

# Chronic obstructive pulmonary disease



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Chronic Obstructive Pulmonary Disease Shay Ward Purdue University Chronic Obstructive Pulmonary Disease Chronic obstructive pulmonary disease (COPD) is a chronic lung disease that encompasses a group of lung conditions that causes structural changes of the airways and alveoli, the dysfunction of cilia and an inflammatory response. It is a progressive disease that symptoms worsen over time and is characterized by an accelerated decline in lung function. Chronic bronchitis and emphysema are the most common forms of COPD and long-term smoking is the biggest contributing factor in the development and progression of the disease. COPD has become the 3rd leading cause of death worldwide and it affects nearly 32 million people in the U. S. alone. (Caress, Luker, & Chalmers, 2010) It is estimated that 90% of cases of COPD are caused by cigarette smoking but, interestingly, only 15-20% of smokers are diagnosed with COPD. (Wilson, Elborn, & Fitzsimmons, 2010) In addition to pulmonary abnormalities it has systemic affects as well including skeletal muscle dysfunctions, osteoporosis, cor pulmonale, body mass changes and mood disorders. (Garvey, 2011) The pathophysiology of COPD is not completely understood and is a mixed disorder that includes chronic bronchitis and/or emphysema. It is characterized by limited airflow associated with an abnormal inflammatory pulmonary response to noxious particles or gases, primarily from cigarette smoke. The blockages, or narrowing of the airways, may be caused due to loss of elasticity of the airways, damage or inflammation in the walls of the airways, secretion of excess mucus and a decrease in the surface area of gas exchange or damage to the alveolar walls. COPD associated with inflammation induces the production of neutrophils, macrophages, and lymphocytes. These cells, along with reactive oxygen and protease enzymes are

responsible for causing damage to the alveoli. Smoking cigarettes induces macrophages to release neutrophil chemotactic factors or elastases which leads to tissue destruction by causing the airways to become thickened and excess smooth muscle and connective tissue are then produced by the body leading to fibrosis in the lungs. Also, there is an increase of oxidative stress caused by free radicals in cigarette smoke and the oxidants released by phagocytes and polymorphonuclear leukocytes all may lead to necrosis of the exposed cells in the lungs. These inflammatory responses are due to prolonged cigarette smoking or frequent exposures to lung irritants or environmental pollutants. (" COPD," n. d.) According to the research early diagnosis and treatment is essential in decreasing morbidity and mortality associated with COPD. The diagnostic tool of choice is spirometry or pulmonary function testing (PFT) along with symptom based questionnaires to provide an efficient and coordinated approach to identifying patients with COPD. Prevention is the key since COPD is predominantly caused by smoking. " There is no cure for COPD but refraining from smoking after diagnosis will slow the disease progression and is regarded as the primary intervention for COPD management. " (Wilson et al., 2010, p. 819) Once diagnosed with COPD, treatment will depend on the severity but there should be an ongoing management of symptom control, prevention and early management of exacerbations, and regular office follow-up. There are four stages of COPD ( I-IV) and medication therapy is determined by symptoms. Short acting beta-agonists, such as albuterol, quickly improve acute dyspnea and are used in all stages of COPD but may be the only treatment needed in the early stages or mild COPD. Long acting bronchodilators are the main pharmacotherapy with oral or inhaled steroids to improve pulmonary

symptoms in stages II-IV with patients with moderate to severe COPD. Long acting beta-agonists and ICS combination drugs such as Advair are recommended or added for stage III-IV patients with severe COPD and experience frequent exacerbations. (Garvey, 2011) Instruction on the correct usage and technique is essential during patient education. There is research that antibiotics such as Azithromax may help in the macrophage clearance function involved in the inflammatory response and may be helpful in emphysema patients and other antibiotics are used for treatment during lung infections. Pulmonary rehabilitation can help in improving endurance and teach breathing training and symptom management to "reduce utilization of healthcare service by including supervised exercise and education on disease self management strategies to improve independence and symptom control. "(Garvey, 2011, p. 19) Home oxygen may be used and " can improve sleep, exercise and cognitive performance in hypoxemic patients with COPD. " (Garvey, 2011, p. 20) Patients with advanced stages COPD may be candidates for surgical treatments such as Bullectomy which removes severely enlarged air sacs that squeeze healthier surrounding lung tissue or lung volume reduction surgery (LVRS) that removes excessively damaged lung tissue so healthy tissue can work more efficiently. Lung transplants may be considered for patients that have constant dyspnea and those who do not respond well to medication therapy and medical management. While a lung transplant does not improve survival in COPD patients, benefits from lung transplantation must be looked at in terms of functional and quality-of-life benefit. The subject of my interview is a 68 year old male that was diagnosed with COPD 6 years ago. He initially had symptoms of shortness of breath, persistent cough and fatigue for several

months. He has been on home oxygen for 5 years, takes both long and short acting inhalers and oral Singulair to manage his COPD in addition to nebulizer treatments as needed. His disease is managed by both his internist and pulmonologist whom he sees about every 3 months or sooner if he has a flare up in symptoms. He notices an increase in symptoms in the Spring due to allergies and during the Fall/Winter due to cold/flu season though Summer time can be problematic as well due to the heat. He estimates that he has been hospitalized more than 20 times for exacerbations of his COPD and has participated in Pulmonary Rehab programs after hospital discharge in order to rebuild his endurance. COPD is a progressive disease though he still looks for signs that its “ getting better” such as not taking neb treatments as often or requiring less oxygen at times. His symptoms do greatly affect his ADL’s such as walking distances, climbing stairs and showering independently. His disease also hampers his wife, who is his primary caregiver, in her activities as well as he is afraid to be left alone. He downplays his level of depression and anxiety stating that it’s “ not that big of an issue” to him but that he has to take “ pills that relax him two to three times a day” and a medication that helps with the “ blues. ” His wife and daughter interject that he had had a fairly new diagnosis of OCD in addition to the anxiety and has begun a new medication recently. He reports worrying about being breathless and fears not being able to breathe. He keeps a “ logbook” of the times and duration that the air conditioning kicks on and off by watching the curtains move over the air vent on the floor. He records this due to fears of being too warm and thus not being able to breathe. This new anxiety and OCD behavior limits his activities as well. He states he does not often go out even though he has portable oxygen because “ it’s too much trouble” and he fears “ running out

of air" while away from home. He clearly has feelings of isolation periodically but does well to reach out to family though his family finds his need for constant attention suffocating at times and they push him to be more independent. He has a history of smoking for 50+ years though quit 3 years ago and has remained tobacco free. His mother was also a smoker and passed away from complications of COPD. He does have a DNR in place and his wife has POA for him. He seems knowledgeable regarding his illness and is compliant with treatments. I found the information gathered from the interview closely followed the research as his disease process was typical for COPD and his medical management was current with best practices. COPD is a devastating, incurable disease that is characterized by irreversible airflow dysfunction and dyspnea that greatly limits functional abilities. The most effective treatment for COPD is to quit smoking and compliance to medication and medical management for symptom control. It is common for this population to feel "alienated and unworthy of support because they often see their symptom and disease as self-inflicted" therefore it is important for the nurse to balance patient education while striving for a supportive and therapeutic relationship with their patients. (Wilson et al., 2010, p. 825) Early diagnosis and ongoing management helps patients prevent complications and can improve patient outcomes. References Caress, A., Luker, K., & Chalmers, K. (2010). Promoting the health of people with chronic obstructive pulmonary disease: patients' and carers' views. *Journal of Clinical Nursing*, 564-573. doi: 10.1111/j.1365-2702.2009.02982.x Chronic obstructive pulmonary disease. (n. d.). Retrieved 8/27/12, from [emedicine.medscape.com/article/297664-overview](http://emedicine.medscape.com/article/297664-overview) Garvey, C. (2011). Best practices in chronic obstructive pulmonary disease. *The Nurse Practitioner*, <https://assignbuster.com/chronic-obstructive-pulmonary-disease-2/>

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