Trial by fire: How physicians responding to the COVID-19 pandemic illuminated the need for digital credentials

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Abstract

The current credentialing process for physicians struggled to accommodate fluctuating regional demands for providers during the severe acute respiratory syndrome coronavirus 2 pandemic. This hurdle highlighted existing inefficiencies and difficulties facing healthcare systems across the world and led us to explore how credentialing can be improved using digital technologies. We explain how this is a critical moment to make the shift from physical to digital credentials by specifying how a digital credentialing system could simplify onboarding for providers, enable secure expansion of telehealth services, and enhance information exchange.

Keywords

Digital health, general, health informatics, telehealth, telemedicine, technology

Mismatch

Even before the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, global healthcare needs far exceeded what could be met by the medical workforce.[1–4] Projections developed by the World Health Organization and World Bank estimate that the deficit of healthcare workers across the globe will increase to 18 million by 2030.[5] Despite the growth in telemedicine and digital health services that aim to reduce barriers to entry and deliver personalized care to individuals from a distance, healthcare systems struggle to keep pace with increasing demand.[6] It will likely take years to train and increase the supply of the healthcare workforce, but we can today start building the infrastructure necessary to support this changing landscape and to better meet the demands we face today.

The mismatch between supply and demand of healthcare workers was brought to the forefront during the first wave of the SARS-CoV-2 pandemic and has continued to be a major hurdle for hospital operations as the current Omicron variant disrupts hospital staffing.[7] While regions hit hardest by the pandemic faced the dire need of reinforcements on the front line, providers in areas with low caseloads experienced significantly reduced patient visits, decreased workloads, and even layoffs. Given the exponential spread of disease, we have seen patient surges and

staffing shortages occur within hours after a major outbreak. While this is nowhere near enough time to train specialized clinicians, it should be ample time to allow redistribution of staff within the healthcare system.

In March 2020, states and countries that were overwhelmed by the spread of the virus made broad calls for all practicing and retired physicians to help provide care during a time of dire need. We (the authors) responded to urgent pleas for physicians in San Francisco, New York, and London to help staff some of the hardest hit hospitals. But, like many of our peers, even with emergency credentialing imposed, we waited weeks for paperwork to be processed before we were allowed to work. By that time, the peaks had passed, staff faced unprecedented burnout, and worst of all we were unable to help provide care to those who needed it the most before new regions saw a similar surge.

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The lag time between offering to provide care and being onboarded to deliver care to patients in areas of need left us perplexed. Both physicians and hospitals were impeded by the arcane onboarding process. Presenting and verifying physical credentials which demonstrate that an individual is currently eligible to practice medicine in a given specialty is time consuming. Even when state licensing requirements were overlooked in the setting of emergency credentialing, verifying an individual's physical identity and requiring proof of employment or other specifications maintained a large friction to onboarding.

Physical to digital

The hurdles facing the physician workforce during the pandemic highlighted the existing inefficiencies and difficulties facing our healthcare systems. Physicians are the most regulated cohort of medical practitioners and are much smaller in number than nurses, technicians, and patients. They have well-described certifications, many of which are publicly available for review, which is not the case for other employee or patient databases. However, despite the availability of credential databases for physicians, it is difficult for hospitals to assess and validate their professional history and status. When physicians move to a new hospital within the same region or city, there is a considerable administrative burden to pass all the regulatory requirements demonstrating their fitness to practice. In the name of improving the breadth of experiences for medical trainees, it is customary for them to cycle between hospitals during their training. These rotations are planned, and yet it often takes months to organize administrative paperwork, prove identity, and verify qualifications.

In the case of the National Health Service (NHS) of the United Kingdom (UK), NHS employers outlines six key areas for identity checks to ensure an employer can verify an applicant's identity is genuine, applies to a real person and that individual owns and is rightfully using that identity. The six areas cover criminal records, employment history, right to work in the UK, professional registration and qualifications, occupational health, and identity checks. Current processes require a paper-based review of these documents including multiple identity documents to be presented in person prior to the employment beginning. Once these processes are complete, there are role-specific statutory and mandatory training qualifications that must be checked or repeated. Furthermore, this onboarding problem is exacerbated if physicians want to provide care at hospitals across state borders in the United States or national borders, which often requires recertification and repeat testing or training.

These processes are highly regulated with good intentions but are burdensome for both doctors and administrators who must navigate them. In most cases, physicians devote time to collating and presenting in person a set of physical credentials requested by their employer. The employer then verifies the authenticity of the documents by physical inspection or querying the above-mentioned databases and makes necessary copies for their own records. This process can often be repeated multiple times per year.

Why are high latency steps not automated? Why are there no digital versions of physical credentials such as identification, medical licenses, and board certifications? Enabling doctors to digitally exchange information that proves they hold a physical credential will not only help save them and their employer time in the onboarding process. It will also provide a method for seamless authentication to many existing and emerging digital systems that comprise our learning healthcare systems.

Drivers

The need to digitize physician's credentials has become even clearer as the healthcare industry continues to undergo a profound digital transformation.[8] Though we have focused on the issues of matching demand during a pandemic and the regular movement of doctors in training as motivation for going digital, the real scope of this change extends beyond these two examples. Three driving factors for our call to bring digital credentials to the front line are patient safety, public health preparedness, and high-quality care.

Patient safety is of utmost importance in the delivery of health care. We have seen a large shift in the digital presence of physicians with the expansion of telemedicine.[9,10] The rapid growth of services such as remote consultations and patient monitoring necessitates an update in medical licensing.[11,12] Organizations managing telehealth platforms will need to vet their providers at onboarding and over time to ensure they are suited to deliver care to patients. As the telehealth ecosystem expands and doctors provide care on multiple platforms, a process that requires exchanging copies of physical documents will be onerous for providers and platforms alike. This friction may undermine the growth and trust of these important systems. Leveraging modern cryptography and web-based application programming interface (API) technologies can streamline the process of validating and approving physicians' credentials. In this new model, medical licensing authorities could provide physicians with a digitized version of their credentials. Physicians could then impart ownership of their secure digital credentials to any individual or organization with relative ease. This digital model has the potential to relieve all administrative burdens while promoting patient safety by decreasing the likelihood of organizations accepting falsified or invalid credentials.

The swift onset of the SARS-CoV-2 pandemic has demonstrated the importance of being able to rapidly mobilize providers at local, state, and national levels to respond to

fluctuating demands in healthcare. Some of the most developed and well-resourced nations struggled to promptly redistribute credentialed providers to locations in need because their credentialing systems precluded rapid onboarding of physicians.[13] Areas with the highest caseloads waived usual licensing requirements and activated disaster response plans to enable physicians from other jurisdictions to migrate and deliver care. If physicians hold and assert digital copies of their physical credentials, they would be able to instantly share this information with health systems who could then easily verify the data. This digital credentialing network would be resilient to high verification loads and could ensure rapid, safe movement of physicians in times of emergency.

As we plan for the future of our healthcare systems, we aim to fully deliver the promise of learning health systems and precision medicine.[14] Patients, providers, and researchers must be able to seamlessly navigate the digital health ecosystem and steer data with proper permissions when required. Unique digital credentials issued by states and medical boards could provide a secure and reliable way for physicians to authenticate themselves with many parties to access or process data during care delivery.

The way forward

While our physical world has become more static in the face of a global pandemic, our digital presence has expanded to new frontiers. In this digital age, healthcare systems are continuously responding to a dynamic environment and their infrastructure should enable secure sharing of information across institutional, state, and national borders to promote patient safety, public health preparedness, and high-quality care. Physicians play a central role in this information exchange as they help patients navigate complex healthcare systems and advocate for them to receive the care they need.

It might seem reasonable to ask for another, single digital credential, but given the nuanced institutional, regional, and national differences in care, we believe in these comprehensive checkpoints to provide safe and efficacious care. Instead, it is our opinion that the path forward, for physicians and patients alike, is through a decentralized system allowing for the sharing of these credentials and their easy integration into the digital tools of tomorrow. One simple application would be to place credentials on a de-identified online register, allowing for the permissioned review and auditing of details to streamline onboarding processes. More complex applications could ensue, such as load balancing clinical skills in an emergency situation (i.e. disaster responses and pandemics) or provisioning access to patient data across institutions. These future opportunities and their potential for exponential growth in high-value care come with their risks. Adversarial use of digital credentials could lead to issues including unauthorized access to patient data as well as fraudulent prescriptions and insurance claims. It will be essential for interdisciplinary teams of cyber security experts, engineers, regulators, and healthcare professionals to work together to implement fraud detection measures that combat attack vectors that could lead to unauthorized and unintended usage of digital credentials by adversaries.

We firmly believe that digitizing doctor's credentials has the potential to do much more than mobilize physicians in emergency situations and relieve the baseline administrative burden for employers and physicians. This advance in infrastructure can play a central role in unlocking data silos, facilitating research at unparalleled scale and scope, and realizing the promise of learning healthcare systems to directly improve patient care in ways that we cannot see today.

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