

Collective Action: The Medical College of Wisconsin COVID-19 Vaccination Program

Ashleigh M. Sanchez, MA; Kristin Busse, PharmD; Karen MacKinnon, BPharm; Lisa Henk, MS; George E. MacKinnon, PhD; Jennifer Brown, BS; Susan Mauermann, RN; Teresa Dobrowski; Jayne Jungmann; Jennifer Bultman, BS, PMP; Siddhartha Singh, MD; Ann B. Nattinger, MD, MPH

ABSTRACT

The Medical College of Wisconsin (MCW) COVID-19 Vaccination Program facilitated early vaccination efforts in metro Milwaukee, Wisconsin from December, 2020 through April, 2021. Goals of the program were to work with clinical partners to ensure rapid vaccination availability for the institution's frontline workforce, to support state public health agencies in offering a vaccination opportunity for underserved and higher education community members, and to train vaccinators. A key component of the program was the MCW COVID-19 Vaccination Clinic, and 88% of MCW's workforce was fully immunized against COVID-19 with the 2-dose, mRNA vaccine by April 30, 2021. Within the MCW clinic, 219 pharmacy and medical students learned to administer vaccinations, and 12,450 community vaccinations were administered.

BACKGROUND

In November 2020, despite the use of masks and social distancing, COVID-19 was surging in Milwaukee, Wisconsin, and health care personnel were highly stressed. In anticipation of the Food and Drug Administration's emergency use authorization for the 2-dose Pfizer-BioNTech COVID-19 mRNA vaccine, the Medical College of Wisconsin (MCW) considered how to structure an institutional program for COVID-19 vaccination. MCW employees and trainees number about 9,000, including physicians, clinical personnel, educators, students, staff, and researchers. For context, 24.1% of the regional adult inpatient market in Milwaukee is

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Author Affiliations: Office of Research, Medical College of Wisconsin (MCW), Milwaukee, Wisconsin (Sanchez, Busse, Henk, Brown, Mauermann, Nattinger); School of Pharmacy, MCW, Milwaukee, Wisconsin (Busse, MacKinnon K, MacKinnon G, Dobrowski, Jungmann); Office of the President, MCW, Milwaukee, Wisconsin (Bultman); Department of Medicine, MCW, Milwaukee, Wisconsin (Singh, Nattinger); Froedtert Hospital, Milwaukee, Wisconsin (Singh).

Corresponding Author: Ann B. Nattinger, MD, Medical College of Wisconsin, Office of Research, 8701 W Watertown Plank Rd, Milwaukee, WI 53221; phone 414.955.8495; email anatting@mcw.edu.

cared for in Froedtert Hospital and MCW facilities.

Ann Nattinger, MD, MPH, was appointed to lead MCW's vaccination program. After consultation with other leaders, she determined that the MCW program would utilize clinical partner vaccination sites; additionally, MCW would develop an independent vaccination site on the Milwaukee campus. The program had 3 main goals: (1) engage with clinical partners to ensure rapid vaccination availability for the institution's frontline workforce;

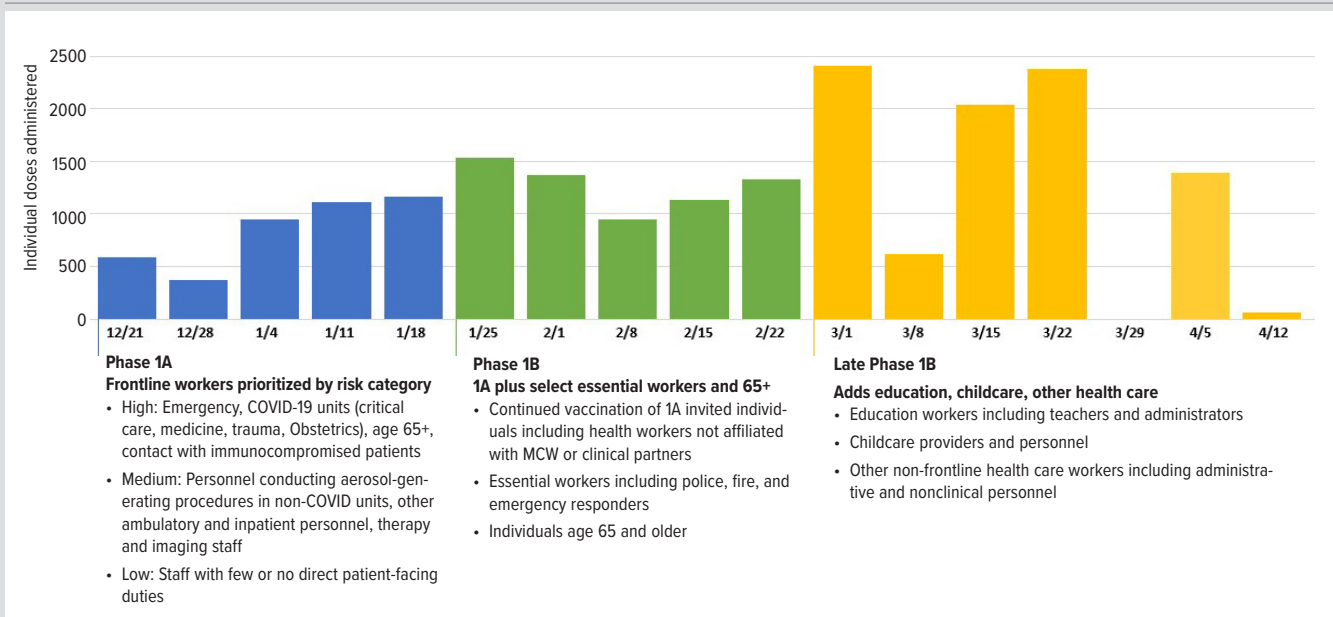
(2) support state public health agencies in offering vaccination opportunities for underserved and higher education community members; (3) train medical and pharmacy student vaccinators to support subsequent public health community vaccination efforts.

METHODS

Development of the Covid-19 Vaccination Program

MCW worked closely with health care partners that were planning vaccination sites, including Froedtert Hospital, Children's Wisconsin, and the Clement J. Zablocki VA Medical Center (VAMC), to assure accountability for initially targeted Phase 1A groups. Children's Wisconsin and VAMC offered vaccinations to MCW personnel and house staff with responsibilities at those sites; Froedtert Hospital (which provides occupational health services for MCW personnel) and MCW agreed to provide vaccinations to all eligible personnel of either organization, as well as trainees. Due to anticipated early vaccine shortages, MCW and Froedtert Hospital worked cooperatively to determine prioritization of Phase 1A personnel based on the Wisconsin Department of Human Services (DHS) criteria,¹ and also by relative level of risk regardless of position (Figure). For example, all personnel working in the emergency department (ED), including physicians,

Figure. Doses Administered Per Week With Eligibility Phase Transitions^a



^aThe clinic was in operation 3 to 4 days per week for 8 to 10 hours per day. To plan for successful sunset of the clinic, first doses were not scheduled after the week of March 1, except for a limited number scheduled the week of March 15. Only second doses were scheduled for the week of March 22 and beyond. The week of March 29 was intentionally not scheduled. The week of April 12 offered 1 makeup clinic date for second dose appointments.

Box. Organizations That Provided Referrals and/or Prescreened Community Patient Lists^a

- | | |
|---|-----------------------------------|
| Alverno College | Milwaukee Urban League |
| America's Black Holocaust Museum | Mount Mary University |
| Boys & Girls Clubs | NAACP of Milwaukee |
| Bright Horizons Day Care | Next Door Foundation/Head Start |
| City of Milwaukee | St. Augustine Prep (K-12) |
| HealthyMKE.com ^b | ThriveOn Collaboration |
| Herzing University | Versiti Blood Center of Wisconsin |
| Local faith-based organizations | Wauwatosa Health Department |
| Medical College of Wisconsin | Wauwatosa Police and Fire |
| (including essential contract workers | Wauwatosa School District |
| in food service, utilities, and cleaning) | WeGive MKE Food |
| Milwaukee Academy of Science (K-12) | Wisconsin Lutheran College |
| Milwaukee Area Technical College | YMCA |
| Milwaukee School of Engineering | |

^aMedical College of Wisconsin leadership worked with leaders of established community, business, education, and faith-based partnerships to help identify eligible, vulnerable populations for vaccination. In several cases, these leaders arranged technology support and transportation.

^bHealthyMKE.com provided referral lists for frontline health care providers who were not affiliated with an established health care system, such as local dentists, physical therapists, and other private practice health care providers who were Phase 1A eligible.

nurses, trainees, and support staff, were considered at equally high risk for exposure.

Initially, Froedtert Hospital emailed invitations to Phase 1A eligible persons at Froedtert Hospital and MCW that permitted scheduling at either location. Beyond Phase 1A, MCW developed an independent ticket system that issued vaccination invitations to

lists of eligible individuals provided by local organizations (Box). These lists included independent (“unaffiliated”) health care providers, individuals age 65 years and older, community members, and MCW personnel as they became eligible. MCW leadership also identified eligible recipients, including local opinion leaders whose vaccination might positively influence others to be vaccinated, as opportunities became available.

Clinic Planning and Organization

MCW submitted its vaccination site application to the state in November, 2020. A secure location with ultra-cold freezers and holding refrigerators was identified. Protocols for remote temperature monitoring, safety, and inventory management were developed, as well as a secure transportation process.² Documentation procedures were developed to screen for vaccine contraindications and to ensure rapid uploading of vaccinations to the Wisconsin Immunization Registry (WIR).

Based on prior School of Pharmacy flu clinics, an open model clinic space utilized plexiglass partitions with appropriately distanced vaccination stations. This permitted ideal patient flow and easy oversight by clinic leaders and preceptors. A “compounding station” was used for trained individuals to dilute the vaccine with saline and fill individually dosed syringes. These syringes were then distributed across the vaccination stations for effective inventory management. Since the vaccine was stored frozen, vials had to be used within 120 hours of thawing and within 6 hours of dilution.³ This required careful planning to ensure appropriate amounts of usable vaccine were ready for clinic. Before vaccina-

tion, patients checked in for appointment confirmation and to receive required paperwork, including the COVID-19 vaccination form, the Pfizer-BioNTech COVID-19 vaccine fact sheet for recipients and caregivers,³ and information on the Centers for Disease Control and Prevention's V-safe after vaccination health checker.⁴ Postimmunization, patients remained in a designated monitoring area for 15 to 30 minutes for observation. Here, patients were invited to provide feedback on their satisfaction with the clinic experience (likert scale 1-10; 10=best) via materials posted in the area. All areas underwent sanitization immediately following patient contact throughout the operations.

Program Staffing

Program leads were identified from the Office of Research, the School of Pharmacy, and the President's Office. These leads managed invitations, trained and scheduled volunteers, entered data into WIR, managed inventory, and oversaw daily clinical and compounding operations. Licensed volunteer vaccinators included School of Medicine and School of Pharmacy faculty, nurses, advanced practice providers, and community volunteers. Compounders included School of Pharmacy and School of Medicine researchers and faculty; all doses were rechecked by licensed pharmacists. MCW public safety, receiving, compliance, communications, human resources (HR), finance, and legal offices provided additional support.

RESULTS

A total of 19,393 doses were administered to 9,944 individuals. Of these, 3,817 MCW employees, students, and residents were vaccinated in the clinic (other personnel were vaccinated at clinical partner sites), and 6,127 unique community members were vaccinated. No episodes of anaphylaxis occurred, although 2 patients were transported to the Froedtert Hospital ED for observation after displaying immediate allergy symptoms. With careful attention to inventory management, no vaccine doses expired. With mitigation efforts, no doses were wasted at the end of clinic days due to overpreparation (Table). Of the 203 respondents to the patient satisfaction survey, the mean score was 9.8 (SD=0.77). Ratings of 9 or 10 were given by 96.6% of respondents. Nearly 300 internal and external volunteers directly supported the clinic in vaccinator or other capacities, offering over 5,000 hours of service. The clinic served as an important bridge to fill an urgent, critical need for vaccination availability. However, as community capacity for vaccinations increased, and because the volunteer-based operation was never intended as an ongoing health care facility, the vaccination clinic ceased operations in April, 2021.

The School of Pharmacy standard curriculum provides didactic and laboratory training in immunization administration to pharmacy students, and the School of Medicine rapidly developed a new COVID-19 vaccination curriculum for medical students.⁵ The clinic was the site for completion of experiential training for

Table. Methods Employed to Identify Standby Patients to Mitigate Wasted Doses^a

Method	Phase
Offer vaccinations to clinic volunteers	1A
Seek referrals for at-risk populations (immunocompromised, older age groups) from institutional leaders to maintain an ongoing standby list	1A
Seek employees who are on-campus at end of clinic day for immediately available referrals	1A, 1B
Contact local businesses and partner organizations at the end of clinic day for immediately available referrals	1B
Seek employee referrals to maintain an ongoing voucher list (offer vouchers at the start of clinic day for referred individuals to return at end of day to wait on standby)	1B

^aClinic days often resulted in extra doses exceeding the number of patients seen. It was uncommon that persons attending a given clinic presented in multiples of 6, and most vials of Pfizer vaccine yielded 6 doses once opened. For this reason, between 1 and 5 standby recipients frequently were needed.

219 students (56 pharmacy students and 163 medical students).

In January, 2021, MCW agreed to a request from DHS to host a regional vaccine hub to complement direct shipping in supplying vaccine to various community vaccination sites. Under this partnership, MCW provided workspace and ultra-cold storage. The hub was staffed by DHS personnel and a Wisconsin National Guard Team supporting health care emergency readiness coalition (HERC) Region 7. At the time of writing, more than 600,000 vaccine doses had traversed the MCW hub, which was still active.

DISCUSSION

With the collaboration of clinical partner vaccination sites at Froedtert Hospital, Children's Wisconsin, and VAMC, the overall MCW COVID-19 vaccination program was a highly effective workforce program, resulting in the vaccination of 7,488 MCW employees, students, and residents (88%) by April, 2021. Operationalized within 1 month, the clinic provided almost 20,000 vaccinations during the first 4 months of availability of vaccine when relatively few vaccinators were available. Over 200 students of medicine and pharmacy were trained in COVID-19 vaccination techniques, many of whom went on to provide vaccination services with various community agencies in Wisconsin.

Internal and external volunteers were essential to clinic operations. Volunteers adhered to personal protective equipment requirements and no cases of COVID-19 were identified as a result of participating in this clinic. Perhaps due to the strong engagement of the volunteer workforce, patients reported extremely positive experiences in the clinic, commenting on the efficient procedures and caring staff.

The MCW program highlights the challenges of applying generic and rapidly changing interim public health guidelines during an emerging public health threat to specific clinical situations for small populations of patients, health care personnel,

and community members. For example, having quantified levels of risk among health care providers would have simplified the task of equitably assigning risk categories. Risk assessment would be improved if HR records included identification of employees working in patient care areas, including any patient-facing role and extent of that role (ie, patient contact hours per day). Confirming patient eligibility based on state guidelines also presented challenges, and the clinic ultimately functioned on an honor system.

The efforts to prevent wasted doses were part of the program contributing to the efficient use of a limited resource during a public health emergency to maximize benefit to all community members. Factors such as inclement weather and no-show appointments made the daily patient counts difficult to predict. During Phase 1A, it was straightforward to find willing individuals available to take prepared doses at the end of the clinic day. Throughout the phases, this required increasingly more creative solutions (Table), which resulted in zero wasted doses due to over-preparation.

Though other similar community and volunteer-based clinics likely existed in early 2021, the literature on the subject is limited. A COVID-19 vaccination clinic at The Brooklyn Hospital Center⁶ and an influenza clinic at the University of Sydney⁷ also reported utilization of students to administer vaccines.

Regarding lessons learned, the early incorporation of students in development of procedures would be extremely useful, as well as the utilization of mitigation strategies to avoid wasted doses. Additionally, the use of predominantly internal volunteers allowed us to move more rapidly than if we recruited externally. The use of volunteers, however, is not a long-term solution as there is an increased risk of burnout.

In summary, a health sciences university developed and executed a COVID-19 vaccination program staffed by internal and external volunteers, in collaboration with local and state health departments to address a community-wide public health threat.⁸ The program served multiple constituents and was well received by all stakeholders.

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