

Reaching the paediatric chest pain audience outside of ambulatory clinic using internet-based education

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ABSTRACT

Paediatric chest pain is common, yet there remain significant barriers to educating and reassuring patients and their families. In July 2014, a blog titled *6 Questions to Ask When Your Child Complains of Chest Pain* was posted to the Cincinnati Children's Hospital Medical Center website to help educate children and parents about paediatric chest pain. The enhanced interactions through internet-based resources create the opportunity to address chest pain in a way that both educate and provide reassurance. Through the reassurance, there is the potential to meaningfully reduce patient stress all while also decreasing medical costs and potential medical visits.

Paediatric chest pain is rarely cardiac, and yet, patient and family emotional distress is often quite high.^{1,2} Unfortunately, many barriers exist regarding effective physician and patient/parent communication, which may lead to a failure to provide effective reassurance.³ Patients and their parents commonly seek in-person professional medical advice but may be met with decreased clinic availability, prolonged emergency room waits, potential infectious exposures and expensive, often unnecessary medical tests. In light of these factors and the increasing accessibility of technology, the internet has become a common source of information.⁴

In July 2014, a blog titled *6 Questions to Ask When Your Child Complains of Chest Pain*⁵ was posted to the Cincinnati Children's Hospital Medical Center (CCHMC) website to help educate children and parents about paediatric chest pain. Since that original posting, the blog has been widely read reaching over 1.1 million international viewers (figure 1) becoming the most-viewed CCHMC blog and a frequently visited paediatric chest pain resource on Google. In addition to its originally intended resource of guidance regarding the possible aetiology of the reader's chest pain, the reader may post a question or comment and ultimately receive a reply from one of the blog's authorship team.

Comments from July 2014 to September 2019 were collected and analysed to provide clues into who was benefiting from this unintended throughway. Duplicate comments were excluded and country of origin was elicited by the CCHMC analytics team.

Details on the comments left are presented in table 1. Interestingly, 26.5% of individuals had interacted with a healthcare provider before their comment/question on the blog, meaning they were not adequately reassured by their medical team. This likely speaks to the various barriers for adequate patient education in the clinic visit, which include communication, psychosocial and educational.³ On the other hand, ~75% of respondents did so before being seen by their medical team. While we do not know how many of these persons ultimately saw a physician, reducing the number of unnecessary visits could result in significant savings. While the chief motivation for producing high-quality internet-based educational materials is to decrease patient and parent anxiety, the potential cost savings are quite noteworthy and represent a very advantageous secondary outcome as hospitals work to decrease overall medical expenditure.

Another interesting observation from our blog experience is that while ~66% of comments were from parents or other adult contacts, the remainder came directly from the individual with chest pain. This speaks to the importance of ensuring that the materials we provide are accessible, age appropriate, developed with attention to the needs of health literacy and sourced effectively for technologically savvy paediatric patients. Other studies have shown significant successes targeting this group for education,⁶ yet we often overlook them in favour of parental information. Obviously, the potential issues of the child not disclosing their symptoms to their parent should be heeded; in fact, there may even be a unique opportunity to use this



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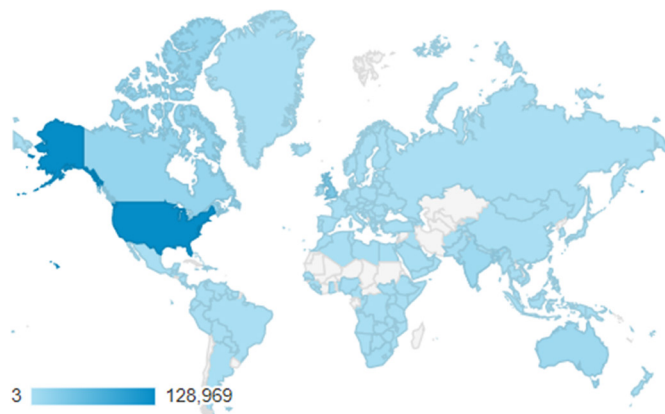


Figure 1 Map showing the global distribution of visitors to the Cincinnati Children's Hospital blog titled *6 Questions to Ask When Your Child Complains of Chest Pain*. Darker shades of blue indicate larger number of visitors.

medium to direct children/adolescents to their parents with a symptom of concern.

In conclusion, enhanced interactions through internet-based resources create the opportunity to address paediatric chest pain in a way that both educates and provides reassurance. Through the reassurance, there may be positive secondary outcomes such as decreasing medical costs and reducing potential infectious exposures. Information directed to the internet-savvy patient should not

Table 1 Details from the 365 comments left on the Cincinnati Children's Hospital Medical Center blog titled *6 Questions to Ask When Your Child Complains of Chest Pain*

Gender	53.7% female
	39.1% male
	7.2% unknown
Author of the comment	57.3% parents
	33.4% the individual with chest pain
	9.3% friends and other relatives
Chest pain context	79.8% rest
	18.1% exercise
	2.1% both exercise and rest
Prior interaction with a healthcare provider	73.5% no
	26.5% yes
History of congenital heart disease	97.3% no
	2.7% yes

be limited to parent information as paediatric patients often perform their own symptom research. We believe that these lessons and learnings are not exclusive to paediatric chest pain, but rather provide an example that other symptom-based, or condition-based, patient and parent facing resources may wish to emulate.

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