Uncovering the mysteries behind pulmonary hypertension in women helps improve care and tailor new treatments

Researchers at National Jewish Health discover new pathways to treat this dangerous and underdiagnosed condition, while exploring long-sought answers about its causes

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DENVER — High blood pressure in the lungs, known as pulmonary hypertension (PH), is a dangerous condition caused by the narrowing and thickening of the blood vessels of the lung. Several forms of PH disproportionately affect women. While experts have long recognized this disparity, the reasons behind it remain unclear. Physician-scientists at National Jewish Health are uncovering the mysteries behind PH in women and finding solutions from every angle, from prompt and accurate diagnoses, targeted treatments and disease management, to the development of new therapies that may ultimately halt disease progression and save lives.

While PH can be caused by a wide range of conditions, it can also manifest without any known cause, and its symptoms are vague and broad, such as fatigue and shortness of breath – making diagnosis a challenge. Many women go years with a misdiagnosis of conditions such as asthma or anxiety; meanwhile, their PH is causing more damage to blood vessels and becoming more difficult to treat.
“It’s a disease that requires input from multiple specialties, so we have built a comprehensive program where pulmonologists work together with cardiologists, rheumatologists and radiologists to thoroughly screen each patient, provide an accurate diagnosis and offer every available treatment,” said M. Patricia George, MD, director of the Pulmonary Hypertension Program at National Jewish Health.

Through this comprehensive program, clinicians are able to give patients concrete answers and effective treatment. However, there are still many lingering questions about exactly why PH develops so often in women and how to target its biologic causes.

“We can ask specific questions based on what we see in the clinic, and then take these questions to the lab and try to design experiments to answer them,” said Tim Lahm, MD, director of pulmonary vascular research at National Jewish Health. “At the same time, we can take the discoveries we make in the lab to the clinic and offer patients cutting-edge knowledge and therapies.”

It’s this bench-to-bedside approach that helps patients like Kira Cronk, who suffers from one of the most dangerous forms of PH, pulmonary arterial hypertension (PAH).

“I was experiencing symptoms that prevented me from living a normal life for a couple of years before I had a diagnosis. Even just trying to climb a flight of stairs, I’d have to stop halfway up to catch my breath and my lips would turn purple,” Cronk said. “Finally, I had a blood clot that caused my arm to swell up to twice its size and I knew it was time to figure out what was really going on.”

At this point, it was determined that Cronk had congestive heart failure, but the root cause was still unknown. Finally, she was referred to pulmonary specialists at National Jewish Health where comprehensive testing confirmed she was suffering from PAH, and while there is currently no cure, there are treatments to ease symptoms and help her manage the disease.

“Finally receiving effective medication and implementing some lifestyle changes to manage PAH has made an incredible difference in my symptoms,” Cronk said. “Before my diagnosis, my body had essentially started shutting down. My heart was failing, my kidneys were affected, and I was unable to even get up to shower on my own. But now, I’m able to drive myself to appointments; I can go shopping with my daughter, even take my dogs for a walk around the neighborhood. It’s like night and day, and I feel like I got my life back.”

“We truly value educating patients about their disease. Oftentimes, patients are their own greatest advocates, and we try to set them up for success,” said Jordin Rice, RN, a pulmonary hypertension nurse at National Jewish Health. “Being able to teach patients like Kira about their medications and why their symptoms vary is a huge part of the comprehensive care we provide.”

While current treatments work to relax blood vessels to treat PH, researchers are also developing and testing new treatments that address the biologic cause of unexplained PH involving the thickening of blood vessel walls, which make it harder for the lungs to perform the critical tasks of taking in oxygen and releasing carbon dioxide.

“There are several drugs currently in clinical development that we are very excited about, and we feel they will have a profound impact for patients suffering with pulmonary hypertension,” said Dr. Lahm. “These novel therapies actively slow down the uncontrolled growth of the blood cells of the vessel wall, which is a whole new way to treat this disease.”

There is additional research in the works that is providing more insight into cases of PAH without a clear cause, including a study recently published in CHEST exploring genetics, patients’ knowledge of how their family history contributes to their disease and the role of genetic testing in assessing risk and customizing treatment.

“Genetic testing is a necessary component of comprehensive care and risk stratification for patients and family and can influence the treatment of pulmonary hypertension,” said Rice, the lead author of the study. “Patients who undergo PAH evaluation should be given the opportunity to speak with a genetic counselor, but our study found that less than half of PAH patients were offered this resource.”
Researchers continue to find clues about how the disease behaves uniquely in women and the specific biologic pathways that may hold the key to preventing the disease from developing. As that research evolves, it's important for anyone with unexplained symptoms to talk to their doctor about screening for PH. Early diagnosis is crucial for limiting damage to the heart and lungs and improving quality of life.

**National Jewish Health** is the leading respiratory hospital in the nation. Founded 125 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of children and adults with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the [media resources](#) page.

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