

## Original Research

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# Readyng Community Pharmacies to Participate in COVID-19 Testing and Vaccination

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## Abstract

**Objective:** Washington State established a Memorandum of Understanding (MOU) and operational plan in 2012 to coordinate pharmacy infrastructure and workforce during a public health emergency. The objectives of this study were to adapt the MOU operational plan to the context of the coronavirus disease 2019 (COVID-19) pandemic and assess community pharmacies' organizational readiness to implement COVID-19 testing and vaccination.

**Methods:** This mixed methods study was conducted June–August 2020. Three facilitated discussions were conducted with community pharmacists and local health jurisdiction (LHJ) representatives to test the MOU operational plan. Facilitated discussions were thematically analyzed to inform adaptations to the operational plan. Pharmacists were surveyed to assess their organization's readiness for COVID-19 testing and vaccination before and after the facilitated discussions using the Organizational Readiness for Implementing Change (ORIC) measure. Survey responses were analyzed using descriptive statistics.

**Results:** Six pharmacists from 5 community pharmacy organizations and 4 representatives from 2 LHJs participated in at least 1 facilitated discussion. Facilitated discussions resulted in 3 themes and 16 adaptations to the operational plan. Five of 6 community pharmacists (83% response rate) completed both surveys. Mean organizational readiness decreased from baseline to follow-up for COVID-19 testing and vaccination.

**Conclusions:** Operational plan adaptations highlight opportunities to strengthen MOUs between local and state health departments and community pharmacies to support future emergency preparedness and readiness efforts.

Pharmacists in the United States (US) have a long history of involvement in public health emergency preparedness and response (EP&R).<sup>1</sup> Their duties in times of public health emergencies have included triaging patients; administering and monitoring patients who have received medical countermeasures, such as vaccines, antivirals, antibiotics, and antitoxins; educating the public; using medicine expertise to inform-decision making; medication procurement, storage, inventory, distribution, and logistics for both emergency and chronic medications from the Strategic National Stockpile (SNS); formulary management; streamlining paperwork and procedures.<sup>2</sup> Pharmacists have carried out these roles and responsibilities during the 9/11 terrorist attacks, 2001 anthrax crisis, hurricanes, and H1N1 pandemic, among others.<sup>3–7</sup>

In Washington (WA) state, the vital role of pharmacists in EP&R was formalized through the establishment of the WA Statewide Pharmacy-Local Health Jurisdiction (LHJ) Memorandum of Understanding (MOU) in 2012.<sup>8,9</sup> MOUs are formal, legal agreements between 2 or more parties delineating activation procedures, roles and responsibilities, and resources.<sup>10</sup> The Washington State Department of Health (DOH) and the Washington State Pharmacy Association (WSPA) developed the MOU after pharmacists demonstrated their critical role in the 2009 H1N1 vaccination campaign. The MOU and its operational plan are a statewide template that coordinate existing pharmacy infrastructure and workforce to support the health and medical needs of an affected population during a public health incident, emergency, or disaster.<sup>8,9</sup> The types of assistance requested from pharmacies may include dispensing medications, administering vaccinations, distributing supplies, providing pharmacy staff time, and communicating targeted information to the public. The MOU has only been previously activated several times at the LHJ level, including during the 2017 mumps outbreak when pharmacies were called upon to quickly disseminate vaccine.

On March 11, 2020, the World Health Organization characterized the COVID-19 outbreak as a pandemic due to worldwide spread of the disease.<sup>11</sup> In spring 2020, it was anticipated that the existing MOU in WA state could be used to expand COVID-19 testing and for mass

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vaccination efforts once vaccines became available. The importance of early and active engagement of community pharmacy organizations by public health agencies to expand the MOU has been demonstrated in previous research.<sup>9</sup> Furthermore, the existing MOU operational plan needed to be adapted to the scale of and unique circumstances created by the COVID-19 pandemic to ensure community pharmacy's readiness to contribute to the response. Readiness and adaptation are 2 implementation science concepts that highlight the importance of how contextual fit for a given intervention influences overall intervention effectiveness. Adaptation is the process of making deliberate alterations to the design or delivery of an intervention to improve its fit and effectiveness in a given context.<sup>12</sup> Organizational readiness for change is a shared psychological state in which organization members of collectively willing and able to implement change.<sup>13</sup> The objectives of this study were to (1) assess community pharmacies' organizational readiness to implement COVID-19 testing and vaccination and (2) adapt the MOU operational plan to the context of the COVID-19 pandemic.

## Methods

### Participants and Recruitment

Participants in this study were community pharmacists and LHJ representatives in WA state. Purposive sampling was used to identify key informants who could contribute information, ideas, and guidance that were relevant to the study's objectives. Pharmacy owners, managers, and staff pharmacists were eligible to participate if they were licensed pharmacists and practiced in community pharmacies in King or Spokane counties. LHJ representatives were eligible if they were employed by the local health departments in King or Spokane Counties and involved in COVID-19 testing or future vaccination efforts during the study period. King and Spokane counties are the 2 largest LHJs in the state, covering approximately 36% of the state's population, and had previous experience activating the MOU.<sup>14</sup> Purposive sampling was used to identify key informants who could contribute information, ideas, and guidance that were relevant to the study's objectives. Participants were recruited by means of e-mail in June 2020 to complete 2 surveys and participate in 3 facilitated discussions. Two recruitment e-mails were sent 1 wk apart. Participants were not compensated.

### Study Design

The study was conducted between June and August 2020. This study used mixed methods that served the function of convergence, as quantitative and qualitative data were collected concurrently and merged to assess whether stakeholder engagement on adapting the MOU improved perceptions of organizational readiness to respond to the COVID-19 pandemic. For the qualitative approach, 3 virtual, facilitated discussions were conducted with community pharmacists and LHJ representatives to assess the applicability of current policies and procedures outlined in the MOU operational plan to COVID-19 testing and vaccination at community pharmacies in WA state. The facilitated discussions took the form of "tabletop" emergency planning exercises.<sup>15,16</sup> These exercises enable organization representatives to test emergency policies and procedures like the MOU operational plan. A facilitated discussion format was selected for this study to enable organization representatives to review their roles and responsibilities in the context of the COVID-19 pandemic and identify gaps in the MOU

operational plan in a simulated environment. The functional exercises were designed to target 4 mission response core capabilities as identified by the National Preparedness Goal of the Department of Homeland Security: operational communications, screening and detection, mass care services, and logistics and supply chain management.<sup>17</sup> The first facilitated discussion was conducted on June 26, 2020, and focused on COVID-19 testing. The second facilitated discussion was conducted on July 9, 2020 and focused on COVID-19 vaccination. The final facilitated discussion was conducted on August 25, 2020. Each facilitated discussion was 90-min and led by the principal investigator (J.B.), a pharmacist and trained and experienced qualitative researcher with previous experience with facilitated discussions.<sup>9</sup>

For the quantitative approach, we surveyed community pharmacists who participated in the facilitated discussions regarding the MOU operational plan on their perceptions of organizational readiness to implement COVID-19 testing and vaccination at community pharmacies. Participants completed the survey at 2 timepoints: once before the facilitated discussions and once after the facilitated discussion were completed (pre/post-test design). This study reviewed by the University of Washington Human Subjects Division and determined to be exempt (IRB ID STUDY00010497).

### Measures

#### Facilitated discussion playbooks

Playbooks were developed to guide each facilitated discussion (see Online Data Supplements 2, 3, and 4). The playbooks outlined 2 scenarios for how the pandemic was progressing through WA state. Briefly, the scenario for the first facilitated discussion addressed the release of a state plan for phased re-opening and the need to increase testing capacity and availability at community pharmacies. The scenario for the second facilitated discussion addressed the authorization of multiple COVID-19 vaccines for use. The findings from the first 2 discussions were presented during the third facilitated discussion as a form of member checking.<sup>18</sup> Additionally, the third facilitated discussion focused on the sustainability of COVID-19 testing and vaccination at community pharmacies once the federal and state emergency declarations were lifted.

The playbooks also contained discussion questions and probes for each facilitated discussion. Discussion question development was guided by the MOU operational plan and the Practical, Robust Implementation Sustainability Model (PRISM).<sup>19</sup> PRISM considers the interactions among an intervention, its recipients, the implementation infrastructure, and external environment to influence adoption, implementation, and maintenance. In this study, the interventions were COVID-19 testing and vaccination. The recipients were community pharmacy organizations and community members in need of COVID-19 testing and vaccination. Each facilitated discussion was audio recorded and transcribed verbatim by a professional transcription agency. All transcriptions were de-identified and checked for quality by the principal investigator.

#### Organizational readiness surveys

Pharmacist participants completed an online survey (see Online Data Supplement 1) to assess their perception of their community pharmacy's readiness for COVID-19 testing and vaccination using the Organizational Readiness for Implementing Change (ORIC) measure.<sup>20</sup> The ORIC is a validated, 12-item measure of 2

determinants of organizational readiness described in Weiner's Theory of Organizational Readiness for Change: Change commitment and change efficacy. Change commitment refers to "organizational members' shared resolve to implement a change," while change efficacy is the "shared belief of their collective capability" to implement a change.<sup>13</sup> Items were adapted to assess organizational readiness for both COVID-19 testing and vaccination. Participants were asked to indicate the extent to which they agreed with each item using a 5-point response scale ranging from strongly disagree (coded "1") to strongly agree (coded "5"). Higher scores reflect higher organizational readiness for change. While organizational readiness is a multi-level construct, the ORIC measure was used to assess organizational readiness at the individual level in this study due to the small sample size and limited number of participants from each organization. The survey was administered using REDCap electronic data tools hosted at the University of Washington Institute of Translational Health Sciences.<sup>21</sup>

### Data Analysis

Facilitated discussions were analyzed using a rapid content analysis approach.<sup>22</sup> Briefly, verbatim transcripts were used to generate summaries for COVID-19 testing and vaccination using a structured template based on the MOU operational plan and PRISM. The summaries were generated by the principal investigator. A secondary review of the summaries was performed by another member of the research team (D.A.). The summaries were then consolidated to identify themes and sub-themes.

The research team reviewed all themes and sub-themes as a group and determined which findings informed potential adaptations to the MOU operational plan. A co-investigator (J.A.), whose professional responsibilities including coordinating the MOU, drafted modifications to the MOU operational plan with input from the research team. All adaptations to the MOU were documented using an abstraction form based on the Framework for Reporting Adaptations and Modifications – Enhanced (FRAME) (see Online Data Supplement 5).<sup>23</sup> Two members of the research team (J.B. and P.S.) independently documented each adaptation using FRAME. The research team met to compare documentation and resolve any disagreements through discussion.

Pharmacists' responses to the ORIC measure were analyzed using descriptive statistics. Mean pre- and post-change commitment and change efficacy scores were calculated. The difference in mean pre- and post-scores was calculated to assess change in organizational readiness.

## Results

### Facilitated Discussion Themes

Fifteen pharmacists from 6 community pharmacy organizations and 3 representatives from 2 LHJs were invited to participate in the facilitated discussions. Participants were able to invite additional individuals from their organization who could contribute information and ideas to the facilitated discussion. In total, 6 pharmacists from 5 community pharmacy organizations and 8 representatives from 2 LHJs participated in at least 1 facilitated discussion. Three pharmacists and 1 LHJ representative participated in all 3 facilitated discussions. One pharmacist and 3 LHJ representatives participated in 2 facilitated discussions.

The first facilitated discussion focused on COVID-19 testing and had 15 attendees, including 6 pharmacists, 4 LHJ

representatives, 1 student pharmacist observer, 1 DOH observer, and 1 nursing observer. The second facilitated discussion focused on COVID-19 vaccination and had 12 attendees, including 3 pharmacists, 5 LHJ representatives, 3 DOH observers, and 1 nursing observer. The third facilitated discussion had 9 attendees, including 4 pharmacists, 3 LHJ representatives, 1 DOH observer, and 1 nursing observer.

Three themes were identified highlighting necessary adaptations to the MOU operational plan. These themes included (1) need to coordinate response efforts, (2) information needs for public health partnership, and (3) technical assistance LHJs can provide to pharmacies. Each theme is described briefly below. All themes and sub-themes are outlined in Table 1 with representative quotes.

### Theme 1: Coordinated Public Health Response

Participants described the need to coordinate response efforts with both COVID-19 testing and vaccination. A sub-theme was the need to coordinate local, state, and federal response efforts. Related to COVID-19 testing, pharmacists described the need to coordinate between the federal testing program for community pharmacies through the Department of Health and Human Services with state and private testing programs. In the context of COVID-19 vaccination, pharmacists emphasized the importance of coordinating priority populations at a state level. A second sub-theme was the need for ongoing communication during a response. The MOU Operation Plan only specifies 1 coordination call. All participants expressed the importance for ongoing communication, including multiple coordination calls, for the duration of a response effort. The final sub-theme was the need to coordinate response assignments to pharmacies. Participants identified that not all pharmacies may need to provide COVID-19 testing. Rather, select pharmacies could be activated in communities with high COVID-19 transmission. Furthermore, pharmacists described how all pharmacies may not have the capacity to provide mass COVID-19 testing and vaccination, so assigning pharmacies to specific response functions could be considered.

### Theme 2: Information Needs for Public Health Partnership

Pharmacists outlined the information they would require from LHJs upon MOU activation, specifically any response participation requirements and resource availability and access. Pharmacists stated they would need to know what would be required of them to participate in a response effort early so they could assess their capacity. For COVID-19 testing, they needed to know the reporting requirements to assess their current technology. For COVID-19 vaccinations, they needed to know whether they would have to join the adult vaccines program in addition to the reporting requirements. The pharmacists also wanted LHJs to be able to provide information about how they could source any necessary supplies, such as COVID-19 tests and personal protective equipment, which were both in short supply.

LHJ representatives also outlined the information they would require from pharmacies upon MOU activation. While LHJ representatives were well versed in pharmacists' scope of practice related to vaccinations, they were unsure whether pharmacists could order COVID-19 tests. They identified that they would need to confirm that response activities were within pharmacist scope of practice or potentially seek emergency expansion of pharmacist scope of practice. LHJ representatives also described

**Table 1.** Facilitated discussion theme and sub-themes related to MOU operational plan adaptations

Theme	Sub-theme	Representative quote regarding COVID-19 testing	Representative quote regarding COVID-19 vaccination
Need to coordinate response efforts	Coordinate local, state, and federal response efforts	“... we have to have a coordinated effort... We can't have one county health department requiring this amount of information, while another one requires this amount of information.” (Pharmacist)	“Just a flashback to H1N1, we had priority groups... that evolved almost on a weekly basis... And it was different in each county. I'm hoping... we're going to try to get consistency between that.” (Pharmacist)
	Ongoing communication required during response	“[We need to make] sure that we are keeping an eye on how operations are going. What are the communication chains? How often are we checking in?” (Local health jurisdiction (LHJ) representative)	Not applicable
	Coordinate response assignments to pharmacies	“... but I could see a scenario where it's perhaps not every single pharmacy... is providing testing, but in some of those areas where again, we have a higher prevalence of COVID-19...” (LHJ representative)	“... when the immunizations come or, when even flu shots come this year, that's really going to stretch capacity, labor capacity, as far as continuing any COVID testing... I think that it's important to really address the expectations versus the realities.” (Pharmacist)
Information needs for public health partnership	Response participation requirements	“I would want to also know what kind of documentation and reporting was expected once we perform these tests.” (Pharmacist)	“... we would need to know, well in advance, whether or not a) we have to be part of the adult vaccination program. And again, there's a lot of restrictions with that program that are cost prohibitive for us. So it definitely could or would be a deal breaker as well.” (Pharmacist)
Information needs for public health partnership	Resource availability and access	“... we're going to need, a ton of guidance... What tests are approved and where can we source them? Where are they coming from?” (Pharmacist)	Not applicable
	Pharmacist scope of practice	“All of the questions that you're bringing up are really great because I don't know, for example, who would be the ordering person? Is that, is that something a pharmacist can do?... I think there's certainly at this point probably more questions, and I'm not really sure who to take those too.” (LHJ representative)	Not applicable
	Pharmacy capacity	“The information that we would require from the pharmacies upon the MOU activation is 'What is your capacity?' Are you even able to do this with the staff that you have right now?” (LHJ Representative)	“We are going to need to do assessments in terms of what your throughput capabilities are so that we can allocate or portion the correct number of vaccines supply to different pharmacies.” (LHJ representative)
	Community demographics	Not applicable	“What's communities or populations does your pharmacy typically serve?... We are going to have to make sure that vaccine is distributed equitably in our communities.” (LHJ representative)
Technical assistance LHJs can provide to pharmacies	Technology	“I think we'd have to make sure that there's some sort of registration system that's set up... One, so the pharmacy doesn't get overwhelmed, but two, so we have a preview. in terms of what testing is looking like in our county.” (LHJ representative)	“... we'll need to think through... what a registration system might possibly look like, how we direct folks to pharmacies, how we maybe prevent some of the challenges that were just brought up with respect to people lining up...” (LHJ representative)
Technical assistance LHJs can provide to pharmacies	Vendor relationships	“As the [federal testing program] dries up... we will sunset our testing right now next week. And we're hoping to continue testing... but we will need to have a new contracted vendor possibly, and a new plan going forward.” (Pharmacist)	Not applicable
	Staffing	“... we do have a cadre of public health reserve corps volunteers that could potentially assist... That is something that we could use to augment normal pharmacy staff.” (LHJ representative)	Not applicable
	Reporting	“... it does sound like this reporting element could be sort of a large hurdle... I think it's worth looking at if there aren't established mechanisms already for reporting again, I think that's going to factor into decisions in terms of expanding pharmacies to do testing.” (LHJ Representative)	“... it's not inexpensive for us to put in the integration [with the immunization information system] as well.” (Pharmacist)
	Quality control processes	“As far as quality control, there's always a site head or in charge or lead that maintains the quality control and pulls associates that are exercising quality in their testing process and procedures.” (Pharmacist)	Not applicable

their need-to-know pharmacy capacity. In the context of the COVID-19 pandemic, they would need to know how many tests and vaccinations pharmacies could administer per week. Last, LHJ representatives described how they would look to the pharmacists to provide information on the communities they serve to ensure response efforts were allocated equitably.

### **Theme 3: Technical Assistance for Pharmacies**

Last, pharmacists described the resources they would need from LHJs and LHJs described the resources and support they would be able to provide to pharmacies that were not already outlined in the MOU operational plan. Technical assistance included technology, such as patient registration and appointment systems and reminder-recall systems, and additional staffing support for response efforts by means of the Medical Reserve Corps. It also included facilitation of vendor relationships. In the context of the COVID-19 pandemic, pharmacists articulated their desire for LHJs to help connect them to vendors who could source COVID-19 tests and personal protective equipment. Last, pharmacists described how they would look to the LHJs to outline any quality control processes that they would require above and beyond standard practice.

### **MOU Adaptations**

In total, 16 adaptations were made to the MOU based on the themes from the facilitated discussions, including 5 revisions and 11 additions. [Table 2](#) summarizes the MOU operational plan adaptations. One adaptation was made to the Purpose section of the MOU operational plan and 1 adaptation was made to the Authorized Representatives section. Fourteen adaptations were made to the Activation Process section, including 2 adaptations to the Resource Request Form sub-section, 8 adaptations to the Communications sub-section, and 4 adaptations to the Provision of Technical Assistance from Party LHJs sub-section.

### **Organizational Readiness**

Five community pharmacists (83% response rate) from 4 community pharmacy organizations completed the baseline and follow-up surveys. Mean age was 48 y, and 80% identified as female. Participating pharmacists had been in practice for an average of 23 y, and 60% had been previously involved in responding to a public health emergency within a community pharmacy during the H1N1 pandemic in 2009-2010. Additional pharmacist demographics are provided in [Table 3](#).

For organizational readiness for providing COVID-19 testing, participants' mean baseline score on change commitment items was 4.2 (standard deviation (SD) 0), and the mean follow-up score was 3.2 (SD 1.13). The mean baseline score on change efficacy items was 4.4 (SD 0.70), and the mean follow-up score was 3.2 (SD 0.97). For organizational readiness to provide COVID-19 vaccination, participants' mean baseline score on change commitment items was 5 (SD 0), and the mean follow-up score was 4.4 (SD 0.82). The mean baseline score on change efficacy items was 4.9 (SD 0.33), and the mean follow-up score was 4.3 (SD 0.79).

### **Limitations**

This study is limited by the small sample of community pharmacists. However, it is worth noting that pharmacist participants represented 3 major types of community practice settings, aiding with the generalizability of the study's findings.

Each pharmacist was able to contribute thoughtful and unique insights based on their leadership roles within their respective organizations. Furthermore, 3 pharmacists had been previously involved in their organization's response to a public health emergency, specifically the H1N1 pandemic. Organizational readiness for change is a multi-level construct representing a shared psychological state among organization members.<sup>13</sup> The small sample did not allow for within-group analysis, which could have provided a more complete understanding of the variation in community pharmacies' readiness to implement COVID-19 testing and vaccination across pharmacy types. Additionally, the timing of survey administration may have influenced the results. The community pharmacists were instructed to complete the post survey right after the third facilitated discussion. Their perceived readiness may have been different with more time to fully digest the needed adaptations to task demands and resource availability for COVID-19 testing and vaccination. Finally, de-implementation is an important consideration for any implementation effort. Demobilization procedures were considered outside of the scope of this work due to time limitations. Future research should explore MOU demobilization and transitioning provision of emergency services, such as COVID-19 testing and vaccination, to sustained service offerings at community pharmacies.

### **Discussion**

This study sought to adapt a statewide MOU operational plan in WA state and assess community pharmacists' readiness to provide COVID-19 testing and vaccinations. Community pharmacists who attended the facilitated discussions reported a decrease in organizational readiness, including change efficacy and change commitment. Interestingly, pharmacists' baseline responses indicated a higher shared sense of readiness for COVID-19 vaccination than COVID-19 testing. This finding was likely due to pharmacists' significant past experiences with implementation efforts related to vaccinations. Pharmacists in WA state were among the first in the US to begin administering vaccinations in the 1990s and have served as critical access points for several new vaccines, including the H1N1 pandemic vaccine and the recombinant herpes zoster vaccine.<sup>24</sup> Community pharmacists had less experience with point-of-care testing for infectious diseases.<sup>25,26</sup>

The decrease in change efficacy for both COVID-19 testing and vaccination was likely because the facilitated discussions provided a forum for the pharmacists to reflect on how the implementation efforts would differ from their past experiences and alter task demands and resource availability in the pharmacy. Task demands and resource availability are both key determinants of implementation capability.<sup>13</sup> The significance of task demands and resource availability are confirmed in 2 facilitated discussion themes: information pharmacies require from LHJs and technical assistance LHJs can provide to pharmacies. For example, pharmacists discussed the need for a registration system for both COVID-19 testing and vaccination. Previously, community pharmacies offered patient care services, such as vaccine administration, on a walk-in basis and did not offer or have the capability to offer appointments for services.<sup>27</sup> During the facilitated discussions, the pharmacists realized the need to implement an appointment-based model for COVID-19 testing and vaccination to prevent virus transmission. An appointment-based model would require new technology and financial resources

**Table 2.** Summary of MOU operational plan adaptations

Adaptation no.	MOU OP section	Revision or addition	Description	PRISM linkage	Themes linkage
1	Purpose	Addition	Outlines federal response efforts is outside the scope of the MOU and its operational plan	External environment – competition, community resources	Need to coordinate response efforts
2	Authorized Representatives	Addition	Specifies that pharmacies' can choose to participate in and/or change involvement during MOU activation based on nature of emergency capacity considerations	Program (organizational perspective) – readiness; Implementation infrastructure – performance data	Information needs for public health partnership
3	Activation Process – Resource Request Form: Request and Response Procedures	Addition	Assigns WSPA the responsibility of assessing the feasibility of the LHJ request and whether it falls within pharmacist scope of practice	External environment – regulatory environment	
4		Addition	Assigns WSPA the responsibility of prioritizing and distributing requests among responding pharmacies	Program (organizational perspective) – coordination across departments and specialties	Need to coordinate response efforts
5	Activation Process – Communications	Revision	Revises language about a single coordination call to coordination calls to indicate that ongoing communication is expected between all parties during MOU activation		
6		Revision	Specifies information that is be discussed during the initial coordination call		
7	Activation Process – Communications	Addition	Specifies that LHJ and DOH will communicate pharmacy requirements for participating in a given response during the initial coordination call	Program (organizational perspective) – readiness	Information needs for public health partnership
8		Addition	Specifies that LHJ and DOH will communicate priority populations for response during the initial coordination call	Program (organizational perspective) – coordination across departments and specialties	
9		Addition	Broadly outlines the information pharmacies need to be prepared to provide during the initial coordination call		
10		Addition	Specifies surrogate markers of pharmacy capacity that pharmacies need to be prepared to provide during the initial coordination call		
11		Addition	States that LHJs and DOH will be prepared to communicate the physical and financial resources they will be able to provide during the initial coordination call	Program (organizational perspective) – coordination across departments and specialties, addresses barriers of frontline staff	
12		Revision	Clarifies that pharmacies will be expected to provide demographics of the communities they serve during the initial coordination call.	Program (organizational perspective) – coordination across departments and specialties	
13	Activation Process – Provision of Technical Assistance from Party LHJs	Revision	Revises examples of technical assistance LHJs can provide to include quality control processes	Implementation infrastructure – adaptable protocols and procedures	Technical assistance LHJs can provide to pharmacies
14		Addition	Adds the Medical Reserve Corp as a form of technical assistance that LHJs can provide to pharmacies	External environment – community resources	
15		Revision	Revises examples of technical assistance LHJs can provide to include acquisition of materials necessary for response	Implementation infrastructure – adopter training and support; External environment – community resources	
16		Addition	Describes that LHJs and DOH may coordinate online or software systems that support pharmacy response efforts	Program (organizational perspective) – addresses barriers of frontline staff; Implementation infrastructure – adopter training and support	

**Table 3.** Community pharmacist survey participant demographics

Parameter	Community pharmacists (n = 5)
Age in years, mean (range)	47.6 (33-60)
Female, no. (%)	3 (80)
Race, no. (%)	
Caucasian	5 (100)
Asian	1 (20)
Native Hawaiian or Pacific Islander	1 (20)
Community pharmacy organization type, no. (%)	
Independent	2 (40)
Traditional Chain	2 (40)
Supermarket Chain	1 (20)
Years in practice, mean (range)	23.2 (8-38)
Years with current organization, mean (range)	21.6 (5-38)
Year in current position, mean (range)	11.4 (1-27)

and change the type and sequence of tasks required of community pharmacy staff.

A decrease in self-efficacy or confidence likely contributed to the decrease in change commitment for both COVID-19 testing and vaccination. Change commitment is heavily influenced by confidence and change valence, or the extent to which organizational members value a specific change.<sup>13</sup> Pharmacists expressed strong beliefs of community pharmacy's ability to support public health activities during the pandemic; however, the opportunity to reflect on implementation changes may have negatively influenced confidence. These data are limited by application of the ORIC measure at the individual level in this study. As organizational readiness is a multi-level construct, the inclusion of multiple individuals from any 1 organization may have produced different results and deeper understanding of changes in change commitment.

Ultimately, COVID-19 testing and vaccination were not implemented in community pharmacies by means of the MOU in WA state. A federal strategy was used due to the scale of the public health emergency. The strategy included temporary expansion of pharmacists', student pharmacists', and pharmacy technicians' scope of practice nationally to enable COVID-19 testing and vaccination for adults and children.<sup>28</sup> It also included the Federal Retail Pharmacy Program, a partnership between the federal government and over 20 national pharmacy chains and independent pharmacy networks to distribute COVID-19 vaccines nationwide.<sup>29,30</sup>

Despite the federal strategy, the facilitated discussions conducted as part of this study did improve the state-level COVID-19 response and the MOU operational plan for future public health emergencies. The facilitated discussions revealed a gap in COVID-19 testing programs in the state. This finding led to further collaboration between community pharmacies and the WA DOH to implement a COVID-19 testing at independent pharmacies in the most vulnerable communities in the state. Furthermore, 16 adaptations were made to the MOU's operational plan. These adaptations represent new, important lessons learned for strengthening MOUs between local and state health departments and community pharmacies to support future EP&R efforts.

First, community pharmacists and public health professionals should establish an expectation of ongoing communication between all parties during MOU activation. The need for early and active engagement of community pharmacy organizations by public health agencies has been previously established.<sup>9</sup> In this study, participants highlighted the need for ongoing communication, particularly when information and needs are developing or changing quickly. Multiple adaptations were made for the MOU to revise language about a single coordination call and establish the expectation of ongoing communication.

MOUs are intended to strength partnerships between community pharmacies and public health agencies by clarifying expectations of both parties during an emergency response.<sup>10</sup> While the MOU was not ultimately activated for COVID-19 testing and vaccination, there was value in refreshing expectations by means of the facilitated discussions. Importantly, the discussions provided an opportunity to identify how implementation efforts for COVID-19 testing and vaccination efforts would need to differ from past experiences. Both parties were able to begin planning for and adapting based on these differences, which may have improved how efficiently the federal strategy was implemented in the state. Furthermore, the discussions provided the opportunity to identify and close gaps in the MOU operational plan. The adapted MOU operational plan could improve response at the state level to future COVID-19 outbreaks and other public health emergencies as the federal COVID-19 emergency declarations end.<sup>31</sup>

Finally, community pharmacists and public health professionals should consider and practice how activation procedures, roles and responsibilities, and resources may differ based on the scale of a public health incident when establishing or updating an MOU. This study identified the need to coordinate between local, state, and federal response efforts during a large-scale public health incident, emergency, or disaster. As a result, an addition was made to the MOU specifying federal response efforts are outside the scope of the statewide MOU. This study also identified that response assignments may need to be coordinated to pharmacies during a large-scale public health emergency based on pharmacy capacity and community need. An addition was made to the MOU assigning the state pharmacy association with the responsibility of prioritizing and distributing requires among responding pharmacists.

## Conclusions

This study sought to increase community pharmacists' readiness to provide COVID-19 testing and vaccinations and adapt a statewide MOU operational plan in WA state. Community pharmacists perceived organizational readiness to implement COVID-19 testing and vaccination decreased after participation in 3 facilitated discussions to coordinate MOU activation procedures, roles and responsibilities, and resources. This decrease was likely due to the significant differences between the required response for the COVID-19 pandemic in comparison to their past experiences and its impact on key determinants of implementation capability in the pharmacy, task demands, and resource availability. Opportunities were identified to enhance the existing MOU that could benefit state and local health departments that have already engaged or are planning to engage community pharmacists in future EP&R efforts. These opportunities include establishing an expectation for ongoing communication for the duration of a public health

emergency and considerations for how MOU procedures may differ based on the type and scope response needed.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/dmp.2023.84>

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