

Pulmonary hypertension: A growing problem in US children

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A review of 15 years' worth of data in a national pediatric medical database has documented a substantial increase in the rate of hospitalizations for children with a form of high blood pressure once most common in those with congenital heart disease.

In a report on the data analysis, published in the August issue of *Pediatrics*, Johns Hopkins researchers say hospitalizations nationwide for pulmonary hypertension (PH) overall doubled between 1997 and 2012, with national hospital charges to treat the children rising from the millions to the billions of dollars. In addition, the report showed that a majority of those hospitalized in 2012 did not have congenital heart diseases.

Pulmonary hypertension remains relatively rare overall in children. While the exact incidence and prevalence of pediatric pulmonary hypertension is not well-known, United Kingdom and Netherlands registry data give an incidence for idiopathic pulmonary hypertension (IPAH) of 0.48-0.7 cases per million, respectively. "Though the reason for the trend of increased hospitalization is not entirely clear, it likely reflects several components, including better recognition of PH, broader inclusion of patients with PH and a growing population of patients who survived extreme prematurity, a risk factor for PH," says pediatric cardiologist Melanie K. Nies, M.D., an assistant professor of pediatrics at the Johns Hopkins University School of Medicine and faculty member at the Johns Hopkins Children's Center.

Pediatricians have long suspected that an increasing number of children were being hospitalized for PH, a condition in which blood pressure is abnormally high in the blood vessels of the lungs, Nies says. Moreover, she says, while the condition was historically associated in children mostly with [congenital heart disease](#), the rising numbers also appeared to reflect a change in the type of patient, with more and more children without [congenital heart defects](#) admitted for PH treatment.

In an effort to document the suspicion, Bryan G. Maxwell, M.D., M.P.H., an assistant professor of anesthesiology and critical care medicine at the Johns Hopkins University School of Medicine, Nies and their colleagues used data from the Kids' Inpatient Database, the largest publicly available database of inpatient pediatric care in the United States. Every three years starting in 1997, the database releases discharge data from thousands of hospitals across the country.

The researchers found that hospitalizations for PH doubled, from one in 1,000 discharges in 1997 to one in 500 in 2012. Further examination showed that inflation-adjusted national charges to treat the condition skyrocketed over this time period, from \$926 million in 1997 to \$3.12 billion in 2012. Significantly, Nies says, while mortality is still high in this population, it decreased from 11.3 percent of hospitalizations in 1997 to 5.9 percent in 2012.

As researchers had suspected, Nies says, the latest reported data show that patients without congenital heart defects in 2012 accounted for the majority of PH hospitalizations—at 56.4 percent—compared to 43.6 percent for patients with congenital [heart defects](#). A surprise from their analysis, she adds, is that only 33.9 percent of hospitalizations for PH were at children's hospitals, even though these specialized centers are often the best equipped to deal with this condition.

"That there's a growing population of pediatric [pulmonary hypertension](#)

patients is something that we suspected," she says, "but actually having the data to back it up will be important for resource allocation and promoting the best multidisciplinary care for these medically fragile patients."

Nies says there is a need for a national registry to track patient outcomes over time and to provide a foundation for clinical trials to test new treatments.

Provided by Johns Hopkins University School of Medicine

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