Digital Health Systems for Improving Infectious Disease Surveillance in Developing Countries (Sri Lankan Perspective)

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Infectious disease surveillance in developing countries is often limited by fragmented data systems, delayed reporting, and weak integration between laboratory and clinical services, which reduces the effectiveness of early detection and response. This study aims to evaluate existing gaps in surveillance systems and propose a practical digital health framework to improve infectious disease monitoring, with a focus on the Sri Lankan healthcare context. A conceptual research design was adopted, combining a focused literature review with practical observations from laboratory practices and healthcare data handling. The study identifies key challenges in current systems and develops a model that integrates centralized patient databases, real time reporting tools, and laboratory information management systems. The proposed framework enables the inclusion of diagnostic data, such as PCR and ELISA results, into a unified digital platform, improving data flow and coordination among healthcare providers. The findings suggest that this approach can significantly enhance data accuracy, reduce delays reporting, and improve accessibility of critical health information. It also supports early detection of disease patterns and enables faster and more coordinated outbreak responses. Furthermore, improved data integration can assist policymakers in evidence-based decision making and efficient resource allocation within healthcare systems. In conclusion, the implementation of integrated and scalable digital health solutions can strengthen infectious disease surveillance in resource limited settings. This study highlights the importance of adopting cost-effective digital strategies to build more resilient, proactive, and efficient health systems in developing countries such as Sri Lanka.

Keywords: digital health systems, infectious disease surveillance, public health informatics, healthcare data integration, developing countries