When people become ill, however, their respiratory functions may be inhibited for such reasons as pain and immobility. Shallow respirations inhibit both diaphragmatic excursion and lung distensibility. The result of inadequate chest expansion is pooling of respiratory secretions, which ultimately harbor microorganisms and promote infection. Additionally, shallow respirations may potentiate alveolar collapse which may cause decreased diffusion of gases and subsequent hypoxemia. This situation is often compounded by giving narcotics for pain, because narcotics further depress the rate and depth of respiration.

Interventions by the nurse to maintain the normal respirations of clients include

- Positioning the client to allow for maximum chest expansion.
- Encouraging or providing frequent changes in position.
- Encouraging ambulation.
- Implementing measures that promote comfort, such as giving pain medications.

The semi-Fowler’s or high Fowler’s position allows maximum chest expansion in clients who are confined to bed, particularly those with dyspnea. The nurse also encourages clients to turn from side to side frequently, so that alternate sides of the chest are permitted maximum expansion. Dyspneic clients often sit in bed and lean over their overbed tables (which are raised to a suitable height), usually with a pillow for support. This orthopneic position is an adaptation of the high Fowler’s position. It has a further advantage in that, unlike in high Fowler’s, the abdominal organs are not pressing on the diaphragm. Also, a client in the orthopneic position can press the lower part of the chest against the table to help in exhaling (Figure 50-4 ■).

**Deep Breathing and Coughing**

The nurse can facilitate respiratory functioning by encouraging deep breathing exercises and coughing to remove secretions from the airways. When coughing raises secretions high enough, the client may either expectorate (spit out) or swallow them. Swallowing the secretions is not harmful but does not allow the nurse to view the secretions for documentation purposes or to obtain a specimen for testing.

Breathing exercises are frequently indicated for clients with restricted chest expansion, such as people with chronic obstructive pulmonary disease (COPD) or clients recovering from thoracic surgery.

A commonly employed breathing exercise is abdominal (diaphragmatic) and pursed-lip breathing. Abdominal breathing permits deep full breaths with little effort. Pursed-lip breathing helps the client develop control over breathing. The pursed lips create a resistance to the air flowing out of the lungs, thereby prolonging exhalation and preventing airway collapse by maintaining positive airway pressure. The client purses the lips as if about to whistle and breathes out slowly and gently, tightening the abdominal muscles to exhale more effectively. The client usually inhales to a count of 3 and exhales to a count of 7.

Forceful coughing is often less effective than using controlled or huff coughing techniques. Instructions for abdominal (diaphragmatic) and pursed-lip breathing and coughing techniques are provided in Client Teaching.

**Deep Breathing and Coughing Care Plan Activity**

**CLIENT TEACHING Abdominal (Diaphragmatic) and Pursed-Lip Breathing**

- Assume a comfortable semi-sitting position in bed or a chair or a lying position in bed with one pillow.
- Flex your knees to relax the muscles of the abdomen.
- Place one or both hands on your abdomen, just below the ribs.
- Breathe in deeply through the nose, keeping the mouth closed.
- Concentrate on feeling your abdomen rise (expand) as far as possible; stay relaxed, and avoid arching your back. If you have difficulty raising your abdomen, take a quick, forceful breath through the nose.
- Then purse your lips as if about to whistle, and breathe out slowly and gently, making a slow “whooshing” sound without puffing out the cheeks. This pursed-lip breathing creates a resistance to air flowing out of the lungs, increases pressure within the bronchi (main air passages), and minimizes collapse of smaller airways, a common problem for people with COPD.
- Concentrate on feeling the abdomen fall or sink, and tighten (contract) the abdominal muscles while breathing out to enhance effective exhalation. Count to seven during exhalation.
- Use this exercise whenever feeling short of breath, and increase gradually to 5 to 10 minutes four times a day. Regular practice will help you do this type of breathing without conscious effort. The exercise, once learned, can be performed when sitting upright, standing, and walking.

![A client using the overbed table to assist with breathing.](koz74686_ch50.qxd 11/8/06 1:51 PM Page 1368)