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## Research Summary

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**Title** Deploying Telemedicine in Capacity Constrained Contexts: Lessons from the Vanuatu Inter-island Telemedicine and Learning Project

### Abstract

Deploying and expanding adoption of telemedicine is critical to saving lives in small island developing states but can be challenging in these contexts due to limited infrastructure and human resources. This paper studies the implementation and impact of a telemedicine deployment in the remote island of Maewo in Vanuatu. Termed the Vanuatu Inter-island Telemedicine and Learning (VITAL) network, it uses satellite backhaul with last mile Wi-Fi architecture distributed to two primary health access points (in Naviso and Kerembei) staffed by local nurses and community health workers. Community health workers used a basic telemedicine platform run over a messaging application to confer with doctors in referral hospitals located in three different islands, often a six-hour mountain trek and a US\$300+ flight away. The lessons from Vanuatu can help design and scale other similar efforts in contexts and demonstrate how Internet connectivity can be used for providing healthcare in a sustained and impactful manner.

Through in-depth interviews with doctors, nurses, and community health workers, fieldwork in Vanuatu and Maewo as well as text analysis of over 9000 messages shared by doctors, nurses, and village health workers and community health volunteers, this paper documents lessons for implementation of Internet-supported healthcare in contexts with high resource and capacity constraints. The key research question that the paper seeks to answer is, what factors that influence the adoption of a telemedicine system by health workers in a relatively underserved community? How do healthcare providers at various levels communicate within the system in a linguistically diverse environment, and how do the conversations evolve in terms of healthcare?

The paper shares several insights for the successful design and implementation of rural and remote telemedicine interventions in language-diverse contexts with capacity constraints. Only 3% of households in Vanuatu use English or French on a daily basis, preferring to speak local, indigenous language or Bislama, the national language. Through data collected from in-depth interviews and the network's messages, the paper finds that since the network's first deployment in mid to late 2016 until July 31, 2018, over 9000 messages have been shared on the network.

Deploying telemedicine in low-capacity constraints through a messaging platform instead of a text-oriented or synchronous video platform was beneficial to the community in several ways. Messaging applications lower costs - both by removing the need for the design and development of a new platform, and by reducing costs incurred in training community health workers from villages in their use. Training and onboarding can be costly in areas with poor infrastructure, or geographies like the Small Island Developing States; use of intuitive applications can aid tremendously in ensuring take-up when limited resources can be expended on long-drawn training programs. Lastly, the messaging application used, from our interviews, helped reduce the hierarchical, reporting-oriented and often burdensome task of case maintenance online, and can be incredibly useful especially in contexts with low skilled manpower, low rates of literacy, and an over-reliance on community/village health workers. Design features built into the messaging system by the nurses, nurse aids, village health workers and doctors- such as regular check-ins through the application every day - served a dual purpose of checking the status of the system (in a context with no technical support for repair of the infrastructure) as well as providing a source of community between far-flung community workers and doctors.