

## Company and Product Background

[Nuvaira, Inc.](#), is a privately held medical device company that develops minimally invasive products to make breathing easier for patients suffering from obstructive lung diseases. Specifically, the company is developing a novel, catheter-based system to address chronic obstructive pulmonary disease (COPD) and asthma by treating the overactive airway nerves in a procedure called Targeted Lung Denervation\* (TLD). Nuvaira received CE Mark approval for its Nuvaira™ Lung Denervation System in January 2016.

Nuvaira was co-founded by Martin Mayse, M.D. to develop an effective and lasting treatment for COPD sufferers. Dennis Wahr, M.D., assumed leadership of the company in 2012 as president and chief executive officer.

The [Nuvaira™ Lung Denervation System](#) is comprised of a console and single use treatment package that contains the dNerva™ Dual Cooled RF Catheter. Targeted Lung Denervation therapy is a simple, one-time bronchoscopic procedure that disrupts overactive nerves in the lungs, thereby opening up the airways to improve breathing. Similar to anticholinergic drugs (a class of drugs that block the action of the neurotransmitter acetylcholine in the lungs), TLD targets the parasympathetic innervation of the lungs<sup>1</sup> and has the potential to provide a lasting improvement in lung function, exercise capacity and quality of life for patients with obstructive lung disease.

Nuvaira's proprietary technology and accompanying procedure have been used in the recently completed AIRFLOW-2 sham controlled randomized clinical trial (RCT) and the ongoing RELIEF-1 asthma trial.

COPD is a progressive lung disease characterized by a persistent airflow limitation due to a progressive narrowing of the airways that interferes with normal breathing. This results in shortness of breath (dyspnea), wheezing, chest tightness, and a productive cough. It is one of the world's leading, yet under-recognized causes of morbidity and mortality. Worldwide, more than 300 million people are estimated to have COPD with more than 19 million adults in the US<sup>2</sup>.

Asthma is the most prevalent chronic respiratory disease, affecting an estimated 350 million people globally<sup>3,4</sup>. Asthma sufferers have difficulty moving air in and out of the lungs, due to airway narrowing (bronchoconstriction), airway wall thickening (inflammation), and increased mucus production. The ongoing burden of this serious and costly disease is estimated at more than \$50 billion per year with more than 5,000 emergency department visits per day in the US alone<sup>5,6</sup>.

Pharmacological treatment is the approach for most patients today. Inhaled drugs are used once or twice daily to relax and temporarily open airways. These treatments provide temporary relief. The annual financial burden of lung disease in Europe is €141 billion and COPD accounts for almost half<sup>7</sup>.

Nuvaira has raised \$72 million through private equity financing rounds. Venture investors include [Advanced Technology Ventures](#), [Morgenthaler Ventures](#), [Split Rock Partners](#), [Versant Ventures](#), [Vertex Venture Holdings Ltd.](#), [Windham Venture Partners](#), and two strategic investors. Nuvaira's board of directors includes industry

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<sup>1</sup> Belmonte K. Cholinergic Pathways in the Lungs and Anticholinergic Therapy for Chronic Obstructive Pulmonary Disease. Proc Am Thor Soc 2005; 2: 297-305.

<sup>2</sup> Global Chronic Obstructive Pulmonary Disease Epidemiology and Patient Flow. 2017. Fore Pharma.

<sup>3</sup> Global Initiative for Asthma (GINA). Pocket Guide for Asthma Management and Prevention (for Adults and Children Older than 5 Years), 2017.

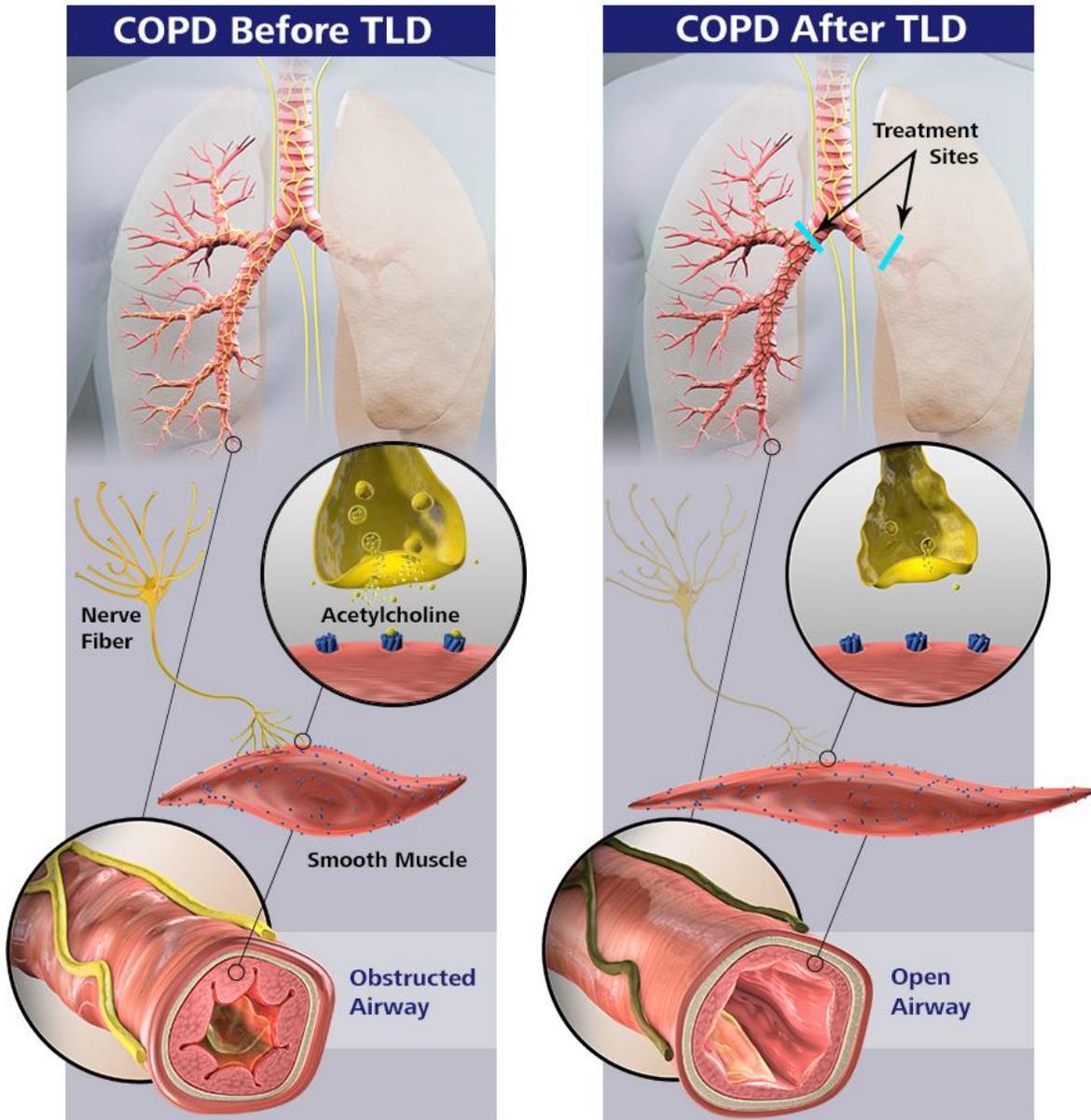
<sup>4</sup> Global, regional prevalence for COPD and asthma 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. www.thelancet.com/respiratory. Online Aug. 16, 2017.

<sup>5</sup> Wang, Emergency department charges for asthma-related outpatient visits. J Health Care Poor Underserved. 2014 February; 25(1):396-405

<sup>6</sup> Barnett, Costs of Asthma in the United States:2002-2007. J Allergy Clin Immunol January 2011.

<sup>7</sup> EFA 2015 COPD

veterans Mike Carusi, Mark Deem, James Lee, Kirk Nielsen, Hank Plain, Dave Stassen and Dennis Wahr, M.D. The company has more than 70 patents issued and pending worldwide. Nuvaيرا is headquartered in Minneapolis, Minnesota. Additional information may be found by visiting [www.Nuvaira.com](http://www.Nuvaira.com).



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\*Targeted Lung Denervation (TLD) is currently under clinical investigation for chronic obstructive pulmonary disease and asthma and is not yet commercially available.

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