



Pulmonary Disease

by Brenda Richardson, MA, RDN, LD, CD, FAND

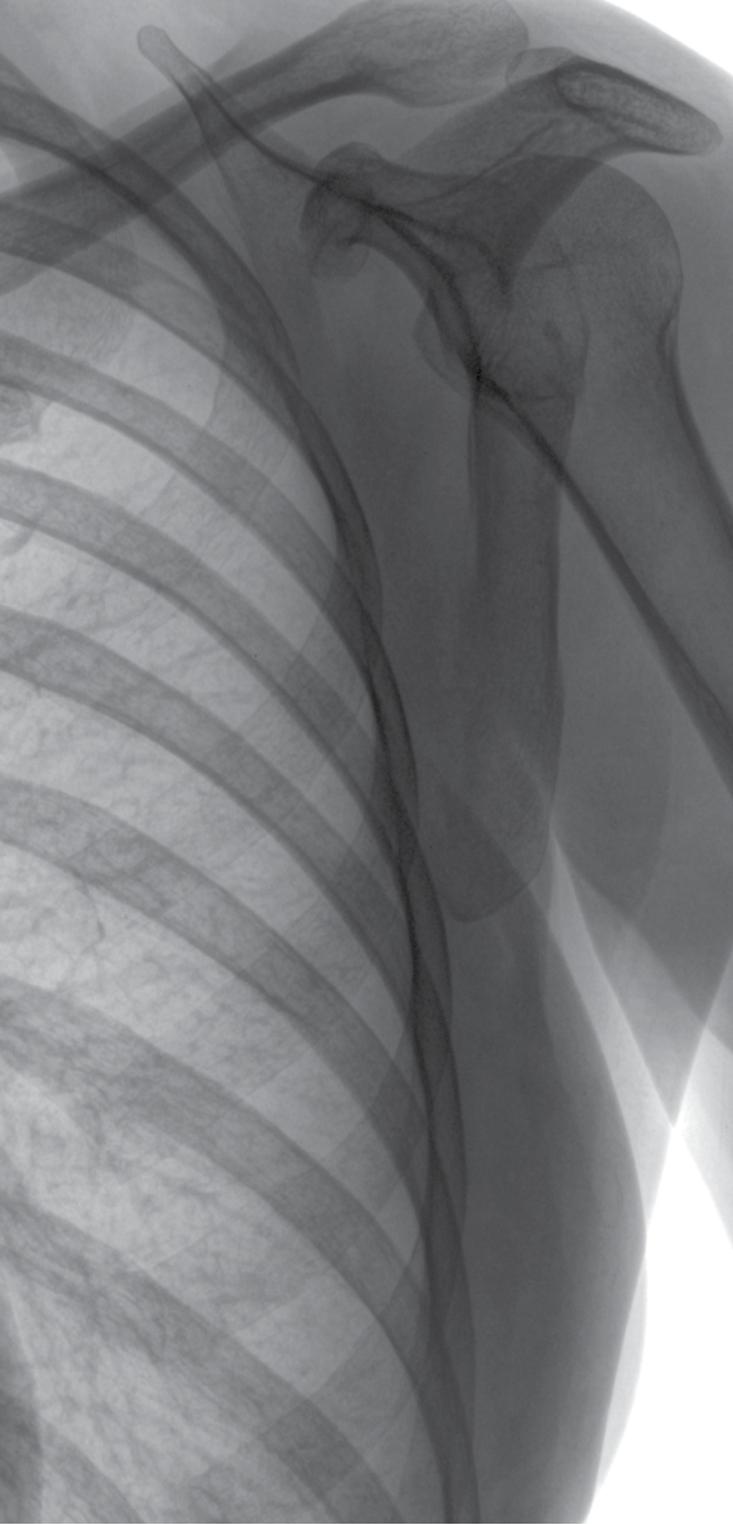
C.O.P.D. AND NUTRITION



One of the more common and challenging chronic diseases that can place aging adults at risk is pulmonary disease. Included in pulmonary diseases is chronic obstructive pulmonary disease (COPD), chronic bronchitis and emphysema, cystic fibrosis pneumonia, lung cancer, and acute respiratory failure (ARF). COPD is the most common of all lung diseases and is very prevalent in the aging. According to the Global Initiative for Chronic Obstructive Lung Disease, COPD “is the fourth leading cause of chronic morbidity and mortality in the United States,” with an estimated 24 million Americans affected.

It is interesting to note that while death rates for COPD have declined among US men between 1999 and 2010 in the United States, there has been no significant change among death rates in women. See Figure 1.

The prevalence of COPD varies considerably by state, from <4 percent in Washington and Minnesota to >9 percent in Alabama and Kentucky. The states with the highest COPD prevalence are clustered along the Ohio and lower Mississippi Rivers. Age-adjusted prevalence of COPD among adults in the United States during 2011 is seen in Figure 2.



Healthy older adults' bronchial tubes and alveoli are elastic; thus, when they breathe in and out, the lungs inflate and deflate much like a balloon. In contrast, elders with COPD experience limited airflow through their airways due to either a loss of elasticity and/or inflamed, damaged, or mucous-clogged airways. Because the airways are partially blocked or damaged, breathing becomes difficult and the lungs begin to lose their ability to effectively take up oxygen and remove carbon dioxide.

Symptoms of COPD include chronic cough, often referred to as smoker's cough; excessive mucous production; wheezing; shortness of breath; tightness in the chest; and a decrease in exercise capacity.

COPD is actually an umbrella term that includes both emphysema and chronic bronchitis. Elders with emphysema experience shortness of breath due to a loss of elasticity

COPD is a progressive lung disease that makes breathing difficult due to partially obstructed airflow into and out of the lungs. It results from an inflammatory and destructive process in the lungs stimulated by exposure to toxin.

To better understand chronic obstructive pulmonary disease, we know COPD is a progressive lung disease that makes breathing difficult due to partially obstructed airflow into and out of the lungs. It results from an inflammatory and destructive process in the lungs stimulated by exposure to toxin. Although COPD can develop in nonsmokers, the single most important factor for developing COPD is a history of smoking. Other causes include long-term exposure to indoor and outdoor air pollutants, occupational chemicals, fumes, dusts, and second-hand smoking. In rare cases, a genetic component may increase susceptibility.

and eventual damage to the air sac walls, leading to impaired exhalation and a buildup of gas in the lungs. These elders are typically thin, often exhibiting significant weight loss due to the increased energy requirements associated with labored breathing. In contrast, elders with chronic bronchitis are typically normal weight or overweight and edematous and experience persistent cough, increased mucous production, and shortness of breath due to inflammation, scarring, and eventual narrowing of the airways.

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The term COPD is used to refer to these two conditions because elders often exhibit features of both. As the disease progresses, an individual's ability to breathe worsens, and some elders require supplemental oxygen or mechanical ventilation. Although COPD is largely preventable, it is not curable and lung damage is irreversible. Therefore, treatment focuses on smoking cessation, symptom management, improved conditioning, and increasing a patient's ability to lead an active life.

COPD AND NUTRITION

Elders frequently lose weight due to decreased dietary intake. Reasons for poor nutritional intake may include (but are not limited to) the following:

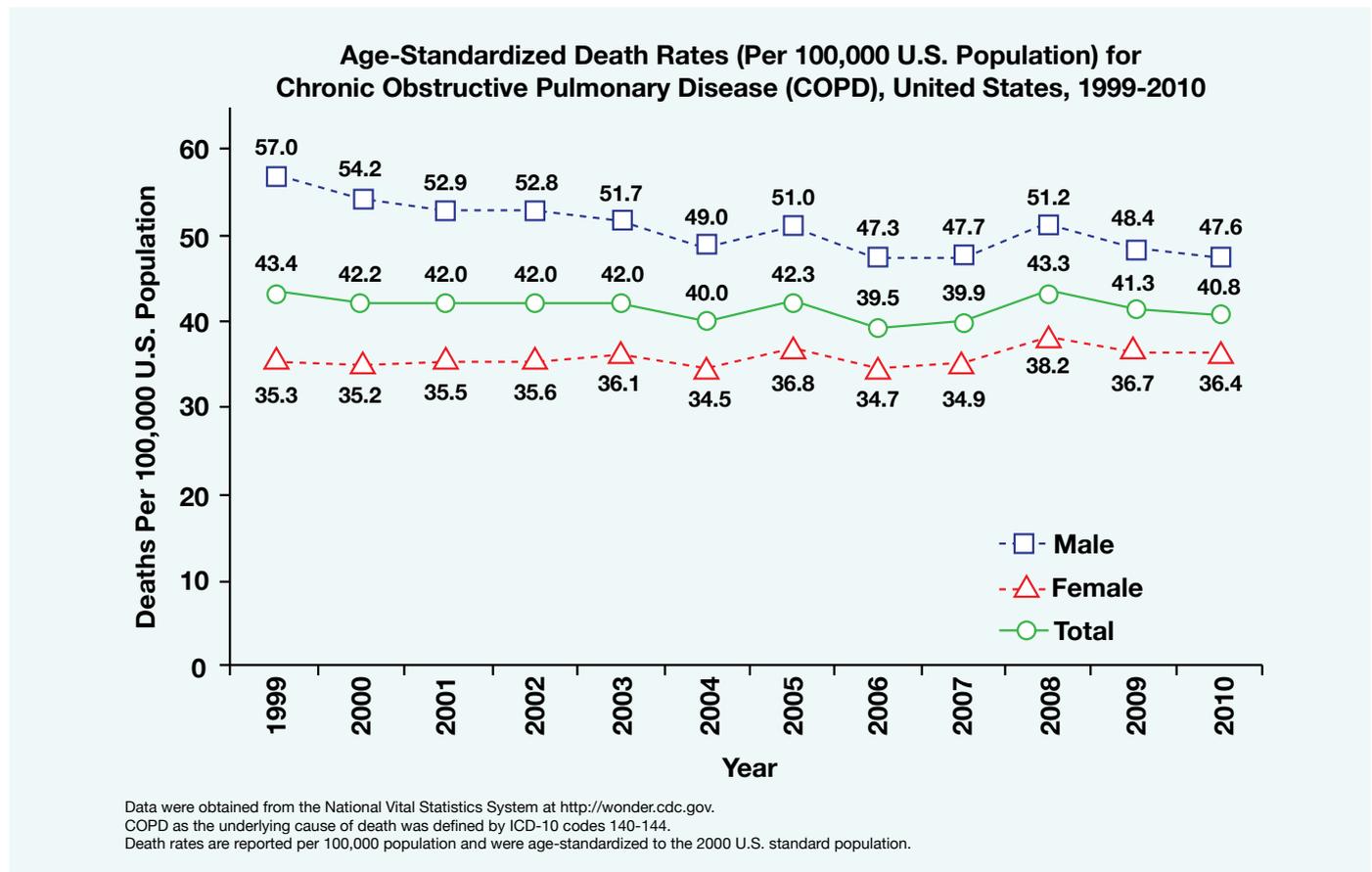
- Shortness of breath when eating
- Difficulty swallowing or chewing due to dyspnea
- Chronic mouth breathing, which can alter the taste of food

- Chronic mucous production
- Coughing
- Fatigue
- Morning headache or confusion due to hypercapnia
- Early satiety caused by flattened diaphragm or aerophagia (swallowing too much air)
- Anorexia
- Depression
- Side effects of medications

NUTRITION GOALS AND INTERVENTION

The overall Goals of Nutrition Intervention for elders with COPD from the Academy of Nutrition and Dietetics Nutrition Care Manual includes:

Figure 1



tions of serum vitamin C, and according to findings from the National Health and Nutrition Examination Survey I published in the *American Journal of Clinical Nutrition*, a positive relationship exists between an increased dietary intake of vitamin C and pulmonary function. Researchers have found that smokers, as well as elders experiencing acute exacerbations, had lower plasma levels of certain antioxidants (e.g., ascorbic acid, vitamin E, beta-carotene, selenium) and that this imbalance between oxidants and antioxidants leads to oxidative stress and inflammation.

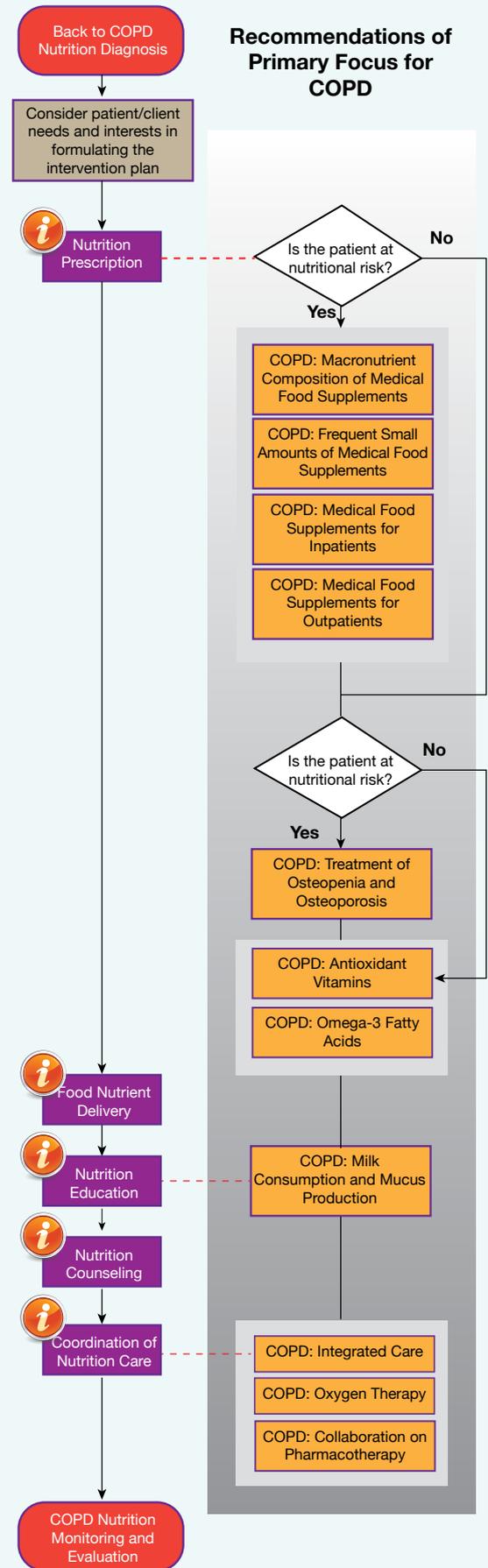
Although the research is not sufficient to conclude that antioxidant therapy can slow COPD's rate of progression, findings indicate that the consumption of fresh fruits and vegetables is positively associated with improved pulmonary function, fewer symptoms, and possibly reduced oxidative stress. It is also important to keep in mind that elders may develop vitamin and mineral deficiencies due to reduced dietary intake.

GENERAL NUTRITION INTERVENTION STRATEGIES

Some general nutrition intervention strategies to help increase older adults' dietary intake and promote optimal nutrition include:

- Discussing the overall goals of nutritional care with the elder and making sure the overall plan is “person-centered” and “resident directed”
- Developing an individualized meal plan to meet specific energy and nutrition needs. Liberalize as much as possible, as a restrictive diet can be unacceptable and contribute to poor food/fluid intake
- Eating meals when energy levels are at their highest, usually in the morning
- Eating several small, nutrient-rich meals and snacks to avoid becoming breathless while eating
- Eating slowly and chewing foods thoroughly to avoid swallowing air while eating
- Selecting foods that are easy to chew, swallow, and digest. Modifying food consistency if mastication seems to increase fatigue while eating
- Eating a variety of whole grains, fruits and vegetables to provide adequate fiber, vitamin and mineral intakes

Figure 3



<http://www.andeal.org/files/image/algorithm/COPD-intervention.png>

- Considering nutrient-dense foods or supplements as appropriate to compensate for inadequate intake
- Preparing meals that appear palatable and well presented
- Avoiding foods that cause gas or bloating; a full abdomen can make breathing uncomfortable
- Eating with proper sitting positioning to prevent aspiration
- Oxygen therapy while eating if continuous oxygen is prescribed; eating and digestion require oxygen, so the body may need the extra oxygen
- Making the meal more enjoyable by engaging in social interaction while dining
- Continuing to provide resident-centered nutrition education as part of the interdisciplinary care, and consult with members of the team for proper screening, assessment, interventions, and monitoring/evaluation

SUMMARY

COPD is the fourth leading cause of chronic morbidity and mortality in the United States, with an estimated 24 million Americans affected. The risk of malnutrition is a common concern among elders with COPD. Malnutrition can impair pulmonary function, increase susceptibility to infection, lower exercise capacity, and increase the risk for mortality and morbidity. It is critical that proper screening, assessment, and person-centered interventions are implemented. Appropriate monitoring and evaluation of the care should be evident, with revisions to the plan of care applied when any change in overall care is needed. **E**

ADDITIONAL RESOURCES

The **ChooseMyPlate.gov** website provides practical information to individuals, health professionals, nutrition educators, and the food industry to help consumers build healthier diets with resources and tools for dietary assessment, nutrition education, and other user-friendly nutrition information.

<http://www.choosemyplate.gov/>

The **COPD Foundation** is a not-for-profit organization established to undertake initiatives that result in expanded services for COPD and improve the lives of individuals affected by COPD. The Foundation's activities focus on research, education and advocacy programs that will lead to prevention, and someday, a cure for this disease.

<http://www.copdfoundation.org/>

REFERENCES

Academy of Nutrition and Dietetics Evidence Analysis Library. Chronic Obstructive Pulmonary Disease (COPD) Guideline (2008) Access 9 August 2014.

Academy of Nutrition and Dietetics Nutrition Care Manual. Chronic Obstructive Pulmonary Disease (COPD), Access 9 August 2014.



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