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# Pediatric Mobile Health Care Delivery During COVID-19

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Received for publication August 11, 2021; accepted February 18, 2022.

**KEYWORDS:** community pediatrics; health disparities; health innovation; Mobile Health Clinics; pediatric health care delivery

**ACADEMIC PEDIATRICS** 2022;22:873–875

## WHAT'S NEW?

An urban safety-net hospital operationalized a Mobile Health Clinic to bring over 1700 immunizations and well-care to more than 500 patients disproportionately affected by the COVID-19 pandemic. Interviews suggest that Mobile Health Clinics may continue to have an important role post-pandemic.

## INNOVATION AND CONTEXT

Boston Medical Center's (BMC) primary care pediatric practice is the medical home to 14,000 patients, the majority of whom come from structurally marginalized communities disproportionately affected by COVID-19. In Spring 2020, BMC became an epicenter of COVID-19, and the hospital-based pediatric practice saw a 90% decrease in the volume of primary care visits and a significant drop in vaccine distribution. In tandem, families reported increases in joblessness, housing and food insecurity.

In response, BMC launched an innovative MHC to deliver medical care and material goods to patients' doorsteps. Department leadership rapidly engaged the Department of Public Health and other hospital stakeholders. In a matter of days, we partnered with an ambulance company and transformed an ambulance into an exam room equipped with an infant scale, vaccine cooler, books, and a "coping kit" from Child Life. Due to the rapidity of our response, we did not consider another vehicle, but the ambulance was large enough to include a parent and examine a child and small enough to park on the street. We staffed the ambulance with a driver and a rotating group of multilingual pediatricians and nurses, and began delivering curbside, comprehensive well-child care, including immunizations and material goods. With few patients to see in clinic, clinical staff were readily available. As such, we scheduled patients with providers who spoke their language and with their primary care providers. When this was not possible, we used telephone-based interpreter services to ensure language-concordant care. Using the electronic medical record, patients were prioritized based on "no-shows" to appointments, and children under 5 in need of vaccines. Administrative staff outreached to these families to offer appointments and to screen for material needs.

## BACKGROUND

APPROXIMATELY 2000 MOBILE Health Clinics (MHCs) are operational in the United States.<sup>1</sup> MHCs represent diverse clinical platforms, with the majority providing screenings and other primary care-based services. MHCs provide cost effective, patient-centered care to patients who may experience obstacles to care receipt such as transportation, structural barriers, and the anxiety of attending visits in a traditional clinic setting.<sup>1</sup> Additionally, literature shows that MHCs have been effectively utilized in health care crises such as the opioid epidemic.<sup>2,3,4</sup>

During the COVID-19 pandemic, many MHCs were repurposed to provide COVID-19 testing and education.<sup>5</sup> However, while our health care system was responding to the acute crisis, routine preventive services, like immunizations, were often deferred, raising concern for potential non-COVID infectious disease outbreaks in children. Vaccines for Children and the Vaccine Safety Link reported a steep decline nationally in vaccines ordered and administered between mid-March and April 2020.<sup>6</sup> MHCs, with their ability to overcome barriers and flexibly respond to communities' needs, are well-positioned to address the gap in preventive care for structurally marginalized populations.

Material resource provision is standard of care for in-person visits, and we sought to replicate this in the MHC. Our clinic's Family Navigation Team prepared bags of food, gift cards, diapers, masks, hygiene products, books, and games, customized to each family's needs. Visits were billed to insurance, though the effort also was supported through philanthropy to cover costs.

The team tracked percentage of visits scheduled versus completed, and number of immunizations delivered. To understand perceptions of this innovation, research assistants interviewed over Zoom 8 physicians and nurses and 33 families. All provided verbal informed consent. Three were not recorded, and 2 had transcription issues, leaving a total of 28. All remaining interviews were audio-recorded and transcribed. Semi-structured interviews lasted on average 20 minutes. We conducted interviews until we reached thematic saturation. Two research assistants read through each transcript and developed themes. The authors' Institutional Review Board approved this evaluation.

## RESULTS

Between April and August 2020, 642 MHC visits were scheduled and 567 completed (88%). Pre-pandemic, the clinic had 18,000 visits in 5 months with an estimated no-show rate of ~20%. The MHC delivered 1777 immunizations, predominantly to children less than 2 years of age (376 in total) who lived in the city of Boston.

During interviews, clinicians and parents identified similar areas in which they believed the van was effective including overcoming hesitation to attend hospital-based visits, overcoming transportation issues, convenience, and provision of additional resources and saving of resources (Table 1). Clinicians noted maintaining immunization rates and enhanced teamwork as a significant benefit. Commonly cited barriers included space and the desire for additional team members. Interviewees also noted the need for training to deliver care in this new way.

## DISCUSSION

The COVID pandemic represents an unprecedented time in which the clinical value of preventing additional communicable diseases through routine immunizations cannot be underestimated. Similar to existing studies, our evaluation supports the notion that MHCs are capable of overcoming barriers to care faced by marginalized patients.<sup>1</sup> Parent interviews revealed families deferred pediatric preventive health care services due to their perceived risk of infection. Parents discussed additional reasons why coming into the clinic setting was difficult which are consistent with the literature.<sup>1</sup> Parents reported that receiving care in the MHC provided convenience, and overcame logistical challenges. Clinicians emphasized that the MHC enhanced teamwork.

**Table 1.** Perceived Benefits and Barriers of the Mobile Van: Themes and Illustrative Quotes

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<p><i>Theme 1. Overcoming Stress Related to Attend Hospital-Based Visits Parent:</i> "...during the Coronavirus, when it was so intense there was no way I would have come to the clinic. I was too scared. Several times, my kids were not feeling very well, but I couldn't bring them in because I was too scared to take them in."</p>
<p><i>Theme 2. Overcoming Transportation Issues Parent:</i> "[S]o, sometimes, if I am to take a bus, and I miss the bus, I don't get to take my child for his – before her appointments. So, the mobile van is super. I don't get to miss any appointments for my kids."</p>
<p><i>Theme 3. Convenience Parent:</i> "[The ambulance is] a huge time saver from the preparation, the commute, the parking, the waiting time in the waiting room. Um, once you even get into the room, there's a whole waiting process. But once you're on the ambulance, it's like it's just you, and the nurse, and the EMTs, or whatever is happening in there. And so, I think that, that just saves families a huge amount of time. . . . I don't know who wouldn't want that, what's more valuable than time?"</p>
<p><i>Theme 4. Provision of Additional Resources and Saving of Resources Clinician:</i> "This program can definitely overcome those issues, both financially with food insecurity and providing a lot more support than we were doing before. So that's a really [good] thing—that could really stay in the future where patients who really cannot come to the clinic and have difficulties - we could always go to them"</p>
<p><i>Theme 5. Identification of the Hospital as a Traumatic Place to Visit. Parent:</i> "Like it was, it was so much better than just going into the hospital, you know, and dealing with a lot of that, you know, people and all the doctors and you know. Especially because when I would go in and you know, a lot of the people, the receptionist, the doctors are not nice, you know, because they're dealing with a whole bunch of people. So, you know, eventually they get irritated, you know, you got to deal with, you know, people like that. Like, I don't like you know, deal with that. So, I felt like me— just people coming to me, it was so much easier and helpful for me. And avoid a lot of issues."</p>
<p><i>Theme 6. Keeping up Vaccines Clinician:</i> "The best parts were knowing that we were delivering the vaccinations that kids needed in real-time when people were uncomfortable coming to the hospital."</p>
<p><i>Theme 7. Teamwork Clinician:</i> "I worked with one of our longtime nurses in pediatric primary care, but being on the ambulance with her, I felt like I got to know her better. And also, I'm usually not in the room when the vaccinations are being given or when the nurses are speaking with the patients and their parents, so, it was kind of nice to witness that, to watch the way the nurses interact, how they calm a child down to give the vaccines, how they talk to the parents, the education stuff that they do. And just like the cultural stuff, it was fun to sort of witness it up close and personal like that. I liked that, I feel like I know them better, the nurses."</p>
<p><i>Theme 8. Space as a Barrier Clinician:</i> "Specifically, with the mobile [unit], it's challenging due to the limitation of space. And it gets challenging with older patients when you need to talk about personal issues, more private exams, it just feels like there are some barriers, given that we're in the public doing these types of visits."</p>
<p><i>Theme 9. Desire for Additional Team Members and Features Clinician:</i> "We didn't do any lab work on the van because we weren't licensed to draw bloods and bring them back to the lab. So I think that was a downside, because we had kids that were not getting lead testing or getting their CBCs at their usual intervals"</p>

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## NEXT STEPS

BMC's MHC emerged in a pandemic to address the needs of patients disproportionately affected. Interviews suggest that mobile programming, *outside of a crisis*, may continue to provide benefits, especially for those who experience barriers to traditional care. When the acute crisis subsided, traffic increased (which limited our MHC volume), and doctors were needed in the hospital, our described model adapted to address on-going needs. Last fall, we used a nurse-based model to deliver flu vaccines to high-risk patients. This spring, the MHC added dyadic care for mothers and newborns, and distributed COVID vaccines to eligible households. We are considering a non-ambulance vehicle which may be less expensive and stigmatizing.

The pandemic necessitated innovative approaches to health care delivery and demanded disruption of the status quo, offering an opportunity to build more equitable systems of care. In the future, exploring insurance reforms and infrastructure to support pediatric MHC care will be important for scale and spread to other communities for which this type of care delivery may be beneficial (eg, rural).

## ACKNOWLEDGMENTS

*Financial statement:* This work was supported by The Klarman Family Foundation, Boston, MA. The funders had no involvement in the study design, in the collection, analysis, or interpretation of data, or the writing of the report. They do support the decision to submit this article for publication.

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