Breathing Exercises

Purpose

To standardize the re-training of patients to use respiratory muscles efficiently when their inefficient use is due to disease or trauma.

Policy

Respiratory Care Services will instruct the patient in exercises to prevent or lessen the pulmonary complications due to inefficient use of the respiratory muscles due to disease, trauma, surgery, drugs, or rib cage restrictive condition (including obesity and pregnancy).

Accountability/Training

A Licensed Respiratory Care Practitioner trained in the procedure will instruct the patient, the family, and/or available medical personnel in the proper exercises as specified in the EPIC orders. The patient will receive supervised instruction as needed by the RCS personnel until able to perform exercises adequately without supervision or until the circumstances necessitating breathing exercises have been eliminated. Training must be equivalent to the minimal entry level in Respiratory Care Service with age specific requirement of patient population recognition.

Physician's Order

- A written physician's order is required. Order must specify which exercises are desired.
- Nursing staff will perform cough and deep breathe unless physician's order specifies therapy to be performed by RCS.

Goals

- To strengthen the abdominal muscles and diaphragm.
- To decrease the use of the accessory muscles of respiration.
- To decrease the work of breathing.
- To increase the efficiency of breathing.
- To increase thoracic cage mobility and tidal volume.
- To assist in removal of secretions.
- To increase chest wall compliance.
- To increase exercise tolerance.

Indications

Breathing exercises are indicated in any pathological state, which causes the patient to use his muscles of respiration inefficiently resulting in an impairment of pulmonary function; generally, any patient with an abnormal pattern of breathing or increased work of breathing. They are done in conjunction with cough effort to assure total lung clearing.

Contrain-dications

Voluntary breathing exercises are contraindicated:

- In acute medical or surgical emergencies.
- In a patient whose level of consciousness does not allow his full cooperation.

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Contrain-dications Continued

- Significant pain or discomfort: although most definitely not a contraindication to therapy, pain or discomfort should be considered by the therapist and all possible steps taken to relieve it if it interferes with the patient's cooperation.

Procedure

For unilateral and bilateral basal, segmental, or lateral intercostal breathing; posterior basal expansion, apical expansion; diaphragmatic breathing, and pursed-lip breathing.

Step	Action
1	Check EPIC for physician's orders.
2	Wash hands.
3	Explain purpose/goals of breathing exercise(s) to the patient.
4	Position patient for most efficient breathing pattern
5	Auscultate patient's chest.
6	Instruct patient on specific breathing exercise.
7	Have patient repeat exercise until he/she is performing it adequately without supervision.
8	Have patient cough. Auscultate chest.
9	Therapist may demonstrate by exaggerated pantomime.
10	Document outcome/effectiveness of breathing exercise(s) in EPIC.
11	Maintains proper medical and departmental records, per RCS Policies 7.1.1 and 7.1.2.

Pursed-Lip Breathing - Detailed Purpose
Helps to maintain higher and expiratory pressure in the airways. Prevents alveolar collapse and extends alveolar collapse time onset

Step	Action
1	Instruct patient to pucker his/her lips in a whistling position.
2	Ask patient to exhale slowly and completely.
3	Have patient repeat exercise.
4	May be used in conjunction with diaphragmatic breathing.

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Procedure Continued

Diaphragmatic Breathing - Detailed Purpose
Used to help strengthen and train the diaphragm and other respiratory abdominal muscles. To increase tidal volume.

Step	Action
1	Position the patient in a 45° relaxed sitting position with the back and head supported.
2	The therapist places hand on the patient's upper abdomen.
3	Have the patient inhale through nose, letting the therapist's hand rise during inspiration.
4	Then have the patient exhale through pursed-lips, while the therapist's hand presses inward on the abdomen.
5	Have the patient perform this exercise with patient's hand on upper abdomen.
6	Have patient repeat exercise until adequate expansion is achieved.
7	The patient should relax upper chest and shoulders.

Lateral Costal Excursion - Detailed Purpose
Mobilize the thoracic cage. Help relieve splinting from incision or abdominal pain.

Step	Action
1	Have the patient sit erect on the edge of the bed or chair.
2	The therapist should place hands over the patient's lower ribs or upper abdomen.
3	Instruct the patient to exhale, while the therapist applies firm pressure against the patient's ribs and abdomen with hands. Have the patient exhale through pursed-lips.
4	Have the patient inhale, pushing the lower ribs outward against the therapist's hands. The therapist should gradually increase resistance to this movement, as much as can be tolerated by the patient.
5	Have the patient perform this exercise using own hands.

Undesirable Side Effects

Patient who is unable to perform exercise easily may increase the work of breathing, by use of accessory muscles.

Therapist may unknowingly use excessive pressure thus restricting movements of specific area.

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Assessment of Outcome

Breathing exercises shall be considered effective when the patient's pulmonary function improves as measured by one or more of the following means:

Subjective:

- The patient's complaint of shortness of breath has resolved or significantly improves.

Objective:

- Significant improvement in Arterial Blood Gases.
- Significant improvement in X-rays.
- Significant improvement in tidal volume or forced vital capacity.
- Equal bilateral chest excursion where unequal excursion existed prior to the institution of therapy.
- Decreased work of breathing; decreased respiratory rate.
- Effective voluntary or reflex cough mechanic.
- **NOTE:** If the patient is following all instructions with consistent effective attempts and lung, muscle, or rib cage fail in expected motion, one must re-evaluate and discuss with a physician. Perhaps there is another underlying problem (e.g., pleural effusion, pneumothorax, hematoma) that must be relieved by other means.
- If the patient's vital signs change significantly during these procedures, the treatment must be stopped and an RN/MD notified

Patient Teaching

Step	Action
1	The tactile sense is most helpful in instructing a patient to assume a more appropriate breathing pattern. The therapist's hands are placed over the areas where muscular movement is desired and the patient is encouraged to concentrate on expanding the part of the chest under the hands.
2	For segmental breathing instruction, the therapist's hand is placed on the chest area to be expanded. The patient is encouraged to breathe deeply and to preferentially "send air" to that area of the chest where tactile stimulation is being applied by the therapist. On full expiration, moderate compression is applied.
3	It is often helpful to have a patient with obstructive disease exhale through "pursed lips," a maneuver that increases resistance to exhalation at the mouth. This maneuver is

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Patient Teaching Continued

3 (Cont.)	believed to transmit an early expiratory backpressure to the bronchial tree and the backpressure is believed to prevent early collapse of small bronchioles and improve exhalation from alveoli (specifically COPD patients).
4	The patient is encouraged to perform pursed-lip breathing while climbing stairs, bathing, getting dressed and lifting.

Infection Control

Follow procedures as outlined Healthcare Epidemiology Policies and Procedures: #2.24 Respiratory Care Services.
http://www.utmb.edu/policy/hcepidem/search/02-24.pdf

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