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Short Communication

Healthcare 5.0 and Pandemic Preparedness

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Coronavirus will not be the last pandemic in our lifetime because of increased population density, growing capacity to travel across the globe, environmental changes, infectious diseases that jump from animals to humans, etc. Therefore, the risk of a new pandemic is higher now than ever before [1]. However, COVID-19 has shown us the lack of smart pandemic preparedness systems in healthcare organisations. The pandemic preparedness systems empower better data to drive smarter and earlier decisions. The system focuses on public health data among multiple participants (e.g., governments, healthcare organisations, institutions, regions, doctors, people, and researchers) to improve local and global coordination to combat future potential pandemics and avoid communication breakdowns [2]. During the pandemic, there has been significant progress toward smart and connected healthcare systems. However, more research innovation, dissemination and technologies are needed to unbundle new opportunities and move towards smart systems for pandemic preparedness to save human lives and maintain economic growth during the pandemic (see Figure 1).

Figure 1: Pandemic preparedness in the globe [3].

Industry 5.0 is a human-centric industrial revolution aiming to leverage human experts' creativity in collaboration with efficient, intelligent and accurate machines within a human–cyber-physical system (HCPS). Several advanced technologies are used to enable Industry 5.0, including sensing technologies, the Internet of Things (IoT), 5G technologies, blockchain, digital twins (DT), collaborative robots (cobots), big data analytics, AI, and cloud/edge computing [4,5]. These technologies play an essential role in developing the emerging innovative concept known as Healthcare 5.0 as a dimension of Industry 5.0 (see Figure 2) [6]. However, building smart pandemic preparedness based on Healthcare 5.0 technologies is still at an early stage. Many challenges still exist to designing end-to-end pandemic preparedness systems to combat the future pandemic, including data interoperability, authentication, privacy, centralisation scalability and robustness. For example, the privacy problem relates to patient privacy protection and data sharing with hospitals and researchers.

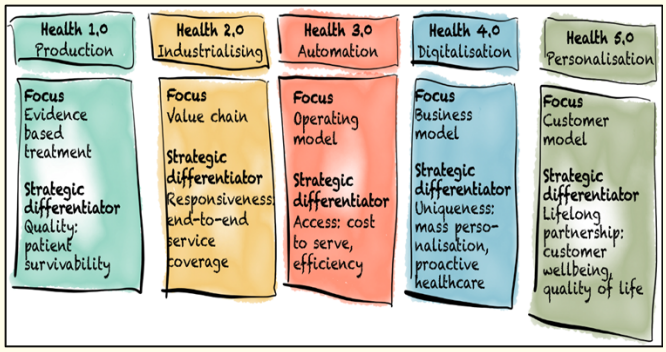

Figure 2: Five stages of evolution of the health sector [7].

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