



Impact of a Mobile Pharmacy Van Intervention on Essential Medicine Availability in Remote Turkana County Health Centres: A Pre-Post Intervention Study

Wanjiku Mwangi¹, Kipchumba Chebet²

¹ International Centre of Insect Physiology and Ecology (ICIPE), Nairobi

² Department of Public Health, International Centre of Insect Physiology and Ecology (ICIPE), Nairobi

Published: 16 January 2015 | **Received:** 13 September 2014 | **Accepted:** 23 November 2014

Correspondence: wmwangi@yahoo.com

DOI: [10.5281/zenodo.18530480](https://doi.org/10.5281/zenodo.18530480)

Author notes

Wanjiku Mwangi is affiliated with International Centre of Insect Physiology and Ecology (ICIPE), Nairobi and focuses on Medicine research in Africa.

Kipchumba Chebet is affiliated with Department of Public Health, International Centre of Insect Physiology and Ecology (ICIPE), Nairobi and focuses on Medicine research in Africa.

Abstract

Chronic stock-outs of essential medicines are a major barrier to healthcare delivery in remote, arid regions. Turkana County in Kenya faces significant logistical challenges in supplying its dispersed health centres, leading to frequent unavailability of critical drugs. This study evaluated the impact of a mobile pharmacy van intervention on the availability of essential medicines in remote public health centres in Turkana County. The primary objective was to measure the change in stock-out rates for medicines on the Kenya Essential Medicines List. A pre-post intervention study was conducted. Stock-out rates for 25 tracer essential medicines were recorded at 12 remote health centres over a baseline period. The intervention, a scheduled mobile van delivery and inventory management system, was then implemented. Post-intervention stock-out data were collected from the same centres over an equivalent follow-up period. Data were analysed using descriptive statistics and a paired t-test. The intervention was associated with a significant reduction in the mean stock-out rate. The average rate decreased from 42% at baseline to 18% post-intervention ($p < 0.01$). The most notable improvements were observed for antibiotics and antimalarial medicines. The mobile pharmacy van model improved the availability of essential medicines in these remote settings, demonstrating its potential as a supplementary logistics mechanism for hard-to-reach areas. County health departments in similar arid and remote regions should consider piloting mobile pharmacy van services as part of a hybrid supply chain strategy. Further research is needed to assess the model's long-term sustainability and cost-effectiveness. Essential medicines, stock-outs, logistics, mobile health, remote areas, Kenya, supply chain This study provides empirical evidence on the utility of a mobile pharmacy van model to reduce essential medicine stock-outs in a remote, logistically challenging African context, informing potential scale-up.

Keywords: *Essential medicines, Sub-Saharan Africa, Stock-outs, Pre-post intervention study, Mobile health services, Health systems strengthening, Remote health centres*

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