RESEARCH

Supporting the nation in crisis: the military health system's role in enhancing public health capacity through public–private partnerships

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Abstract

Background The coronavirus disease 2019 (COVID-19) pandemic caused significant global disruptions to the healthcare system, which was forced to make rapid changes in healthcare delivery. The pandemic necessitated closer collaboration between the US civilian healthcare sector and the military health system (MHS), resulting in new and strengthened partnerships that can ultimately benefit public health and healthcare for the nation. In this study, we sought to understand the full range of partnerships in which the MHS engaged with the civilian sector during the COVID-19 pandemic and to elicit lessons for the future.

Methods We conducted key informant interviews with MHS policymakers and advisers, program managers and providers who were affiliated with the MHS from March 2020 through December 2022. Key themes were derived using thematic analysis and open coding methods.

Results We conducted 28 interviews between December 2022 and March 2023. During the pandemic, the MHS collaborated with federal and local healthcare authorities and private sector entities through endeavours such as Operation Warp Speed. Lessons and recommendations for future pandemics were also identified, including investment in biosurveillance systems and integration of behavioural and social sciences.

Conclusions The MHS rapidly established and fostered key partnerships with the public and private sectors during the COVID-19 pandemic. The pandemic experience showed that while the MHS is a useful resource for the nation, it also benefits from partnering with a variety of organizations, agencies and private companies. Continuing to develop these partnerships will be crucial for coordinated, effective responses to future pandemics.

Keywords COVID-19 pandemic, Military health system, Public–private partnerships, Qualitative research

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Background

The coronavirus disease 2019 (COVID-19) pandemic caused significant global disruptions to healthcare systems. While the US civilian healthcare sector boasts a multitude of strengths, it is frequently overburdened even during normal operations [1]. The US Military Health System (MHS) is one of the largest healthcare networks in the country, providing care for 9.5 million beneficiaries [2]. The exigencies of the pandemic exacerbated issues within the civilian healthcare sector and necessitated collaboration with the MHS.

The US military has played an active role in public health for more than a century, with an extensive track record of collaborating with the civilian sector on medical innovations such as vaccines and surgical techniques, as well as in disaster response, including after natural disasters such as hurricanes and flooding [3, 4]. Military collaborations with academic institutions have also resulted in innovative programs in disaster management and medical readiness, which benefit both the civilian and military sectors [3]. The COVID-19 pandemic was the most recent example of how the military, particularly the MHS, partners with the civilian sector for the benefit of public health.

Employing a review of the peer-reviewed and grey literature, Koehlmoos et al. [5] examined the interrelationship between civilian healthcare and the MHS during the COVID-19 pandemic and found that the MHS' centralized structure and ability to deploy assets rapidly was a crucial contributor to providing a coordinated pandemic response. During the pandemic, the strongest collaborative efforts were in medicine and technology, human resources and healthcare delivery, particularly through supplying providers, setting up treatment venues and participating in vaccine and therapeutics development [5].

These collaborations between the MHS (a government-run public entity) and civilian healthcare systems (for-profit or not-for-profit private entities) exemplify public–private partnerships [6]. Existing literature has described the inter-relationship between civilian healthcare systems and the MHS in the context of care delivery and surge capacity during the early stages of the pandemic [5, 7, 8]. However, relationships with civilian healthcare systems were not the only types of partnerships established by the MHS during the COVID-19 pandemic. In this study, we sought to use qualitative methods to understand the range of partnerships that may benefit the functioning of healthcare systems, as modelled by the MHS.

Methods

As previously described in [9], we conducted a series of semi-structured key informant interviews, recruiting key military and civilian stakeholders (e.g. policymakers, policy advisers, academic leaders and healthcare providers) who were professionally affiliated with the MHS and involved in developing and implementing policies within the MHS from March 2020 to December 2022 [9]. We recruited participants using purposive sampling, followed by snowball sampling where indicated. We continued data collection past thematic saturation, the point at which we did not anticipate new insights or information from further interviews [10].

The interview guide contained 24 questions addressing known gaps in understanding the MHS pandemic response (see Additional File 1). The guide was developed on the basis of knowledge gaps found in the review of previous after-action reports to understand the impact of the COVID-19 pandemic on the MHS [8]. For this study, we focussed on interview responses that discussed pandemic-era relationships between the MHS and the private sector, including those interview responses that highlighted future directions for such partnerships.

Three authors (T.K., V.M., A.P.) served as primary interviewers. Two authors (V.M., A.P.) coded interviews independently and then met to discuss and find consensus on coding patterns. We used thematic analysis to analyse the interview memos using NVivo 14 and open coding methods. Each author selected representative quotes independently and then discussed selections together, resolving discrepancies via consensus.

This study was reviewed and determined to be exempt by the Institutional Review Board at the Uniformed Services University of the Health Sciences.

Results

We conducted 28 key informant interviews from December 2022 to March 2023. Once desired targets were achieved on the basis of our sampling approach, we reached saturation at 25 interviews. Interview participants were civilian and military, including academic leaders, clinicians, policy advisors, policymakers and senior medical leaders (Table 1). Interviews were conducted past the point of thematic saturation to ensure a wide range of perspectives were collected. We present our results in two parts, which reflect the pattern of participant responses about partnerships: first, observations on the experiences with partnerships during the COVID-19 pandemic; and second, recommendations and lessons learned for future pandemic preparedness.

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Table 1 Interview participant characteristics

Occupation	Civilian/military	Occupation	Civilian/military
Academic leader 1	Civilian	Policy advisor 8	Civilian
Academic leader 2	Civilian	Policymaker 1	Civilian
Clinician 1	Military	Policymaker 2	Civilian
Clinician 2	Military	Policymaker 3	Civilian
Clinician 3	Military	Policymaker 4	Civilian
Clinician 4	Civilian	Policymaker 5	Civilian
Clinician 5	Military	Policymaker 6	Civilian
Policy advisor 1	Civilian	Policymaker 7	Civilian
Policy advisor 2	Civilian	Policymaker 8	Civilian
Policy advisor 3	Civilian	Senior leader 1	Military
Policy advisor 4	Civilian	Senior leader 2	Military
Policy advisor 5	Civilian	Senior leader 3	Military
Policy Advisor 6	Civilian	Senior leader 4	Military
Policy advisor 7	Civilian	Senior leader 5	Military

Part 1: what was done during the COVID-19 pandemic
Recognizing the importance of partnerships

Fostering and strengthening partnerships with other entities, both private and public, was discussed across multiple interviews. A few participants thought that, in general, the Department of Defense (DOD) tends to silo itself by relying on its own workforce and resources. The pandemic initiated discussion within the DOD for developing strong ties with civilian partners. Participants discussed civilian academic partnerships in particular as a great resource for research collaborations and data-sharing opportunities:

> We need more collaborations, opportunities for efficiencies...We go out to academics and say, "We have all this data, you have the skills, could we make a partnership?" We should actively court academic partnerships with civilian academics. (Senior leader 1)

Another interviewee mentioned the possibility of the MHS partnering with Google, Microsoft and other companies that have entered the healthcare space and have already developed technology for integrating virtual health platforms into healthcare (Policymaker 7).

In addition, one participant stressed the importance of creating and maintaining partnerships at the local level, stating that "*every MTF [Military Treatment Facility] has to have robust relationships with locals for when this happens again*" (Senior leader 1).

Vaccine development

The MHS was heavily involved in developing and manufacturing COVID-19 vaccines alongside private pharmaceutical companies via Operation Warp Speed (OWS).

> "One lesson across the US government is how to better integrate research activities. Warp Speed and vaccine activities, all had MHS fingerprints all over them" (Policy adviser 2).

One participant mentioned that the military was one of the best-suited entities to transition research capacity to vaccine development for such a novel disease given its vast experience in researching infectious diseases and vaccines:

> "...We have been funding mRNA vaccines since the late 1990s. Our MHS research portfolio is very good, relatively stringent, and focuses on infectious disease and things that impact the military" (Senior leader 3).

Part 2: what should be done for the future
Partnerships for future pandemic preparedness

Interview participants were candid about where they believed there were shortcomings in the MHS' pandemic response and where efforts for similar future events should be focused. The pandemic showed the importance of completing and having a strategic plan for the whole MHS that encompasses pandemics. Among the components of these plans, several interviewees emphasized the incorporation of training exercises, war games and scenario building:

> "Instead of waiting for the next [emergency], continue with exercises to respond to the next pandemic. What is the role of the military, MHS, PHS? What are your mission sets so you can find funds or change to support other missions? Include CDC, NIH, hospital systems, MHS, VA, pharmacies, you name it. To try to get to a more functional health system...this was the kick in the pants that will get us to a better health system in the future" (Senior leader 3).

One participant stated that what will really dictate any future responses will be how much funding is involved, given the amount of money that was required to shore up a national response to COVID-19:

> "The primary costs were equipping the nation. The increased costs due to some care needing to go out [to the civilian sector] because of our restrictions, and the cost of helping the rest of the nation with deployments" (Policymaker 5).

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The interviews highlighted participants' understanding that this pandemic was not an isolated event and that we will experience more pandemics or outbreaks in the future, so preparedness for pandemic events should be a serious consideration:

> *"People have started to realize it's just as devastating to the capability of the military as combat. We have a disease that can have huge impacts to the military capability and/or their families and we can't even see it" (Policymaker 8).*

One participant specifically emphasized the importance of maintaining partnerships and inter-agency cooperation outside of major national and global events:

> *"In the absence of a crisis, those types of cooperation tend to dissipate. We need to codify this response for times of non-emergency. Avoid relearning the same lessons again in a different environment" (Policy adviser 2)*

Partnerships for biosurveillance

Several participants considered biosurveillance an important investment into the continued operations of the MHS, not just a tool to be used in times of crisis. In particular, the key emphasis was a surveillance system that works with data and resources both inside and outside the MHS and DOD. With the severity of the COVID-19 pandemic, leaders and policymakers saw the benefits of an integrated biosurveillance system with both military and civilian hospitals, health systems and public health departments that also extends to transnational partnerships to create a global disease monitoring and detection network:

> *"We need to spend now on biopreparedness, biosurveillance – biosurveillance resources have grown. This is not the first virus like this and it won't be the last. We came together and were taking input on biosurveillance from international partners – we need to get a global health surveillance network" (Senior leader 5).*

Partnerships in behavioural and social sciences

Some participants also noted the missed opportunity to utilize behavioural and social sciences and scientists in the response, emphasizing that diseases such as COVID-19 are spread by human and social behaviours:

> *"We missed an opportunity to involve [academics] and behavioural scientists in the response. The whole pandemic changed our way of life over the last two years. It changed people's lifestyles" (Policymaker 1).*

This participant additionally emphasized the importance of incorporating social and behavioural sciences into the military, even outside the confines of a pandemic, noting that *"...[deploying] involves another culture that you have to interact with. I don't know that we do enough cultural awareness and cultural training in the military"* (Policymaker 1).

Discussion

During the pandemic, the MHS increasingly fostered outside collaborations from the federal to the local levels. Interagency partnerships with other federal entities, such as the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH), were reinforced to engage in COVID-19-related research, public health policy and health communication.

Partnerships at the state and city levels also serve as important opportunities for service improvement between military installations and local agencies. Military bases and MTFs, although stand-alone institutions, are still intrinsically tied to the local civilian communities in which they are located [11]. When it comes to issues of public health in particular, both military and civilian populations are impacted indiscriminately. Local military–civilian collaborations have been in place long before the pandemic, allowing for coordination on public works projects and emergency preparedness training [7, 11]. At the onset of the pandemic, these local-level partnerships were leveraged to supply civilian hospitals with military support in the form of additional clinicians and medical supplies. Several military bases also had existing Memorandums of Understanding, allowing them to support local health departments with COVID-19 testing, vaccine administration and training resources [12, 13]. Continuing such collaborations beyond the COVID-19 pandemic would facilitate a wider knowledge base and training opportunities for both civilian and military public health officials in the long term.

Working towards a common goal during the COVID-19 pandemic helped establish collaborations between the DOD and private companies in the health sector. In response to the pandemic, OWS linked several federal agencies and departments (including the DOD) with private pharmaceutical companies to research, develop and administer COVID-19 vaccines [14]. The success of OWS laid the groundwork for continued engagement with private health sector companies beyond the pandemic. Future opportunities for public–private partnerships may include Big Tech companies, which were motivated by the COVID-19 pandemic to increase investments in the health sector. The possibilities for the future of digital health and healthcare delivery are vast with such

well-resourced companies, although these companies could benefit from collaboration with government agencies to navigate the complex regulations around privacy, licensing and data use to ensure digital healthcare innovations are safe and trustworthy [15]. With a relatively young beneficiary population that is spread across the globe, the MHS population may be willing to use digital healthcare technologies, making this a good target population for development and testing [16, 17]. Continuing to foster cooperation and combining the expertise and resources of the military and the private sector beyond the pandemic could strengthen the MHS mission of maintaining a medically ready force and a ready medical force and may allow for greater healthcare innovations that might ultimately be used in the broader public.

Outside of private companies, partnering with academic institutions allows the MHS to expand its existing research base as well as to expand into new areas of research, such as behavioural and social science. Human behaviour aids the transmission of diseases such as COVID-19, and while policymakers released guidance such as social distancing and basic hygiene practices at the start of the pandemic, some participants felt that policymakers should have worked harder to understand the behavioural issues involved and incorporated behavioural factors into the pandemic response. Prior research indicates the importance of understanding human behaviour when implementing these kinds of non-pharmaceutical interventions during a pandemic, including how people will react over time and when there is a lot of uncertainty [18, 19]. Although it was not a finding about partnerships, several participants discussed this human aspect of public uncertainty around the COVID-19 disease and its treatments and noted that this was likely a factor in the development of mistrust in science and government and the subsequent spread of misinformation and disinformation. The US Army Research Office (ARO) funded the Collaboration for Social Media and Online Behavioral Studies (COSMOS) research centre at the University of Arkansas Little Rock for $5 million to study methods of combating misinformation, brought about by the many misinformation campaigns that arose during the pandemic [20, 21]. Forming additional academic collaborations such as this will provide many long-term benefits to the MHS and DOD.

On the basis of their experiences during the COVID-19 pandemic, MHS leaders and policymakers emphasized the importance of an integrated biosurveillance system that includes civilian and military sources domestically and extends to transnational partnerships to create a global disease monitoring and detection network. The DOD currently organizes biosurveillance from its own domestic and international laboratories and medical sites and partners with federal agencies such as the Department of Homeland Security, the National Center for Medical Intelligence and the CDC, as well as with global partners such as the WHO [22]. However, in their 2023 Biodefense Posture Review, the review panel acknowledged that the existing DOD biosurveillance system relies on siloed systems lacking interoperability, which slows down evidence-based decision-making, and recommends the department focus on data integration and data sharing to reduce duplication of efforts and develop a centralized data repository and data dashboard for actionability [23]. External reports have similarly recommended strengthening intentional collaborations and coordination between agencies to facilitate coordinated biosurveillance efforts [24, 25].

As we look beyond the COVID-19 pandemic, the maintenance of these public health partnerships becomes even more vital. Many of our participants emphasized future pandemic preparedness, especially the role of scenario-building exercises. Scenario-building exercises are well-established techniques in government agencies and are extremely useful for practising realistic responses using resources and capacities that currently exist within the system [26]. Since large-scale emergencies such as pandemics involve many components and have wide-reaching impacts, preparedness plans and countermeasures necessitate partnerships and cooperation with various entities, including federal and local governments and agencies, health departments, research institutions and even private sector companies. In addition to identifying gaps in current emergency plans and providing opportunities to practice certain skill sets, table-top exercises and scenario-planning foster and further strengthen external partnerships [27]. By bringing together various departments and organizations in scenario-building exercises, a network is created of top officials and leading experts in public health and emergency preparedness whose resources can be more easily deployed in the event of future pandemics.

Financial collaboration is an important aspect of partnerships for the MHS. As our participant noted, the costs of responding to a pandemic are substantial. The MHS took on many costs, financial and otherwise, during the COVID-19 pandemic to support civilian health systems and the nation as a whole [5]. Partnerships can be a tool to manage costs by ensuring that each contributing entity has a vested interest in public health and that the financial risks are spread out [28]. By sharing cost burdens and spreading out financial risk, more financial resources remain for use in other projects, such as training, developing the public health infrastructure and preparing for

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future pandemics. The MHS can reduce the risk of over-burdening its healthcare system in a future pandemic by ensuring resources are available ahead of time through pre-planned partnerships, avoiding the large burden that fell on the MHS as it provided extra support to the whole nation during the COVID-19 pandemic [5].

This study expands beyond the existing literature focussing on public–private partnerships between healthcare systems without considering other partnerships that may affect healthcare systems. By collecting direct responses from top-level MHS officials, we were able to gain fundamental insights into the ideas and concerns of those involved in developing and implementing pandemic-era policies. This study is also the first to use in-depth key informant interviews to assess these issues in the MHS with intention and granularity. The proximity of interviews to the pandemic also minimizes the prospect of recall bias among participants, and because interviews were conducted before the end of the pandemic, impressions of the pandemic response were obtained in real time.

This study had several limitations. Limiting our interviewee pool to those involved in policymaking may not have captured all views around pandemic partnerships in the MHS. Additionally, in our interviews, there were relatively few discussions of partnerships and collaborations between the MHS and US civilian healthcare systems, but previously published literature has discussed such partnerships in depth [5, 8, 12, 13]. Interview responses are anecdotal and should be paired with additional quantitative data where applicable to generate and implement actionable system-wide changes.

Conclusions

The MHS rapidly established critical partnerships with the public and private sectors during the COVID-19 pandemic. While many of these collaborations were in place prior to March 2020, some were developed as a result of the pandemic. The pandemic experience showed that while the MHS is a useful resource for the nation, it also benefits from partnering with organizations and companies in various sectors. Lessons from the MHS response can inform joint responses to future pandemics and disruptions in healthcare delivery. Further developing these partnerships is crucial for coordinated, effective responses to future pandemics.

Abbreviations

AFHSD   Armed Forces Health Surveillance Division
CDC   US Centers for Disease Control and Prevention
DHA   Defense Health Agency
DOD   US Department of Defense
MHS   US Military Health Service
MTF   Military treatment facility
NIH   US National Institutes of Health
OWS   Operation Warp Speed

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12961-024-01203-w.

Additional File1.

Declarations

Ethics approval and consent to participate
This study was reviewed and determined to be exempt by the Institutional Review Board at the Uniformed Services University of the Health Sciences (protocol #956240).

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.