

# Chronic Obstructive Pulmonary Disease (COPD)



## Yesterday

- Chronic obstructive pulmonary disease (COPD) was much less common than it is today because people did not live as long and fewer people smoked cigarettes.
- Six times as many men as women died of COPD.
- The term COPD was not used as widely as it is today. Doctors were more likely to tell their patients that they had “chronic bronchitis” or “emphysema” than to use the more general term “COPD,” which encompasses a fuller range of chronic obstructive lung diseases.
- *Spirometry*, a simple measurement of the volume and rate of flow of breath that is used to diagnose COPD, was available only in specialized settings.
- Although smoking was known to be a risk factor for COPD, it was not recognized as an addiction, and few therapies existed to help smokers quit.
- Doctors were uncertain about the efficacy of available treatments in alleviating COPD symptoms.
- Scientific research was focused largely on proteases, protein-degrading enzymes released by inflammatory cells that were suspected of causing lung destruction in individuals with emphysema.

## Today

- COPD is very common. Approximately 12 million adults in the U.S. are diagnosed with COPD, and 120,000 die from it each year. An additional 12 million adults in the U.S. are thought to have undiagnosed COPD.
- COPD death rates for women have risen steadily. Today, more women than men die from COPD each year.
- Today, spirometry is widely available to doctors in primary care settings, facilitating earlier diagnosis of COPD.

- Doctors now recognize that nicotine addiction makes it very difficult for people to stop smoking. Fortunately, methods for smoking cessation have improved, and smokers can benefit from effective treatments and counseling to overcome nicotine addiction.
- A wide range of treatments are now available to improve the quality and length of life for COPD patients, including vaccinations against influenza and pneumonia, inhaled bronchodilator drugs, pulmonary rehabilitation, oxygen therapy, and surgical interventions. Glucocorticoids and antibiotics are regularly used to treat acute exacerbations of COPD.
- Several NIH-sponsored research programs have increased understanding of COPD and fostered new treatments. For example, the Nocturnal Oxygen Therapy Trial showed that some patients with advanced COPD live longer if given long-term oxygen therapy. The Lung Health Study showed that a smoking cessation intervention can improve long-term survival of COPD patients. The National Emphysema Treatment Trial (NETT) ([http://www.nhlbi.nih.gov/health/prof/lung/nett/lvrs\\_web.htm](http://www.nhlbi.nih.gov/health/prof/lung/nett/lvrs_web.htm)) showed that lung-volume-reduction surgery can improve the quality and/or length of life in certain groups of patients with severe COPD.
- Although researchers continue to investigate the role of proteases in COPD, new findings suggest strong inflammatory and immune components to COPD. This insight led to a variety of new ideas about COPD treatment and has stimulated a surge in research activity.
- Despite rapidly rising illness and death rates due to COPD, awareness of COPD among the general public and those at greatest risk for the disease remains low.
- To promote public awareness of COPD, the NIH is partnering with patient advocacy groups and health professional organizations on a COPD awareness and education campaign called COPD: Learn More, Breathe Better (<http://www.nhlbi.nih.gov/health/public/lung/copd/>)

[mbb-campaign/index.htm](http://www.nhlbi.nih.gov/mbb-campaign/index.htm)). The campaign focuses on increasing knowledge of symptoms, diagnosis, and treatment among COPD patients and people at risk of developing COPD.

(<http://www.nhlbi.nih.gov/resources/ltrc.htm>), which provides lung tissue specimens to qualified researchers investigating the biological basis of COPD and other lung diseases.

## Tomorrow

- It is now recognized that 10-20% of COPD patients have never smoked! Furthermore, only a fraction of smokers develop COPD, suggesting that both genetic and environmental factors influence the risk of developing COPD. Investigators in the COPD Gene Study will recruit 10,000 smokers and nonsmokers to identify the genetic factors that determine why some people develop COPD and others do not.
- COPD is a complex disease that presents in many different ways. The NIH is supporting research to help tailor therapies for COPD to individual patients. A study called SPIROMICS (subpopulations and intermediate outcome measures in COPD study) (<http://www.csc.unc.edu/spir/>) will use genetic data, genomic information, and analyses of phenotypes and biomarkers to determine how COPD differentially affects patient subpopulations.
- The NIH COPD Clinical Research Network (CCRN) (<http://www.copdcrn.org/>) is performing therapeutic trials in patients with moderate to severe COPD, with an emphasis on preventing and managing exacerbations. One study is comparing the effectiveness of two different pneumococcal vaccines in patients with COPD. Another study will determine whether an antibiotic called azithromycin is useful in reducing the severity and number of exacerbations. In addition, statin drugs, best known for their use in lowering cholesterol, are being evaluated for their possible role in preventing or diminishing COPD exacerbations.
- The NIH, in cooperation with the Centers for Medicare and Medicaid Services, is supporting the Long-Term Oxygen Treatment Trial (LOTT) (<http://clinicaltrials.gov/ct2/show/NCT00692198?term=nct00692198&rank=1>) to determine whether supplemental oxygen is beneficial to patients with milder disease than those studied previously.
- The NIH also supports the Lung Tissue Research Consortium (LTRC)

- The NIH supports research to improve understanding of the disease process in COPD, identify pivotal points in its onset and progression, and provide the knowledge base needed to intervene early and prevent its development or progression.

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