

# Children referred for chest pain rarely have cardiac disease

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Employing a unique quality improvement methodology, called Standardized Clinical Assessment and Management Plans (SCAMPs), physicians have demonstrated that chest pain in children, rarely caused by heart disease, can be effectively evaluated in the ambulatory setting using minimal resources, even across a diverse patient population. So found a multi-institutional study, led by cardiologists throughout New England and published September 9 in *Pediatrics*.

"Previous research has shown that children referred for [chest pain](#) infrequently leads to a diagnosis of a cardiac condition, and yet, we continue to see referrals at very high rate," says the study's senior author David R. Fulton, MD, chief of outpatient cardiac services at Boston Children's Hospital.

In fact, one study found that among 3,700 children and young adults, ages 7 to 22, who were evaluated for chest pain in the outpatient clinics at Boston Children's from 2000 to 2009, only 1 percent were found to have a cardiac cause.<sup>1</sup> The researchers also found that the patient testing involved with those visits was quite disparate—from extensive to minimal.

"Based on these findings, we recognized the opportunity to decrease practice variation through the design of a SCAMP," Fulton says. "At the inception of this process, we thought it important to include other [pediatric cardiologists](#) from the New England region to see if the SCAMP was scalable and exportable enough to be successfully deployed

across clinical groups of varied sizes."

In this study, the physicians assessed 1,016 ambulatory patients, ages 7 to 21 years, initially seen for chest pain at Boston Children's Hospital or a practice within the New England Congenital Cardiology Association (NECCA).

They developed a SCAMP algorithm for pediatric chest pain using history, physical exam and electrocardiogram (ECG) to suggest when further diagnostic testing was indicated. Without the use of the SCAMP algorithm, practices frequently ordered expensive tests, such as echocardiograms, exercise stress tests, Holter monitors and event monitors—with disparate utilization depending on the unique practice or physician.

This algorithm was designed to identify cardiac causes of chest pain while effectively using resources in the outpatient cardiology clinic setting. The algorithm was used to analyze the combined patient population and to compare outcomes of those seen at BCH and NECCA sites.

"While the algorithm makes recommendations for patient care, it also allows physicians the freedom to diverge. However, if they choose a different clinical pathway, they must explain why they have made that decision," Fulton explains. "This context is what is unique about SCAMPs, and it allows the collaborators to learn from their colleagues' decision-making." The overall goal of SCAMPs is to analyze the data collected every six months and improve the SCAMP based on these analyses." The SCAMP has been updated once with an additional review of the most current data in progress.

This study brings to light an important point about practicing medicine today, states the study's lead author Gerald H. Angoff, MD, MBA,

associate medical director for quality improvement at Dartmouth-Hitchcock, Manchester, N.H. "Clinical guidelines, while informative, are not always practical, because they fail to consider sustainable adoption by practicing physicians. The study underscores the value of SCAMPs, which through iterative analysis of the data, produces a guideline that busy practicing physicians across a diverse geographical region will more likely adopt and use to treat a biologically variable patient population."

Among the 1,016 patients in this study, only two had chest pain due to a cardiac etiology. Testing performed outside of guideline recommendations of the SCAMP demonstrated only incidental findings, and the few patients who returned for persistent symptoms did not have cardiac disease. In addition, though not part of this review, Fulton reports a 15 to 20 percent drop in costs after implementing the SCAMP relative to a pre-SCAMP population.

Importantly, the study also found that the pattern of care for the NECCA practices and Boston Children's differed minimally.

"The willingness for collaboration for this study across New England facilities represents the collective responsibility among today's physicians to reduce testing and health care costs, when appropriate, while improving the quality of care delivery" Fulton says.

**More information:** Effectiveness of screening for life-threatening chest pain in children. Saleeb SF, Li WY, Warren SZ, Lock JE. *Pediatrics*. 2011 Nov;128(5):e1062-8.

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