Editorial

Strengthening the Health Care Workforce in Fragile States: Considerations in the Health Care Sector and Beyond

The presence of a well-trained health care workforce is a central feature of effective health care systems. In particular, thriving medical schools are foundational within established national and regional health care systems. Although health care workforce research has grown in recent years (Aiken et al. 2010; Navathe et al. 2013), there is far less known about health care workforce issues in the developing world, particularly related to medical education (Greysen et al. 2011; Chen et al. 2012). A study by Mateen et al. in this issue of *Health Services Research* begins to address this gap by characterizing the presence of medical schools in fragile states (Mateen, McKenzie, and Rose 2018).

MEDICAL SCHOOLS IN FRAGILE STATES AND THE DEVELOPING WORLD

Using multiple data sources and standardized regression analysis to estimate marginal associations relevant for policy decision making, the authors found that fragile state status was significantly associated with having a critically low number of established medical schools. Fragile states comprise a diverse group of nations that are distinct in their specific circumstances and challenges. In general, as Mateen et al. note, they can be characterized by recent or current armed conflict, unstable and/or ineffective governance, and other forms of political and economic volatility that leave such nations and their

citizens more vulnerable to crises and often less able to mitigate and respond to crises (Newbrander, Waldman, and Shepherd-Banigan 2011; Organisation for Economic Co-operation and Development [OECD] 2016).

Fragile states and developing nations are not synonymous categories, however. Fragile states are concentrated mostly in the developing world (and particularly in the African region) and share some features, so we discuss both (OECD 2016). The health care systems of developing nations are, in general, less formally established, less effectively organized, and are supported by fewer resources than health care systems in developed nations (Mills 2014). These disparities may be intensified in fragile states, where the social and economic challenges faced by developing nations are compounded by political instability and war. The lack of medical schools in these nations is not surprising.

The study by Mateen et al. moves health services research forward in several regards: by adding to the growing but still relatively scant academic research on health care systems in the developing world, and through application of novel and rigorous methodology (e.g., the simultaneous analysis of data from the World Bank's List of Fragile States, the World Health Organization Global Health Observatory, and the World Directory of Medical Schools). Although the results were expected, they raise important questions for future research and suggest interesting policy directions. Whether to meet the increasing demand for health care that accompanies the continued growth of global economies, or to respond to disease outbreaks or man-made catastrophes, the availability of medical schools and other health-systems infrastructure in the developing world has major implications for health care access and health outcomes, with secondary impacts on developed nations.

HEALTH CARE SYSTEMS IN FRAGILE STATES

The absence of medical schools is an important challenge confronting fragile states in their evolution toward improved health care systems, and a contributor to physician shortages in the developing world (Scheffler et al. 2008; Kinfu et al. 2009). However, increasing the density of medical schools without

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addressing other components of health system infrastructure will have limited benefit for fragile states' health systems and population health (Fujita et al. 2011). The practice of modern medicine requires a substantial and well-trained team and a rich substrate of resources that must accompany medical schools in order for physicians to meet the health needs of fragile states. The health systems in most developing nations are characterized by fragile physical and technological infrastructures, so any expansion in medical education will require a concomitant investment in other forms of infrastructure like academic hospitals (Greysen et al. 2011; Mills 2014). For physicians to optimally practice modern evidence-based medicine, there is also a need for ancillary services (e.g., banked blood products, pharmacological agents), physical infrastructure (e.g., incubators and equipment for neonatal resuscitation), and also additional health care personnel (e.g., nurses, surgical technicians, anesthesia technicians).

One must also consider the potential challenges of focusing on medical schools as a solution to limited health care access in fragile states. First, medical education is costly, even in developing nations. Given scarce resources and multiple competing needs that these nations face, it is unclear whether investment in medical education will have a favorable return on investment relative to other approaches. A second and related limitation of this approach to strengthening fragile states' health care systems is outmigration. There is very high outmigration of trained medical doctors from many developing nations to more affluent economies (Mullan 2005; Connell et al. 2007). This emigration and associated loss of human capital have been even more pronounced in fragile states that have current or recent armed conflicts (e.g., Syria), limiting both training opportunities for medical trainees and access to health care services. Whether because of specific actions targeting physicians and medical infrastructure in fragile states, more general societal upheaval, or "pull factors" in receiver nations such as increased economic opportunity, there is a clear global disequilibrium of medical personnel.

Lack of formal medical education clearly contributes to lack of high-quality health services in fragile states, but it is also important to consider the lack of medical schools as a common outcome—along with limited access to care, insufficient infrastructure, morbidity, and death—of more fundamental causes that harm health care and health in fragile states (e.g., societal and/or economic instability; Pavignani 2011; Rubenstein 2011). Collectively, we must consider whether these features of fragile states—some separate from, some interlocking with medical schools—may be as or more important than

medical education itself. For example, political stability and peace, effective and transparent governance, economic development in nonhealth sectors, primary and secondary education, and civil society all foster the development of effective health systems. As medical schools and health systems do not exist in a vacuum, investment in these other factors may be as or more important than investing in medical schools to expand health care access (Fujita et al. 2011). This cross-sector activation may also be bidirectional, such that building health system capacity would be more likely to spur further economic gains and strengthen government and civil society function (Kruk et al. 2010). Investing in the health care workforce and infrastructure could even be viewed as a matter of national security, for instance in the event of war or major disease outbreaks that could threaten large segments of an economy. This calls for active inclusion of leaders and policy makers across the board when embarking on discussions regarding health system development.

MECHANISMS TO STRENGTHEN HEALTH CARE SYSTEMS IN FRAGILE STATES

In addition to rigorously studying the auxiliary factors related to medical education and the other features of fragile states that affect people's access to health care, it is crucial to identify the specific mechanisms that will enable improvement of such nations' health care systems. First, training health care workers of all credentials and disciplines will be essential for building capacity. In fact, it could be arguably more beneficial to invest in the education and training of other health personnel such as nurses, midwives, and community health workers. The training of these health care professionals generally requires relatively fewer resources compared to physician training, and their expertise is necessary and in some cases sufficient to address pressing population health needs, for example, low-risk childbirth care and the prevention/treatment of endemic diseases like malaria (Haines et al. 2007; Frenk et al. 2010). This argument also aligns with task-shifting efforts that are gaining momentum and demonstrating significant potential to improve population health in the developing world, while achieving cost savings (Seidman and Atun 2017). For instance, the WHO has developed specific recommendations for tasks related to maternal and neonatal health (e.g., neonatal resuscitation, intrauterine device placement, and removal) that can be safely carried out by health care workers who are not physicians (WHO 2012). It is currently difficult to analyze the number of training programs for nursing and midwifery,

and potential impacts of their expansion, because of the dearth of international data on such training programs (Frenk et al. 2010). This situation highlights yet another avenue for future research.

There may be opportunities for stronger collaboration among medical schools, departments of public health, local and international nongovernmental organizations, and donor organizations. When developed and developing nations partner on achieving shared goals, it is important that knowledge and expertise flow in both directions. Even so, such cross-sector and transnational collaboration is neither straightforward nor easy: Differences in priorities, culture, and operational practices can impede progress, even when shared goals have been identified (McCloughlin 2011). Some degree of conflict may reveal differences in understanding and operations that lead to valuable learning and process improvement to strengthen health care systems in fragile states (Woodward et al. 2016).

Similarly, there may be opportunities for more involvement of the private sector in medical education and health care delivery in fragile states. Privately run industries have been known to thrive even with unstable governments, for instance the telecommunication industry in sub-Saharan Africa (Poushter and Oates 2015; Mitullah et al. 2016). The availability of mobile phones and cell phone service are now more widespread in the African continent than more conventional forms of infrastructure (e.g., paved roads, electricity, sewage), including in some fragile states (Mitullah et al. 2016). Depending on the specific context, these networks serve various purposes in addition to social connection (e.g., payment transactions, news) and may even provide a platform for health care delivery, although this use is relatively limited to date (Poushter and Oates 2015). As with the cross-sector collaborations discussed above, forging effective public–private partnerships is complex in the developing world and especially in fragile states. The ethical dimensions of such collaborations are also not straightforward, yet it is imperative that we consider multiple strategies to achieve the goal of expanding and improving access to health services in fragile states. Telecommunications in sub-Saharan Africa is one example among many demonstrating that each national/regional context is unique, and a deep understanding of this context will be essential to make locally appropriate, sustainable improvements to fragile states' health care systems (Commins 2010; Woodward et al. 2016).

Finally, there is a pressing need for formative social science research, rigorous health services research, and other types of studies to determine exactly how each of these potential solutions can be successfully implemented. The challenges include characterizing specific local context and engaging relevant

stakeholders, optimizing the limited fiscal and human resources available, weighing potential benefits against risks including unintended consequences, and systematically evaluating the implemented solutions to inform future efforts. In sum, our overall understanding of health systems in fragile and/or developing states, and our ability to meaningfully intervene, requires an investment in both targeted and broad health services research. We have raised questions about how future research can build on Mateen and colleagues' study and identify other factors—both within and outside of health care systems—that should be fortified to strengthen access to high-quality health care services around the globe. Such progress will inevitably be challenging, but through thoughtful research such as the study by Mateen et al., we can facilitate the development of strong and flexible health care systems in fragile states, which can meet the diverse needs of the substantial populations that reside in such nations.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the supporting information tab for this article:

Appendix SA1: Author Matrix.