



## OBESITY AND HOMECARE SERVICES

by Jim Stegmaier, RRT-NPS, RPFT, CCM

There has been a dramatic increase in the past twenty years in the number of obese people in the U.S. It has been estimated that the percentage of overweight people between 1980 and 1999 increased from 47% to 61% and obesity increased from 15% to 25% of the total population. Males weighing 20% and females weighing 25% or more over their recommended body weight for one's height are considered obese. While smoking is the leading cause of preventable death, obesity related diseases are rapidly increasing. In 2000 it was estimated that 400,000 deaths were associated with obesity while 7% of all health care dollars spent that year were utilized for obesity and bariatric related diseases.

Body Mass Index (BMI) is a tool to evaluate the weight status of people over the age of twenty. The formula to calculate BMI is:

**BMI = Weight in lbs/ (Height in inches) x (Height in inches) x 703**

Once the BMI is calculated it is compared to a range which is based upon the effect that body weight has on morbidity and mortality. As the BMI increases, risk for diseases such as premature death, type 2 diabetes, stroke, osteoarthritis, high blood pressure and cardiovascular disease, increases.

BMI is only one indicator of health and must be utilized in conjunction with a complete physical assessment. This is because two people can have identical BMI's but have vastly different amounts of body fat. A body builder and an obese patient for instance, can have the same BMI because the BMI calculation is based solely on height and weight. BMI ranges are as follows:

**The number of patients who are obese and are diagnosed with a chronic respiratory disease is rising significantly**

### BMI

Below 18.5  
18.5 – 24.9  
25.0 - 29.9  
Over 30.0

### Weight Status

Underweight  
Normal  
Overweight  
Obese

The number of patients who are obese and are diagnosed with a chronic respiratory disease is on the rise. In some cases obesity can be linked *directly* to a respiratory disorder. Examples being obstructive sleep apnea and obesity hypoventilation syndrome. Research is currently being conducted to determine if there is any direct connection between obesity and COPD.

Home respiratory care professionals have seen an increase in the utilization of CPAP for the treatment of OSA in this population. When the bariatric patient is compliant with their CPAP therapy, sleep-related breathing disorders, improvement of daytime symptoms, decreases in premature death and decreases in blood pressure during both the day and night, occur. CPAP is part of the preoperative preparation process for bariatric surgery. The therapy is used not only to correct sleep disorders prior to weight loss but to aid in minimizing postoperative cardiopulmonary complications. The respiratory therapist must be prepared to provide the necessary education, training and follow-up to give the patient the tools to successfully acclimate to CPAP therapy and make the lifestyle changes crucial to being compliant long term. Obese OSA patients who cannot tolerate high CPAP pressures may benefit from bi-level continuous positive airway pressure therapy.

Obesity hypoventilation syndrome patients frequently experience hypercapnea, respiratory failure, hypoxemia and cor pulmonale. Oxygen therapy and noninvasive positive pressure ventilation (NPPV) are commonly prescribed to meet the respiratory needs of this group. Ambulatory oxygen needs should be assessed to determine what type of system is appropriate to meet the patient's clinical and lifestyle needs. The respiratory therapist should evaluate liter flow, oxygen saturation, average number of hours of ambulatory oxygen, manual dexterity and ability to comprehend instructions to determine the most appropriate ambulatory oxygen system for the patient.

While the home care therapist is versed in the use of oxygen, CPAP and NPPV therapies to meet the respiratory requirements of bariatric patients, there are other factors the practitioner must consider when developing a plan of care. For instance, manufacturers are now producing a wide variety of bariatric equipment obese patients can benefit from.

Many overweight patients experience orthopnea and must sleep with their heads elevated. Bariatric hospital beds which are wider and accommodate weights up to one thousand pounds are commercially available. Mobility is another major issue for some bariatric patients. Walkers, rollators, manual and power wheelchairs, scooters, canes and crutches specifically designed for the bariatric patient can also provide freedom for some of these patients. Indeed, these aids can make the difference in giving many patients the ability to leave their private residences and again, interact with the community. While these mobility aids work well in the community, there can be challenges to using

tors are found in the parasympathetic nervous system. In smooth muscle they regulate cardiac contractions, gut motility, and bronchial constriction. Muscarinic antagonists include atropine, scopolamine, ipratropium, and darifenacin, which promotes urinary retention. Specific airway conductance (SGaw) improved significantly with both albuterol and ipratropium bromide but FEV1 did not. The transplanted lung's response to methacholine was demonstrated using eight heart-lung transplant patients. The mean PC20 FEV1 was 0.43 mg, cumulative, of methacholine which demonstrates marked hyperresponsiveness. Then patients were given ipratropium bromide before further methacholine trials, this pretreatment with inhaled ipratropium bromide blocked the response to a standard methacholine challenge. Serial methacholine provocation tests were performed in seven long term survivors and the results did not change.

It has been shown that following pulmonary autotransplantation and allotransplantation in dogs and in baboons, neural regeneration occurs by about six to eight weeks. But despite regeneration, neural function remains impaired as shown by the loss of the Hering-Breuer reflex. In humans this nerve regeneration has not been demonstrated. The response to inhaled ipratropium bromide is in keeping with the presence of intact airway ganglia and postganglionic parasympathetic efferents as demonstrated in animal models. These results support the concept of denervation hypersensitivity of intact muscarinic receptors within the lung. These nerves remain intact within the lung and function to some extent without direct CNS control.

If you ever run across a patient population having a unique characteristic, it might be a good opportunity to see how their lung function is affected by their medical condition. If you are interested in further details of the above studies, feel free to contact me.

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these items within a private residence. Many private residences for instance, must have doorways enlarged in order to use those wider bariatric mobility products. A thorough home evaluation will provide answers regarding which products will meet the patient's mobility needs within a private home and in the community as well. Bathroom products including shower chairs, bedside commodes and transfer benches can improve patient independence within the residence as well.

Insurance coverage for some bathroom and mobility products can vary widely between policies and providers. Many durable medical equipment carriers will contact a patient's insurance carrier to obtain information on which products will be reimbursed by their insurance carrier and at what level.

The respiratory care practitioner will continue to face many challenges as he or she works to meet not only the respiratory requirements but also the lifestyle needs of the bariatric patient. The home respiratory therapist must be educated on all the different products available to treat the bariatric patient so that all the needs of the patient can be met for the most positive outcome.

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