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Understanding Barriers to Establishing Public JYNNEOS Mpox Vaccination Clinics in New Hampshire: Mpox vaccine clinic NH

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Brief Report

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Abstract

Objective: 2022 - 2023 mpox outbreak necessitated rapid distribution of JYNNEOS vaccines from US Strategic National Stockpile to state and local public health agencies. New Hampshire's centralized public health structure required partnering with healthcare facilities to reach at-risk persons. Among the 67 organizations contacted to partner with, only 7 established public JYNNEOS vaccine clinics. The study objective was to identify barriers and resources needed for emergency public vaccination.

Methods: In March 2023, mixed-method surveys were developed and sent to 20 non-participating organizations and 7 participating organizations ("vaccine-partners").

Results: 35% (7/20) of non-participating organizations and 100% (7/7) vaccine-partners responded. Non-participating organizations (n = 5) identified lack of staffing (100%) and insufficient provider time or clinical resources (80%) as the most common barriers. Staffing needs reported by non-participating organizations included: administrative (100%); medical doctor or advanced practice practitioner (67%); and registered nurse, medical assistant, or licensed nursing assistant (67%). Vaccine partners reported similar staffing requirements. Estimated additional monthly funding needs were $3,750 for non-participating organizations and $1,680 for vaccine-partners.

Conclusions: A minority of NH healthcare facilities established public JYNNEOS vaccination clinics. The primary barrier was insufficient staffing; additional resources and funding needs were modest. Success of the next emergency vaccination campaign depends on sustained advocacy, resources, and partnership.

Introduction

The US 2022 - 2023 mpox (previously monkeypox) outbreak began in May 2022,[1] just as COVID-19 deaths and hospitalizations from the winter Omicron surge were starting to subside. Since the initial outbreak, mpox transmission has continued at low-levels in the US, particularly through sexual networks, with more than 32,000 infections identified to date.[2,3] Unlike the COVID-19 pandemic, there was already an FDA-approved vaccine against mpox (JYNNEOS) that was available through the US Strategic National Stockpile as part of the Federal Government's bioterrorism preparedness efforts.[4] A key strategy to bring the mpox outbreak under control was distribution and administration of this vaccine. Vaccine was distributed from the Federal Government to state and local public health agencies for distribution to at-risk persons. Due to initial limited vaccine supply, and while case counts were still low, vaccination was first made available for post-exposure prophylaxis (PEP). As the outbreak accelerated, vaccination strategy shifted to a pre-exposure vaccination, targeting at-risk populations including men who have sex with men (who were at higher risk for sexual acquisition of mpox infection).

New Hampshire, a rural state in Northern New England with more than 1.3 million residents, identified their first case of mpox infection in June 2022. Initial efforts to prevent infection spread focused on case investigation and contact tracing with administration of the JYNNEOS vaccine for PEP. In August 2022, vaccination strategy was modified to target preventive vaccination to at-risk populations, which required working with healthcare organizations that served at-risk populations to increase access. NH has a centralized public health system, necessitating close partnership with local hospitals, clinics, and its two city health departments (located in the two most populous cities, Manchester and Nashua) to deliver medical countermeasures like vaccines during a public health response. New Hampshire Division of Public Health Services (NH DPHS) invited these partners to establish public mpox vaccination clinics. There was no state or federal funding available to help with mpox vaccine distribution, but attempts were made to ensure access throughout the state, especially for the state's more rural populations. However, the

majority of established clinics were concentrated in the more populous southern areas of the state.

In May 2022, even before the first case of mpox was identified in NH, NH DPHS contacted 67 organizations requesting partnership in establishing public JYNNEOS vaccine clinics. Outreach was primarily targeted to hospital systems, outpatient clinics (including federally qualified health centers [FQHCs] and other community clinics that may have served the at-risk population), a local urgent care system, and NH's two city health departments. Sixty organizations (90%) declined full participation or never responded to outreach requests ("non-participating organizations"), including 12 organizations that onboarded with the public health immunization program to be able to offer JYNNEOS but did not establish a public vaccine clinic. Seven organizations (10%) became a public vaccine clinic ("vaccine-partners"). This study investigates barriers and resources needed to establish and operate a public vaccination clinic in response to this public health emergency.

Methods

From March through April 2023, two different mixed-method surveys were developed and distributed depending on whether an organization was a non-participating organization or a vaccine partner. The surveys contained a mix of multiple-choice and free-text answers, and are available for review in the Supplemental material. The non-participating organization survey (Supplemental Figure 1) focused on barriers and challenges that prevented establishing a JYNNEOS vaccine clinic, including questions about estimated staffing and funding needs. The vaccine-partner survey (Supplemental Figure 2) focused on the onboarding process, challenges with implementation, resource needs including staffing and funding, data reporting, and communication with NH DPHS. The surveys were designed using REDCap hosted at Dartmouth Hitchcock Medical Center,[5,6] and sent to points of contact at each organization (primarily emergency preparedness coordinators and clinic managers) via e-mail, with at least one reminder e-mail if no response was received.

The non-participating organization survey was sent to 20 non-participating organizations, excluding Department of Corrections, colleges/universities, organizations with missing or incorrect contact information, and organizations that onboarded to become eligible for administrating JYNNEOS but did not operate public vaccine clinics. The vaccine-partner survey was sent to all 7 vaccine-partners. Data analysis was performed using Excel (Microsoft Corp., Redmond, USA). Descriptive analysis was also performed. For the staffing summary, full time equivalent (FTE) needs were summarized as a mean and a range. If fewer than three respondents reported a need for a particular staffing type, individual FTE responses were reported.

No IRB approval was required, as the study did not involve human subjects.

Results

Survey response rate was 35% (7/20) for non-participating organizations, and 100% (7/7) for vaccine-partners. Two non-participating organizations self-identified as non-clinical (e.g., social service organization), and did not perceive their organization as suitable for offering vaccination. All five remaining non-participating organizations reported staffing shortage as a barrier to establishing public mpox vaccine clinic. Other reported barriers included: insufficient provider time or clinical resources (80%), administrative barriers (40%), reluctance to provide public access (40%), difficulty implementing intra-dermal injections (20%), and lack of physical space (20%).

Among vaccine-partners, reported challenges included: data reporting requirements (29%), difficulty with fully/efficiently using multi-dose vaccine vials (29%), scheduling appointments (14%), lack of physical space (14%), obtaining a sexual history (14%), and insufficient staffing (14%). The majority of vaccine partners offered the vaccine in dedicated public mpox vaccine clinics separate from normal clinic operations (86%), during routine visits (57%), and by scheduling dedicated vaccination appointments (57%). Two clinics (29%) allowed walk-in vaccination visits.

Three non-participating organizations (43%) and 7 vaccine-partners (100%) answered questions about estimated and actual staffing needs. Most commonly reported anticipated staffing needs by non-participating organizations were administrative (100%), medical doctor or advanced practice practitioner (MD/APP) (67%), and medical assistant or licensed nursing assistant (MA/LNA) (67%). Most commonly utilized staffing positions by vaccine-partners were administrative (86%), RN (86%), and MD/APP (43%). Details of FTE by position are summarized in Table 1.

In addition to the staffing needs, estimated monthly funding needed for public vaccine clinic operations were $3,750 for non-participating organizations, and $1,680 for vaccine-partners. Free text comments from non-participating organizations and vaccine-partners were categorized into 4 themes: staffing, setting, clinical operations, and non-clinical operations. Selected quotes from responses are shown in Figure 1.

Limitations

Limitations of this study include the heterogeneous facility types, low response rate of non-participating organizations, and potential for reporting and recall bias. We were unable to validate the accuracy of survey responses.

Discussion

Public health emergency preparedness (PHEP) requires sustained investment in public-private partnerships. In New Hampshire, JYNNEOS vaccine coverage for eligible individuals remains below the national average.[7] This may be partly due to difficulty identifying partnering organizations to administer vaccines: only 10% of NH organizations approached by NH DPHS established public mpox vaccination clinics during the initial mpox response. Staffing shortages and insufficient provider time and resources to engage in the process were identified as the primary barriers.

Despite severe healthcare staffing shortages that started during the COVID-19 pandemic,[8] both estimated and actual staffing needs for public mpox vaccine clinic establishment and operations were relatively low. Vaccine clinics were established with part-time administrative and nursing support, with some MD/APP support. Actual staffing needs will depend on local and organizational resources. Although the majority of vaccine-partners established dedicated public vaccine processes separate from routine clinic operations, a smaller majority integrated vaccinations into routine operations. This highlights the need to find ways to integrate future emergency public health vaccination into routine clinic operations

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Table 1. Estimated and actual staffing needs reported by non-participating organizations and vaccine-partners

	Non-participating organization (N = 3)		Vaccine-partner (N = 7)	
Position	N (%)	Mean FTE (range)*	N (%)	Mean FTE (range)*
Administrative	3 (100)	0.7 (0.2 – 1.5)	6 (86)	0.4 (0.15 – 1)
MD/ APP	2 (67)	0.2, 0.5	3 (43)	0.5 (0.2 – 1)
MA/ LNA	2 (67)	0.2, 0.5	2 (29)	0.5, 1
RN	1 (33)	0.3	6 (86)	0.6 (0.17 – 1.5)
Communication	1 (33)	0.5	1 (14)	0.5
Public health specialist	0	0	1 (14)	0.2

*For staffing categories with less than 3 responses, individual responses are reported.

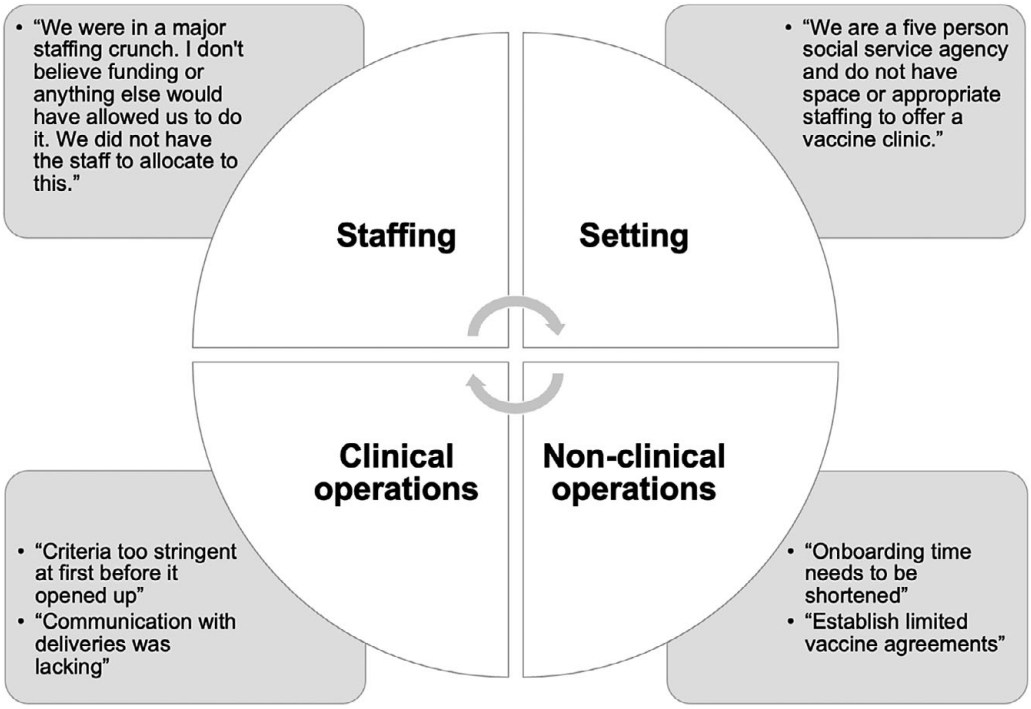

Figure 1 Themes summary: reported barriers to public mpox vaccine clinic establishment and operations.

to the extent possible. This may also help reduce stigma associated with mpox.

Non-participating organizations estimated more than twice the monthly funding needs compared to vaccine-partners. Sharing this potential overestimate may encourage non-participating organizations to partner in the future. With a better understanding of what resources are needed, non-medical facilities may feel comfortable becoming vaccine providers with appropriate support and staffing from public health or local healthcare organizations.

During a public health emergency, there is a need to identify and help provide personnel and other resources required for medical countermeasures.[9] Our findings are important for informing PHEP and response planning, which should be scalable to different events. During the mpox outbreak, there was a need to target vaccination efforts to certain at-risk populations,[1,8] which is why traditional healthcare organizations (including outpatient offices, urgent care clinics, and hospital systems) were engaged. Pharmacies have increasingly been an important partner for offering vaccines such as the COVID-19 and influenza vaccines. However, because of the limited JYNNEOS vaccine supply and need to medically screen and assess patients for vaccination, pharmacies were not utilized during NH's initial mpox response. As vaccine supply increases and medical screening requirements lessen, pharmacies may become an important partner to consider in future vaccination efforts. Another partnership used during the COVID-19 pandemic was the National Guard (in a mass vaccination campaign),[10] but the scale of this mpox vaccination response did not require such large scale activation.

There were no dedicated state or federal funds to respond initially to the mpox outbreak, in sharp contrast to the availability of federal funding during the COVID-19 pandemic response. The vast majority of public health funding in NH comes from federal

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sources for specific purposes, which limits the availability of flexible funds that can be used ad hoc to respond to an emerging public health threat. Since the main barriers identified in this study are staffing and resource related, the availability of money to support a response is important. There is a heavy reliance on federal money to support public health operations and responses, so a flexible federal funding source is necessary.

This study offers direct insight into the state's experience in establishing public-private partnerships for public vaccination and highlights the importance of early public health support to engage and partner with medical organizations to respond to emerging public health threats. These partnerships should be established, nurtured, and maintained before an emergency response occurs. Since the main barriers identified in this survey were staffing and clinical resource-related, there is also a need to build-up and maintain response resources and have a pool of personnel that are easy to mobilize, which will take dedicated funding and resources. The estimated and actual staffing and additional funding needs for public mpox vaccine clinics reported here can help inform future local, state, and federal PHEP and response planning efforts for medical countermeasure distribution and administration.

Conclusions

A minority of NH healthcare organizations established public JYNNEOS vaccination clinics during the mpox outbreak of 2022 – 2023. The primary barrier was insufficient staffing; additional resources and funding needs were relatively low. Healthcare organizations that established public mpox vaccination clinics were able to do so with limited part-time staff.

Supplementary material. The supplementary material for this article can be found at http://doi.org/10.1017/dmp.2024.99.

Author contributions. Kang and Mahanatan: conceptualized and designed the study and surveys, conducted data analysis, drafted, and revised the manuscript; Lee: conceptualized and designed the study and surveys, reviewed the manuscript; Stephanie Locke: conceptualized and designed the study and surveys, provided the list of survey participants, reviewed and revised the manuscript; Talbot: conceptualized and designed the study and surveys, led project meetings, reviewed and revised the manuscript; Chan: conceptualized and designed the study and surveys, led project meetings, distributed the surveys, reviewed and revised the manuscript.

Abbreviations

FTE	Full Time Equivalent
RN	Registered Nurse
MD	Medical Doctor
APP	Advanced Practice Provider
MA	Medical Assistant
LNA	Licensed Nursing Assistant

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