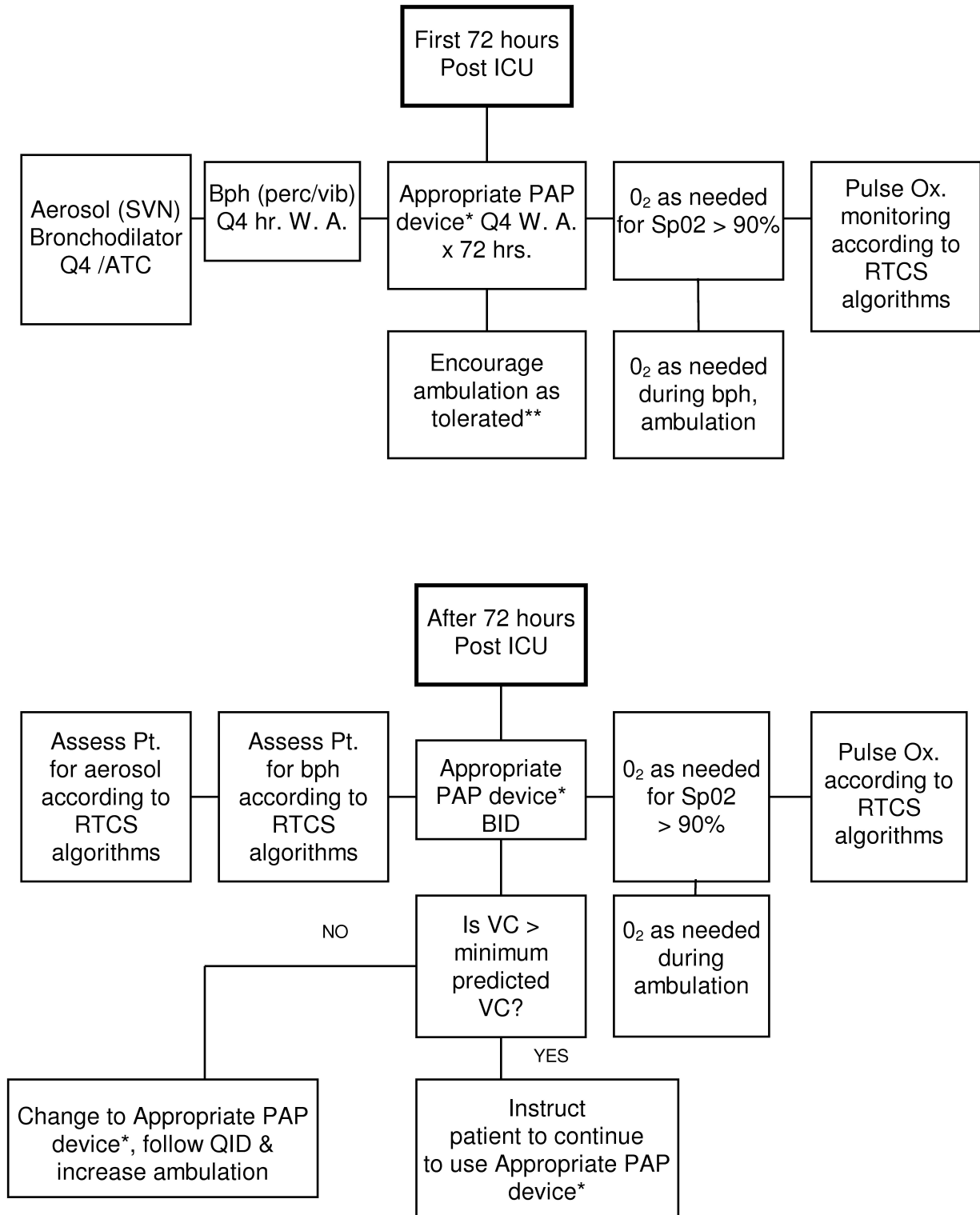


* Select appropriate PAP device (PEP, measured PEP, oscillatory device)

** Early ambulation is essential. Increase as tolerated.

***Use Bedside Spirometer for FEV₁ measurement.

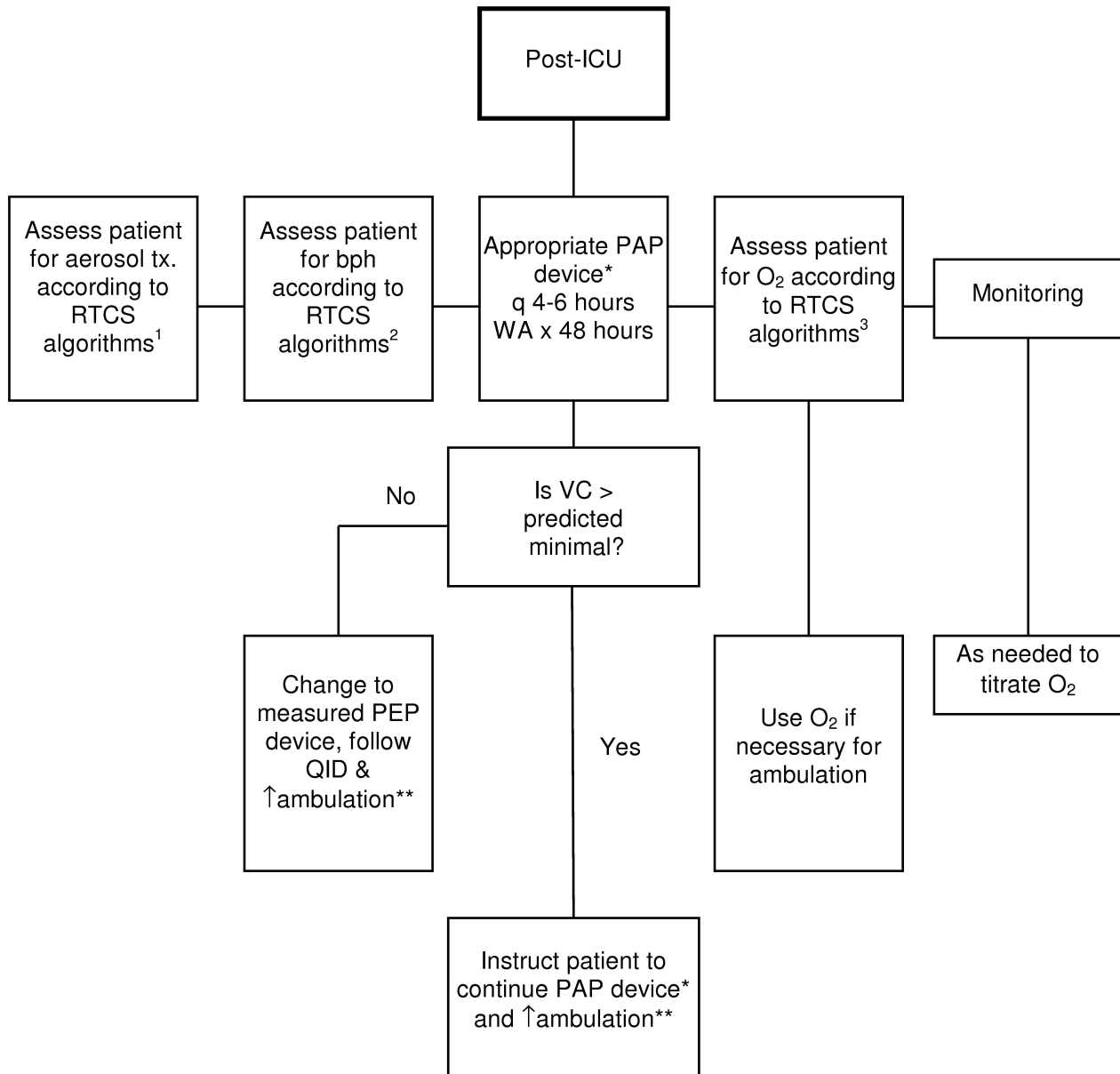
POST-OP LUNG REDUCTION SUGERY PROTOCOL



* Appropriate PAP devices (PEP, measured PEP, oscillatory device)

** Early ambulation is essential. Increase as tolerated.

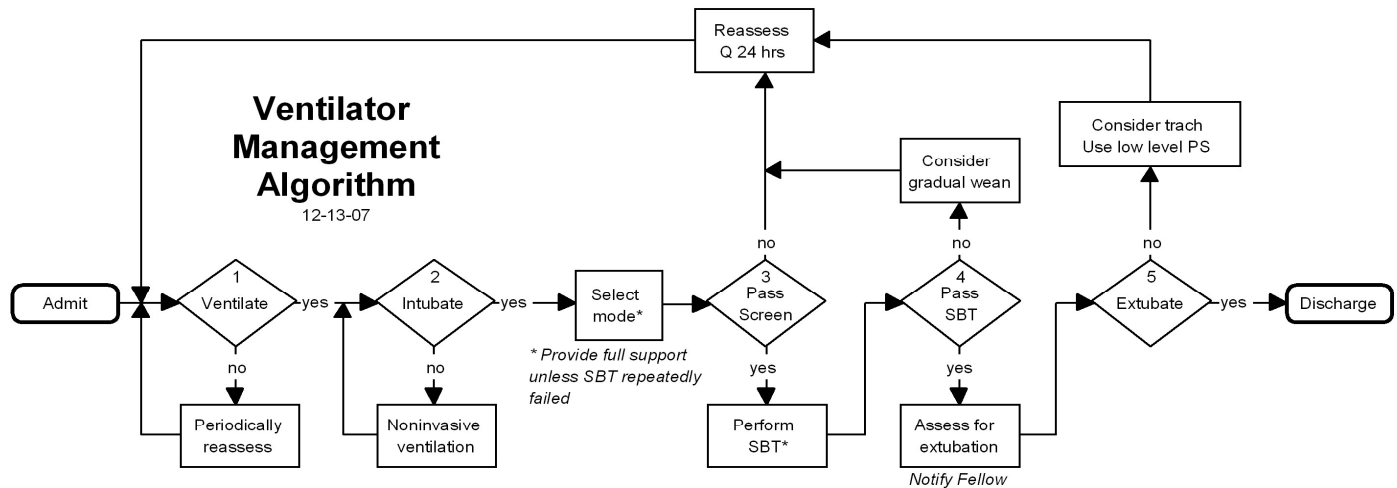
POST-OP HEART TRANSPLANT PROTOCOL



1. Medicated aerosol criteria: bronchospasm, history of bronchospasm
2. bph criteria: secretions, rhonchi that do not clear with cough
3. Maintain SpO₂ ≥ 92%.

* Appropriate PEP device (PEP, measured PEP, oscillatory device)

** Early ambulation is essential. Increase as tolerated.



1. Considerations for Ventilation

- tachypnea/bradypnea
- increasing oxygen requirement
- increasing PaCO₂
- decreased alertness

2. Considerations for NIV

- COPD with initial respiratory failure
- heart failure

3. Criteria to Pass Wean Screen

- reversal of underlying causes
 - presence of spontaneous breath efforts
 - PaO₂ > 60 torr or SaO₂ > 90% on FiO₂ ≤ 0.40
 - pH > 7.30
 - PEEP ≤ 8 cmH₂O
 - RR ≤ 35 breaths/min
 - HR < 140 beats/min
 - systolic BP between 90 and 160
 - Levophed < 5 ug/min
 - temperature < 38.5 degrees C
- Presence of all criteria required to pass*

* Conditions of SBT

- PEEP = 5 cm H₂O
- pressure support = 5 cm H₂O
- trial to last 60 minutes

4. Criteria to Pass SBT

- PaO₂ > 60 torr or SaO₂ > 90% on FiO₂ ≤ 0.40
 - change in pH < 0.10
 - change in PaCO₂ < 10 mmHg
 - RR ≤ 40 for > 50 minutes
 - drop in systolic PB < 20%
 - systolic BP > 80
- Presence of all criteria required to pass*

5. Criteria for Extubation

- suctioning less frequent than Q2 hours
 - adequate cough
 - follows commands (eg "close eyes")
- Presence of all criteria required to pass*

NPPV (BiPAP) Therapy Assessment and Management

Indications:

Thoracic cage deformities
Neuromuscular disease
Idiopathic hypoventilation
Respiratory distress
Hypercapnic COPD
Obstructive sleep apnea
Obesity hypoventilation

Exclusion Criteria:

Respiratory arrest
Cardiorespiratory instability
Uncooperative patient
Recent facial, esophageal, or gastric surgery
High aspiration risk
Inability to protect airway
Fixed anatomic abnormalities of the nasopharynx
Copious secretions

Assessment:

1. Cause of respiratory distress
2. Hemodynamically stable (systolic >90 mmHg)
3. $\text{pH} \geq 7.28$
4. Assess level of consciousness
5. Protect airway
6. Secretions

Critical Factors for Success of NPPV:

1. Cooperative patient
2. Hemodynamically stable
3. Ability to protect the airway
4. No excessive secretions

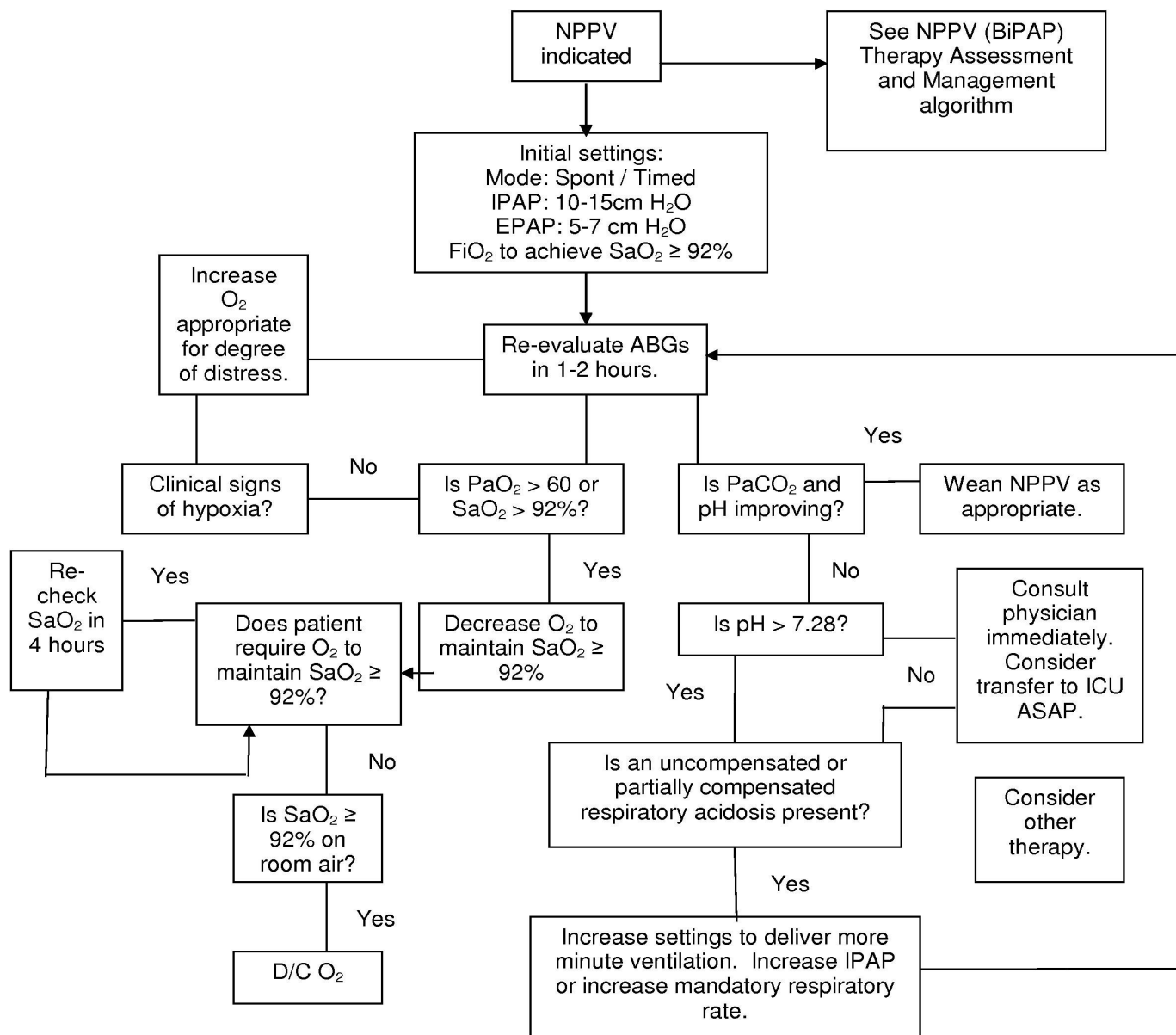
Advantages of NPPV:

1. Patient comfort
2. Airway defense maintained
3. Ability to eat and speak
4. Endotracheal intubation complications avoided
5. Lower risk of nosocomial pneumonia

Disadvantages of NPPV:

1. Need cooperative patient
2. Inability to suction airway
3. Facial trauma
4. Gastric distention

NPPV (BiPAP) Management



HOME O2 QUALIFICATION

I. Qualifying Conditions

- A. Chronic Cardio- Pulmonary Diagnosis
 - 1. example: COPD/ Asthma/ Lung Cancer/IPF/
 - 2. CHF/Pulmonary hypertension
- B. Hypoxemia as defined by:
 - 1. ABG results: PaO₂ < 56, and/or, SaO₂ <89% on room air.
 - 2. Pulse oximetry results: SpO₂ <89% on room air.

II. Medicare/Private Insurance Carrier

- A. Home O2 qualification
 - 1. SpO₂, at rest, of <89%
 - a. always check more than one site
 - b. check a manual pulse
 - c. document on desaturation study form
 - 2. ABG at rest with PaO₂ of <56 and /or SaO₂ of <89% on room air
 - a. SpO₂ may be used to determine O₂ requirements
 - 3. Either ABG or Pulse oximetry results may be used for qualification
 - a. qualifying studies must be done within 48 hours of discharge home
 - b. patients going to another facility after leaving the hospital must be qualified for home oxygen at that facility before discharge home.
- B. Determining needed O2 requirement
 - 1. Determine lowest O₂ level that will maintain an SpO₂ of ≥ 92% (not to exceed 94%) at rest.
 - 2. Ambulate patient on resting O₂ requirement for six minutes or as tolerated.
 - a. SpO₂ on exertion should be > 90%
 - b. Document the SpO₂, the required liter flow and the distance traveled before desaturation.
 - c. also document the resting SpO₂ on the liter flow required to maintain an SpO₂ of > 90% on exertion
- C. Exertional Home O2
 - 1. Patients with a chronic pulmonary diagnosis whose resting SpO₂ is >88% but desaturate to < 89% with exertion
 - 2. A desaturation study is required
 - a. ambulate patient at a normal pace for six minutes or as tolerated
 - 3. Determine lowest O₂ level required to maintain an SpO₂ of >88% to <93% with exertion
 - a. document exertional SpO₂ and liter flow required
 - b. document a resting liter flow on the exertional liter flow

III. Medicaid (Ohio Department of Welfare) Patients

- A. Follow Medicare guidelines

IV. Documentation for all patients

- A. Fill out Desaturation study form (see example)
 - a. white copy goes in patient's chart
 - b. yellow copy goes to the department
 - c. document all patient education on this form
- B. Follow Respiratory Therapy Section documentation procedure