

### Yesterday

- COPD was much less common than it is today.
- 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 breathing test used to diagnose COPD, was only performed 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 that were suspected of causing lung destruction in individuals with emphysema.
- 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 vaccination against influenza, 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) showed that lung-volume-reduction surgery can improve the quality and/or length of life in certain groups of patients with severe COPD.

### 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. may have undiagnosed COPD.
- COPD death rates for women have risen steadily. Today, more women than men die of COPD each year.

- 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*. The campaign focuses on increasing knowledge of symptoms, diagnosis, and treatment among COPD patients and people at risk of developing COPD.

## Tomorrow

**The NIH is poised to make major discoveries in the prediction of COPD, to personalize individual treatments, and to use this information to preempt the disease.**

### *Predicting COPD.*

- It is now recognized that 10-20% of COPD patients have never smoked! Furthermore, only a fraction of smokers develop COPD, suggesting that genetic and environmental factors influence the risk of developing COPD. Investigators are beginning to explore genetic factors, air pollution, and occupational exposures as possible causes of COPD. Analyses of patients enrolled in NETT and in other NIH-supported studies are revealing genetic associations that may help predict risk for developing COPD.

### *Personalized treatments.*

- 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 research program on Novel Biomarkers of COPD addresses the need to identify subgroups of COPD patients based on cellular and molecular abnormalities.
- The NIH COPD Clinical Research Network is performing therapeutic trials in patients with moderate to severe COPD, with an emphasis on preventing and managing exacerbations.

- The NIH, in cooperation with the Centers for Medicare and Medicaid Services, has begun a new Long-Term Oxygen Treatment Trial to determine whether supplemental oxygen is beneficial to patients with milder disease than those studied previously.
- The NIH has established Specialized Centers of Clinically Oriented Research in COPD to hasten translation of basic knowledge into clinical treatments.

### *Preemptive approaches.*

- 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 develop preemptive approaches. For example, the NIH funds targeted research on Molecular Mechanisms of Excess Mucous Secretion and on Causes and Mechanisms of COPD Exacerbations. The NIH also supports the Lung Tissue Research Consortium, which provides lung tissue specimens to qualified researchers investigating the biological basis of COPD and other lung diseases.

*For additional information please contact: Norbert Weber, Ph.D. – [webern@nhlbi.nih.gov](mailto:webern@nhlbi.nih.gov) 301-496-4950.*