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A Novel Algorithmic approach for Covid-19 contact tracing, improves productivity and Patient flow process efficiency**Narayan Venkataraman***Changi General Hospital, Sing Health, Singapore.*

Effective pandemic response and prompt actions for containing the transmission of COVID-19 requires a robust and efficient system. We describe our innovative design and build of an algorithm that integrates available data from multiple hospital-based informatics systems that perform different daily functions to augment the contact tracing process of COVID-19 patients through identifying exposed neighboring patients and healthcare staff and assess their risk. Prior to the establishment of the algorithm, contact tracing teams comprising six members each would spend up to 10 hours to complete contact tracing for five new COVID-19 patients. With the augmentation by the algorithm, we observed $\geq 60\%$ savings in overall man-hours needed for contact tracing when there were five and above daily new cases through a time-motion study and Monte-Carlo simulation. This improvement to the hospital's contact tracing process supported more expeditious and comprehensive downstream contact tracing activities as well as improved manpower utilization for contact tracing. Additionally, automated patient touch point analysis using digital footprints (time stamps) captured in live IT systems is continually evolving with the use of IOT and wearable devices, and we observe the use of smart algorithms for patient flow analytics translating to operational process efficiency and patient safety. Current limitations of our algorithm include the challenges associated with monitoring visitor movements and identifying inflight proximal human touch points using video analytics. We recommend future real-time patient flow dashboards to incorporate case level views mapping patient journey for smart healthcare needs

Biography

Narayan is currently the Assistant Director of Data Management & Informatics, Health Systems Intelligence team at Changi General Hospital, Singapore. His 22 years in healthcare has encompassed portfolios like data science, analytics, biomedical engineering, project management, renal technology, and productivity and operations management. He is a co-author of a reference book on renal technology and has published numerous articles and papers over the years. One of his milestone projects was the commissioning of the first hemodialysis center in Oceania, at Western Samoa, under the MOH Singapore global assistance program. He actively volunteers on overseas medical mission programs and has completed more than 20 charity missions across Asia and Asia Pacific. His recent scientific interests are in data science with specific focus on capability building for Digital Transformation, Robotic Process Automation and Artificial Intelligence in Healthcare.

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