



# Partner Success Stories

## Partner:

Dr. Richard Schwab,  
Professor of Medicine

Hospital of the University  
of Pennsylvania

## Technology:

Millar Mikro-Cath Pressure  
Catheter

Duration: 3+ Years

Status: Ongoing

Nationwide, an estimated 22 million Americans suffer from sleep apnea. Research to identify the anatomical phenotypes is important for improving new treatment going forward and for reducing risk of high blood pressure, heart attack, stroke, and arrhythmias that can result from sleep apnea.

## Increasing Airway Physiology Understanding. Reducing Risk from Obstructive Sleep Apnea.

### Problem

Dr. Richard Schwab, Professor of Medicine at the Hospital of the University of Pennsylvania, designed a study to better understand esophageal pressure changes during an apneic event. The goal of the study is to better understand why some people have sleep apnea and determine if this is due to the anatomical structure or physiological condition of the patient. It was important to find a catheter that could acquire the in-depth data needed as well as keep sleep interference to a minimum.

### Solution

Dr. Schwab chose Millar's Mikro-Cath pressure catheter for high-fidelity pressure measurements in his long-term obstructive sleep apnea study. The Mikro-Cath received 510(k) clearance for airway pressure measurements in 2017. This newly cleared indication enabled Dr. Schwab to use the Mikro-Cath to support the physiological component of his study. Results can be correlated with magnetic resonance imaging (MRI), along with evaluation of sleep arousal, muscle responsiveness, loop gain, and air collapsibility. This study includes 400 patients over the next three to four years. The end goal will be to understand the anatomical and physiological differences in sleep apnea patients with high BMI and those with normal BMI.

### Impact

With its reduced size and signal accuracy, the Mikro-Cath can easily measure esophageal pressure changes and monitor upper airway pressures in these patients through different sleep stages, increasing understanding of the anatomical and physiological differences in patients diagnosed with obstructive sleep apnea. One of the greatest impacts to the patient was the increased comfort level during placement compared to other esophageal catheters. The study is ongoing and official results will be published at its conclusion.