Nurse-Led Model of Care That Helps a Community Heal
Curbside Immunizations With Assistance in Social Determinants

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The COVID-19 pandemic has overwhelmed communities. Physical, emotional, and financial struggles have heightened, especially with our vulnerable populations. People have been afraid to return to their provider’s office. For children, there has been an interruption of well-visits and immunizations. As the nation saw a decline in immunization uptake, a pilot nurse-led program was designed to increase vaccinations and address the social determinant needs during a global pandemic. The purpose of this article is to describe the planning and implementation of a curbside immunization event. The Logic model was used as a framework to ensure an efficient and replicable process. Initial observations showed an overall increase in immunization uptake and 97% of participants current with recommended vaccinations. Most parents (93%) would attend again and recommend it to others. They also felt that infection control precautions helped make the care delivered safe and efficient. Social determinants of health were assessed and addressed. This method of vaccine delivery is a viable model going into the future. Others may replicate this model, and it may also serve as a platform regarding flu or COVID-19 vaccine distribution. Key words: COVID-19, curbside, immunizations, Logic model, Modified Social Ecological Model, school-based clinic, social determinants

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THE PURPOSE of this article is to describe the creation of the quality improvement nurse-led innovative curbside immunization program to impact vaccine uptake. This pilot program improved on the “old style” immunization events where large groups would gather in communal locations such as fairgrounds. It was streamlined to avoid prolonged close contacts in a drive-up fashion. Essential and unique to this model was assessing and assisting with social determinant needs that have escalated within vulnerable populations amid a global pandemic.

When the coronavirus-19 (COVID-19) numbers peaked in Detroit, the community was impacted financially and emotionally, with significant high-acuity needs.1 Detroit has a population inclusive of 78.6% African
Americans and was a hot spot early in the pandemic; COVID-19 has disproportionately impacted communities of color throughout Michigan. Although African American persons comprise 13.6% of the state’s population, they accounted for 40% of the deaths.1

The footprint of any pandemic demonstrates a process consisting of 4 waves; the first wave is identified by concern with immediate mortality and morbidity. The second wave impacts resource restriction on urgent nonpandemic conditions. The third wave results in an interruption of chronic condition monitoring such as heart disease, diabetes, or for children, well-visits and immunizations. The fourth wave considers the effects of posttraumatic stress and associated economic impacts.2

Evidence of the third wave was the dramatic reduction in immunization rates in Michigan and across the country, leaving already vulnerable populations more at risk for vaccine-preventable diseases.3-5 The executive vice president and chief nursing officer at a large health system in the Metro Detroit area charged nurse leaders to aspire to create innovative models of care in response to the pandemic. This call to action fueled and supported an environment of excellence and teamwork and highlighted the value of nurse-led initiatives that ultimately impacted patient outcomes.

The creation of the pilot curbside immunization event was a perfect fit for school-based health centers. They are strategically located in medically underserved areas where vulnerable populations exist. Nurse practitioners (NPs) are culturally competent and trusted within the communities they serve. Nurse practitioners are certified in vaccine management and have health promotion and disease prevention as a primary goal. The immunization process is the most cost-effective intervention for reducing a child’s morbidity and mortality, not to mention the economic impact on an entire population.6,8 Therefore, these clinics were uniquely positioned to meet their respective communities’ needs by creating a curbside immunization program during the pandemic.

**BACKGROUND/SIGNIFICANCE**

Vaccines have contributed to an increase in life expectancy; from 50 years of age in 1900 to more than 80 years of age in 2020.8 Of the almost 6 million childhood deaths (younger than 5 years of age) globally in 2015, more than half were related to preventable infectious diseases.9 Before the COVID-19 pandemic, there was an already significant gap in vaccination rates correlated to race and poverty levels.3,10-12 A lack of access to health care may be related to this health disparity. Currently, most of Metropolitan Detroit is classified as a medically underserved area.13,14

Quality of life and access to health care are influenced by where we live, work, and play. The opportunities of safe neighborhoods, good-paying jobs, and quality education look very different from zip code to zip code. Detroit and its surrounding Wayne county have a known history of health disparity and health inequities.15 Their quality of life ranks the lowest in the state.13 Data show a persistent pattern of barriers to well-being measurements for persons of color and those with lower incomes (see Table).10,12,15-19

Marginalized communities already struggle with basic needs. The COVID-19 pandemic has posed an additional weight. Our essential workers, our grocery store clerks, first responders, and many others did not have options of working from home, adding to the burden or worry for themselves and their families. The unemployment rate escalated to unprecedented levels, and the food pantries were overwhelmed and had to turn many people away.10,18

These struggles are reflective in the Social Vulnerability Index (SVI), which takes US Census data to project a community’s resilience when confronted with stress on an individual’s human health. Stress can take the form of disease outbreaks or pandemics and natural or human-caused disasters. The SVI creates
Table. Typical Well-Being Measures and Their Known Barriers

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<tr>
<th>Well-Being Measurements</th>
<th>Barriers to Well-Being</th>
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<td>Physical well-being</td>
<td>Access to health care</td>
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<td>Economic well-being</td>
<td>Air and water quality</td>
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<td>Social well-being</td>
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<td>Development and activity</td>
<td>healthy foods</td>
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<td>Emotional well-being</td>
<td>Community safety</td>
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<td>Psychological well-being</td>
<td>Educational</td>
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<td>Life satisfaction</td>
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<td>Domain-specific satisfaction</td>
<td>Housing</td>
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<td>Engaging activities and work</td>
<td>Income</td>
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<td></td>
<td>Quality of care</td>
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*From public domain, CDC Health-Related Quality of Life,19 and Michigan County Health Ranking.13*

A number and low numerical values correlate with less human suffering and less potential financial burden. In 2016, Detroit and many zip codes of Wayne County were rated in the highest SVI category, showing greater disparity to cope with disasters than other counties in the region.20 It is important to use the SVI measure when reflecting on the health response to COVID-19 in this population. Based on literature review and SVI data for this community, the focus group proposed a curbside approach to increase immunization uptake in a fiscally sound manner and should include aspects of holistic care to assist with social determinants, especially food insecurity.

**CURBSIDE IMMUNIZATION MODEL DESIGN**

Nurses are trusted in the community; helping parents feel safe to return to medical care is essential post-COVID-19 healing. Offering clinic services outdoors, while promoting physical distancing and increased fresh air flow, helps reduce the spread of the virus.5 The pilot curbside immunization model was based on the Centers for Disease Control and Prevention best practice recommendations during the pandemic, while conceptually designing the program, using a Modified Social Ecological Model. This framework recognizes that health disparities are interwoven between institutional, historical, and sociopolitical factors. Improved outcomes can be achieved by leveraging the efforts of person, family, provider, organization, community, and government16,21 (see Figure 1).

**Design building blocks**

The design building blocks of this innovation included a focus group approach. Participants were the program manager, a registered nurse, social worker, and NPs from the teen center clinics who specialize in this population’s care. Medical assistants were furloughed during the planning process and would have been included if possible. During the planning phase, the group collaborated to ensure that the team agreed on the same problems, aims, process, and evaluation objectives. A SWOT (strengths, weakness, opportunity, and threats) analysis was employed to collaboratively identify solutions. The individuals chosen for the focus group have mastery of the immunization and clinic processes.

Identified strengths and opportunities were the high urgent need for the community and existing health system administration support. The program had no additional costs. The concept was well supported by the school districts and had the support from the NPs who ran other school-based clinics. In addition, partner clinics had reduced summer census/appointments, which allowed more flexibility in staffing the immunization events. The Centers for Disease Control and Prevention provided guidance on best infectious prevention practices to keep staff and the community safe.5 All sites were previously enrolled in the Vaccine for Children federal program and trained in vaccine management and administration protocols. The health department was willing to collaborate.
and provide all Vaccine for Children allocated vaccines. The clinic was located within the community being served and was strategically set up for easy drive-up access. The clinicians were trusted in the community and accustomed to the issues of health disparity and health inequity.

The weakness and threats included potential staffing issues, as it was not mandated to work the event. The focus group recommended that only willing participants would work the events. Many medical assistants had been furloughed during the pandemic as schools had been shut down, and services within school-based clinics were dramatically reduced. In addition, each NP had different medical directors and was not credentialed for the clinic sites chosen for the project. The external factors that could potentially threaten the program included outside weather conditions, power outages, connectivity concerns with information technology, and the electronic medical record. Additional threats were the potential for low public and low media interest. Local media could help advertise the events during this time when communities might not have been aware that the school health centers were open.

After the SWOT analysis, the focus group created an implementation plan using a Logic Model, which systematically maps out process and relationships among resources, activities, outputs, and expected outcomes. See Supplemental Digital Content Appendix, available at: http://links.lww.com/NAQ/A5. This provided the foundation to create a tool kit to support replication of this innovation with other clinics and school-based health centers.

Prior to event (preregistration)

Appointments were made for this event over the phone and also included COVID-19 screening questions and insurance information. A temporary chart was created including insurance verification, and immunizations were preordered to streamline efficiency on the day of the event.

Day of event

COVID-19 screenings were conducted at the event entrance, which included questions, temperature checks, provision of hand sanitizer, assurance (and provision) of face masks, and providing a free pen (to eliminate the need to sanitize pens between patients). The event began with the family’s car pulling into a parking spot next to a 10- × 10-ft tent, where the vehicle parked with the engine off. Three similar vaccination stations were set up in the parking lots; staff came to the car

Figure 1. Social Ecological Model—modified to include the concept of health disparity and COVID-19 pandemic. A framework of care that depicts the interwoven relationships of health within a community as it relates to the need of a curbside immunization event amid a pandemic. From public domain, adapted from ATSDR, CDC. SVI indicates Social Vulnerability Index.
to accomplish the vaccination process. The cars were then directed to drive to one last station in the parking lot for postvaccination observation.

**Vaccination stations: 3**

Activities at the vaccination stations included registration, provider assessment of the patient(s), teaching, guidance, review of orders, and the actual immunization administration. The detailed process of activities utilized the Logic model to ensure consistency and potential replication. All immunization administration followed the clinic’s well-established vaccination policy.

**Station 4**

Station 4 was used for the waiting period recommended by guidelines to assess for possible reactions. This area provided an opportunity for the parent/guardian to fill out a de-identified survey to help discern their opinion of workflow, perceptions of care, and needs for social determinant resources. Clinic social workers provided assistance with needs for food, shelter, Medicaid sign-up, transportation, gas, electrical, and water bill concerns. The focus group understood the food insecurity issues ever present in this community and partnered with a local food bank. It was not advertised as an incentive, but a box of groceries from a local community food bank was provided and placed in their trunk. After 15 minutes in station 4, the families drove away and exited the event (see Figure 2).

**PRELIMINARY QUESTIONS AND OBSERVATIONS**

An early analysis of the pilot curbside immunization program raised numerous questions and revealed interesting initial observations. A few essential questions stand out. Did the pilot program improve uptake of immunizations? Did the parents express concern about going inside their doctor’s office? Did the survey reveal a need for social determinant resources? Did the parents feel that this program was safe and efficient?

Initial observations showed that 69% of the youth had prior delays greater than a year in getting recommended immunizations. In 2 different events, 29 participants

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![Figure 2](https://example.com/figure2.png)

**Figure 2.** Process flow of curbside immunization event. Each car follows the arrows to complete full immunizations and social determinant assessment and assistance.
received 64 different immunizations, which showed that more immunizations were given at these events as compared with a regularly scheduled clinic day 1 year prior. Children in most states, including Michigan, have required immunizations that must be in place before entrance to school. However, school attendance requirements are not inclusive of all recommendations by the American Academy of Pediatrics. After the curbside events, 97% were categorized by an “up-to-date” status by the Michigan Care Improvement Registry.

Preliminary observations also suggested that most parents (93%) were favorable to return to this type of event or recommend the program to others. They felt that precautions taken for infection control helped and that the care delivered was safe and efficient. Social determinant resources were provided as needed, and all but one wanted and received boxes of food. Further analysis of the data will determine whether there is an association of location or zip code with social determinant needs. Although mental health assessments were not completed, 2 families requested mental health service; referrals were immediate. Staff felt that this process would work for immunization events in the future and serve as a platform for entire communities to receive care.

CONCLUSION

If vaccines are not received, patients, families, and entire communities are at risk of getting vaccine-preventable diseases. This would further stress communities that have been so profoundly affected by the COVID-19 virus. This program culminates best practice recommendations for immunization administration, infection/prevention measures for COVID-19, and the assessment for social determinants of health. Future manuscripts will focus on the final outcomes of this pilot program. These preliminary observations support a viable model going into the future. Other medical professionals may embrace and replicate this new model of care. It may also serve as a platform for all ages in regard to flu distribution or the COVID-19 vaccine.

Nurses continue to expand their roles in health care and the community. Nurses approach health care through a holistic lens and look at an entire forest instead of just a tree. This nurse-driven new model of care brings high value to a community, especially one that needs to heal.

REFERENCES


