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Uninvited Letter to Editor

Big Data-driven personal protective equipment stockpiling framework under Universal Healthcare for Disease Control and Prevention in the COVID-19 Era


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To the editor:

We read with great interest the article by Tang et al. on avoiding iatrogenic infection [1]. In this letter we reported Taiwan's experience using big data analytics platforms designed to allow PPE providers to manage the distribution of surgical masks on a real-time basis, and to identify mask holders.

Big data analytics has improved healthcare by analyzing electronic medical records, socio-demographic information, and environmental factors [2]; moreover, its tracking roles in emerging infectious diseases including the coronavirus pandemic have been discussed [3]. In countries with single-payer universal healthcare systems (UHS), claimed data of payers could be an abundant source for analytics. On the other hand, compulsory social distancing, coupled with mass masking, has been widely adopted as strategy for non-specific symptoms at early stage COVID-19 [4]. We propose that analytics based on proper concatenation of databases may prevent supply shortages for personal protective equipment (PPEs).

Taking Taiwan as an example, cloud computing-based healthcare databases within the UHS has alleviated the integration between primary care providers and hospitals, as well as reduced the cost of tracking procedure. Applying the same logistics to PPE allocation would allow PPE providers to manage the distribution of surgical masks on a real-time basis, and recognize the mask holders per insurance or passport number [5]. With the help of data analysis, combining artificial intelligence and cloud technology, public health policy-making could be practicable. Thus when it comes to the implementation cost of epidemic prevention policies, Taiwan authorities adopt low stringent level strategies compared with other high income countries, but still have achieved epidemic control in the early outbreak [6].

After the 2003 severe acute respiratory syndrome outbreak, Taiwan CDC (TCDC) started transferring registered real-time infectious disease data to this established monitoring system, where PPE stockpiling platform was practiced. Therefore, prior to the official recognition of COVID-19 outbreak [3], PPE databases were subsequently concatenated by UHS to manage resource allocation and logistics when several cases were identified. Establishment of this application

programming interface for mask-selling pharmacies under UHS required data transfers as well as managerial issues including governance and ownership, which interdepartmental communication was efficient within UHS. Specifically, the tracking system expands the healthcare informatics system that pharmacists are familiar with, which user friendly interfaces for these PPE providers and consumers help expedite processes in an efficient manner [5]. UHS and TCDC have also promoted the system to increase the distribution channels, which government offices may also allot masks to lessen the burden on healthcare providers.

Since masks alone aren't effective without combining infection-control measures [7], we recommend to utilize such integrative platform for the maintenance of more PPE stockpiles, including critical infection-control equipments, so as to reduce iatrogenic COVID-19 exposure.

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Shin-Yi Tsai: Conceptualization, discussion, and review.

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Declaration of competing interest

The authors declare no conflict of interest.

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Kevin Sheng-Kai Ma (DDS, MSc), Shin-Yi Tsai (MD, DrPH)*
 Department of Health Policy and Management, Johns Hopkins University
 Bloomberg School of Public Health, Baltimore, MD, USA
 E-mail addresses: sheng.kai.ma@cern.ch (K.S.-K. Ma),
 stsai22@jhu.edu (S.-Y. Tsai).

* Corresponding author. Department of Health Policy and Management, Johns Hopkins University Bloomberg School of Public Health, Baltimore, USA.