

**Pulmonary
Hypertension and
Sleep
Apnea**

PH&A

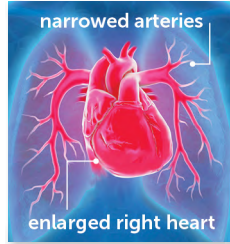


Pulmonary Hypertension Association
Empowered by hope

ABOUT

PULMONARY HYPERTENSION

Pulmonary hypertension is a complex and often misunderstood disease. PH sometimes is confused with systemic hypertension or “high blood pressure” that affects arteries throughout the body.



PH refers to pressure within the blood vessels of the lungs. The blood vessels can become stiff and narrow, which makes it more difficult for the right side of the heart to pump blood through them.

There are five types of PH based on different causes. Each form of PH is different, so it is important for newly diagnosed patients to find PH specialists who can pinpoint the cause of their PH. The specialist then develops a treatment plan specifically for the patient’s type of PH.

Every person with PH is different, and scientists continually conduct new research to improve the outlook for people living with PH. With proper care and treatment, people with PH can live many years.



NORMAL mean pulmonary artery pressure is between 8-20 mmHg at rest.

PULMONARY HYPERTENSION is defined as a resting mean pulmonary artery pressure at or above 20 mmHg.



PH Related to Sleep Apnea

Sleep apnea is a potentially serious sleep disorder that causes a person's breathing to repeatedly stop and start while they sleep. There are two types of sleep apnea. Obstructive sleep apnea, which is more common, occurs when throat muscles relax during sleep, causing a blockage in the airway. Central sleep apnea occurs when the brain does not send proper signals to the muscles that control breathing.

The most common signs and symptoms of obstructive and central sleep apnea include:

- > Loud snoring.
- > Brief episodes of stopped breathing (noted by another person).

Mild to moderate PH is a common complication of sleep apnea.



- > Abruptly waking up choking or snorting.
- > Waking up with a dry mouth or sore throat.
- > Morning headache.
- > Attention problems.
- > Feeling tired during the day.



Mild to moderate PH is a common complication of sleep apnea. Pulmonary pressure often increases during sleep, possibly as a result of low levels of oxygen and pressure changes inside the chest.

Let your doctor know if you experience any of these symptoms because they could indicate sleep apnea-associated PH.

- > Light-headedness and fainting.
- > Unexplained shortness of breath.
- > Increased fatigue.
- > Swelling of the ankles, arms, legs or abdomen.
- > Chest discomfort or pain.



Treating sleep apnea can improve or possibly resolve PH. If the symptoms continue or worsen, further evaluation is required.

Diagnosing PH

Doctors who suspect PH in addition to sleep apnea can order any of the following diagnostic tests:

Echocardiogram: An ultrasound of the heart that provides a rough estimate of the pressure in the lungs. It assesses the function of how blood flows through the heart by examining the right and left ventricles, valves, etc.

Pulmonary function tests: Non-invasive tests that measure how much air the lungs can hold, how much and how quickly someone can blow air, and how oxygen and carbon dioxide are exchanged between the air entering the lungs and the blood circulating through the lungs (diffusion capacity of carbon monoxide).

Ventilation-perfusion (V/Q) scan: Determines whether there are undissolved clots in the blood vessels of the lungs.

Natriuretic peptide tests: Measure specific proteins in a blood sample and help screen for heart failure. Tests of the proteins NT-proBNP (N-terminal pro b-type natriuretic peptide) and BNP (brain natriuretic peptide) are two examples. Elevated levels of these proteins can signify heart failure.

Right heart catheterization: The most accurate diagnostic test for PH. It measures the pressures and flow directly in the pulmonary artery. The invasive procedure usually takes place on an outpatient basis in the hospital. Doctors guide a small tube (catheter) through the right side of the heart and into the pulmonary artery to directly measure the pulmonary artery pressure.

In addition to directly measuring pressures in the heart and lungs, a right heart catheterization can determine whether patients have problems with a stiff left side of the heart. Left heart disease also can cause PH. In those cases, doctors refer patients to a cardiologist to treat the heart disease.

Treatment Options

Sleep apnea associated with PH is usually mild to moderate. There is little information about the effectiveness of PH-specific therapies for sleep apnea-related PH. However, all patients can benefit from appropriate treatments, including:

- > Paying special attention to fluid balance with a low-sodium diet and diuretics (water pills).
- > Using supplemental oxygen as directed.
- > Using optimal bronchodilator inhalers.
- > Treating sleep apnea with continuous positive airway pressure (CPAP).

Many patients show significant improvement when their physician determines an effective medical approach and treatment plan, often in conjunction with doctor-prescribed cardiopulmonary rehabilitation.

Treatment with current PH therapies based on echocardiogram findings is strongly discouraged.

It is important to first treat sleep apnea and make sure patients get enough oxygen at night. If symptoms persist, and the pulmonary artery pressures are still high, patients might benefit from a PH medication. Patients should visit a PH-treating specialist, such as those at a Pulmonary Hypertension Association-accredited PHA Care Center, for a detailed assessment and appropriate next steps.





ADDITIONAL RESOURCES

American Sleep Apnea
Association | [Sleephealth.org](https://www.sleephealth.org)
Project Sleep | [Project-Sleep.com](https://www.project-sleep.com)
[SleepApnea.org](https://www.sleepapnea.org)

ACKNOWLEDGMENTS

Namita Sood, MD, University of
Texas Health Science Center.
Omar A. Minai, MD, Pulmonary
and Critical Care Associates of the
Tri-Cities.








About the Pulmonary Hypertension Association

Headquartered in Washington, D.C., the Pulmonary Hypertension Association is the oldest and largest nonprofit patient association dedicated to the pulmonary hypertension community. PHA's mission is to extend and improve the lives of those affected by PH.

PHA engages people with PH and their families, caregivers, health care providers and researchers, who work together to advocate for the PH community, provide support to patients, caregivers and families, offer up-to-date education and information on PH, improve quality patient care, and fund and promote research. For information, visit PHAssociation.org.

PHA's mission is to extend and improve the lives of those affected by pulmonary hypertension. PHA's vision is a world without PH, empowered by hope.



-  **301-565-3004**
-  **Support Line: 800-748-7274**
-  **PHAssociation.org**
-  **[/PulmonaryHypertensionAssociation](https://www.facebook.com/PulmonaryHypertensionAssociation)**
-  **[@PHAssociation](https://www.instagram.com/PHAssociation)**
-  **[/PHAssociation](https://www.linkedin.com/company/PHAssociation)**
-  **[/user/PHAssociation](https://www.youtube.com/user/PHAssociation)**