



Re-purposed drive-through vaccination set-up for Mpox, New York Metropolitan Area

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SUMMARY

Background: This report details how one large medical center in the Metropolitan New York area re-purposed a drive-through COVID-19 vaccination structure to handle a surge in Mpox cases in July 2022.

Methods/Results: Simultaneous to on-going COVID-19 vaccination and testing, Mpox vaccination was rolled out in the same drive through structure. More than 1,820 Jynneos (Smallpox and Monkeypox Vaccine, Live, Non-replicating) vaccine dosages were delivered subcutaneously and then intradermally to 1,123 individuals through the open window of their vehicles, averaging 8–10 patients an hour. Five vaccine recipients suffered Mpox rash; there was no exposure among healthcare providers.

Conclusion: Drive-through vaccination is an efficient model to be redeployed for future unexpected vaccine initiatives.

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Introduction

Since May of 2022, a global outbreak of Mpox (previously known as monkeypox) has grown to over 79,000 cases in 110 countries [1]. While the epidemic has spread across the United States, the largest outbreaks have been in more populated, urban settings [2]. Westchester Medical Center (WMC) is an

academic hospital is located thirty miles north of New York City and experienced the first wave of Mpox cases in the US in July 2022. The medical center is a Level 1 Trauma Center that serves the eight county Hudson Valley region, north of New York City, and encompasses 2.3 million people.

The medical center was chosen to administer two mass COVID-19 vaccination centers for the NYSDOH (New York State Department of Health) starting in July 2021. Previously, as part of the COVID-19 pandemic response, WMC built and maintained a drive-through tent for vaccination and testing for our patients and employees (Figure 1). The vaccination tent was designed for patients to drive-through and receive care without leaving their vehicles. The open-air format allowed for natural ventilation and provided a safe care environment during the COVID-19

Abbreviations: PCR, Polymerase chain reaction; COVID-19, Coronavirus disease; NYS, New York State; NYC, New York City; NYSDOH, New York State Department of Health.

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Figure 1. Drive through structure.

pandemic (Figure 2a). Health care workers were required to wear masks, gloves, and gowns while working in the tent. The tent was located on the hospital grounds next to the public bus stop to accommodate individuals arriving on public transportation (Figure 2b). With time, the cloth tent was replaced by a metal structure with heating, Wi-Fi, fridges and computers on wheels. There were four patient lane drive-throughs.

Methods

Early in the Mpox epidemic, the small pox vaccine (Jynneos, Bavarian Nordic) was identified as a preventative tool to slow down the spread of the infection. This vaccine was stored in the strategic national stockpile and supplied to states with high volume of Mpox cases for distribution where needed. WMC planned to provide the small pox vaccine (Jynneos, Bavarian Nordic), for its own patients attending a specialized clinic. However, the NYSDOH mandate rapidly expanded to providing Jynneos vaccines for the broader community in partnership with our local department of health. Therefore, the medical center quickly pivoted from a clinic-based vaccination program to using the COVID-19 tent. Two lanes from the COVID-19 tent were dedicated for Jynneos vaccination; which could accommodate 8–10 patients per hour. The two other lanes continued to provide COVID-19 vaccination and testing. The pharmacy already had the storage freezers, remote temperature monitoring devices, vaccine databases, and vaccine transport equipment necessary to add on Jynneos vaccination. Most importantly, the pharmacy staff were already trained in vaccine storage and handling for large vaccine drives. When the Jynneos vaccine was switched from the subdermal administration of one dose per vial to the intradermal administration of five doses per vial, the pharmacy was ready. The competency built on dispensing, labeling and tracking ten doses per vial of Moderna COVID-19 vaccine was brought to bear for intradermal Jynneos dispensing.

To ensure that patients met the public health criteria for vaccination [3], all patients were required to make appointments by phone (Figure 3). Patients who met the criteria were instructed to drive or take the bus to the vaccination tent. Patients with active symptoms concerning for Mpox were redirected to the special Mpox clinic for evaluation. To

preserve confidentiality, the word “monkeypox” was not used on any public facing signs.

Patients remained in their cars throughout the process and drove from station to station along the tent roadway. Demographic and insurance information were provided via an open-window at the first station. At the second station, the car motor was stopped, a nursing review including questions related to contraindications and allergies was performed. The vaccine was then administered to an arm extended through the window. There was a learning curve for nursing staff to become adept at intradermal vaccinations. Despite previous education and technique practice prior to starting to vaccinate patients, there were two staff needle-stick injuries reported during the first two days. Subsequent investigation related these injuries to staff inexperience and neither posed a significant risk to staff or patients. On leaving the tent, the patient was instructed to call the Mpox appointment hotline if experiencing any side effects or symptoms of Mpox.

Results

None of the patients who received vaccine reported any side effects. Five patients developed Mpox after receiving the Jynneos vaccine. One of the five patients received the vaccine because of direct exposure to an infected sexual partner; three days later he developed a mild rash that tested Mpox indeterminate by genus PCR (Orthopox). On the first day of Jynneos use, after requesting and receiving the vaccine, another patient revealed the presence of a preexisting rash compatible with Mpox. Each of the other three patients presented with rashes on post-vaccination days 2, 4, and 7 respectively. No difference in clinical presentation was noted in these patients compared to the other Mpox cases. There were no cases of Mpox among health care workers.

Diverse media were used to advertise the drive-through, including television, radio, social media posts, phone calls, and print media. The NYSDOH website listed the drive-through vaccine center for Mpox vaccination. The local Congressman helped spread the message to communities at risk for Mpox via a television ad at our vaccine tent. WMC made a concerted effort to follow guidance for reaching out to communities who might be underserved [4].

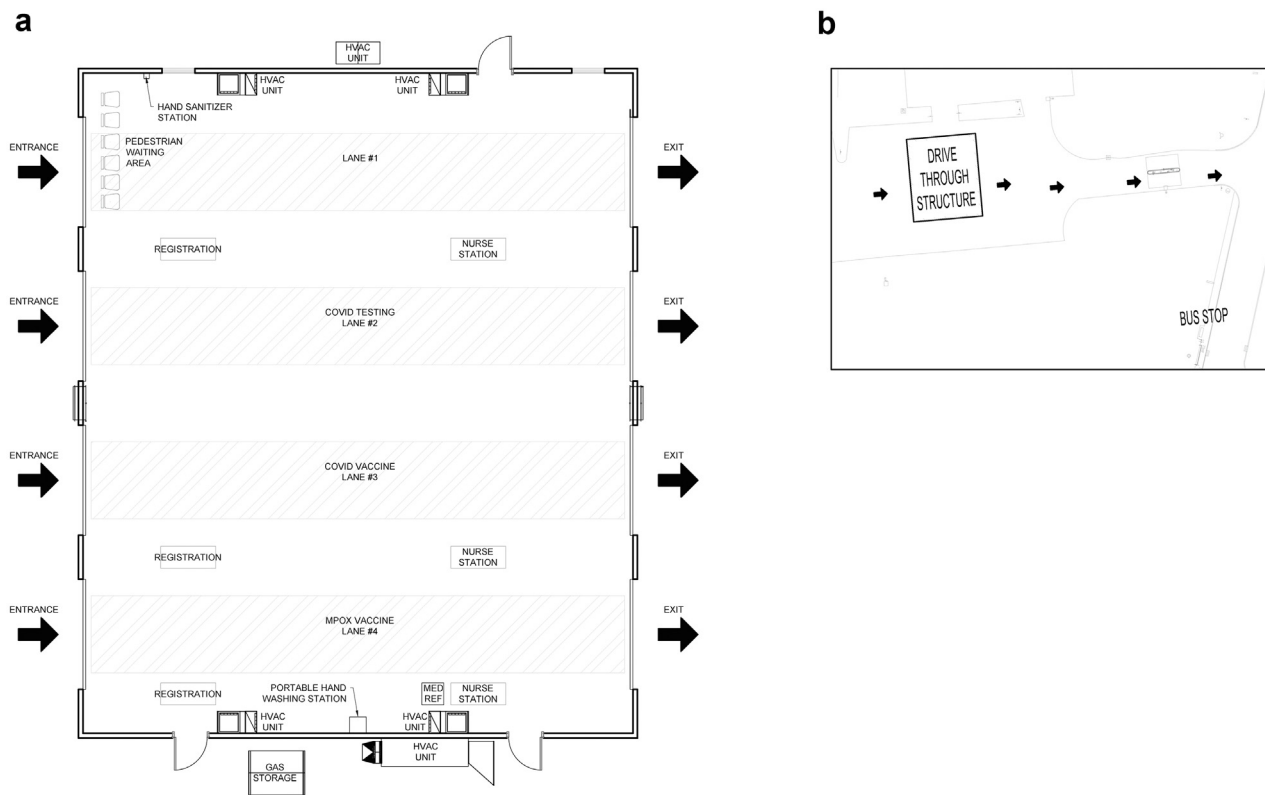


Figure 2. (a) Drive through structure – Three lanes for patients driving through and one lane for pedestrians are illustrated. COVID-19 testing occupied lane 2, COVID-19 vaccinations were lane 3, while Mpox vaccination happened in lane 4. The 8 wide open garage doors provided ample ventilation for the unit. Four HVAC units provided either air conditioning or heating for the healthcare workers, with 8 over head outflow vents (b) Site structure- drive through located approximately 150 yards from a public bus stop.

In total, 1,824 doses of Jynneos vaccine were administered to 1,123 individuals, 981 of whom were male, 101 were female, and 41 were of undifferentiated gender (details in table 1). Over 50% of patients were between the ages of 25 and 45 and 87% were male. Of the patients who disclosed their race or ethnicity, 10% were black, 7% were Hispanic, and 2% were Asian. While most of the vaccines (82%) went to New York State (NYS) residents from outside New York City (NYC), 325 NYC residents and 67 non-NYS residents were also vaccinated. When asked why they sought Mpox vaccination, 77.3% of patients stated that they had had skin to skin contact with a member of

a high-risk population within the last 14 days (see Figure 2), 27.5% were receiving pre-exposure prophylaxis for HIV (PrEP), and only 5% had had direct exposure to a suspected or confirmed case of Mpox.

Discussion

A drive-through vaccination strategy provides an efficient and safe method for vaccination [5,6]. In Italy, shortly after the first wave of COVID-19, local public health authorities used

Monkeypox Immunization Screening and Consent Form	
Have you had a known exposure to a suspected or confirmed monkeypox case within the past 14 days?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown
Have you had skin to skin contact with individuals who are members of the gay, bisexual, transgender or gender non-conforming community?	<input type="radio"/> Within the last 14 days <input type="radio"/> More than the last 14 days <input type="radio"/> No <input type="radio"/> Unknown
Are you on PrEP (pre-exposure) medications to prevent HIV?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown

Figure 3. Jynneos screening questions.

drive-through vaccination to safely distribute Tick Borne Encephalitis vaccines [7]. Drive-through vaccination has increased during the pandemic to enable catchup pediatric vaccinations and annual flu vaccines [8,9]. Similar successful execution of vaccination strategy was described for seasonal influenza [10,11]. In the future, the medical center plans to further improve on the vaccination process by operating beyond traditional working hours and running shuttles from local clinics or social centers to facilitate transportation to the vaccine tent. Mobile Health COACH (Community Outreach and Community Health) vehicles can be deployed to bring mass vaccination to at-risk populations.

Conclusion

The open floor plan of a drive through vaccine tent and the privacy of a vehicle help provide a safe vaccination environment for the patient and the vaccinator. Large volumes of patients can be efficiently processed through the use of multiple lanes. Different vaccines can be safely administered simultaneously each in their own dedicated lane. The successes experienced with the drive-through tent supports the use of this model for other unexpected vaccine initiatives.

Ethics

This study was conducted through an IRB exemption at Touro Medical College, protocol # 17894.

Credit author statement

Marina Keller: Conceptualization, Methodology, Supervision, Data curation and analysis, Writing the original draft of manuscript and editing. Vishnu Chaturvedi: Data curation and analysis, Investigation, Writing the original draft and editing of manuscript. Rebecca Glassman: Conceptualization, Methodology, Supervision, Editing of manuscript. Donald S Chen: Methodology, Project administration, Data analysis, Editing of manuscript. Mary Dundas: Data curation and analysis. Marc El-Khoury: Methodology, Project administration. Nicholas Feola: Methodology, Resources. Varghese Thankachen: Resources, Project administration. Marie Yezzo: Supervision, Project administration. Keri Tone: Supervision, Project administration. Renee Garrick: Conceptualization, Methodology, Resources, Supervision, Project administration.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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