



# Evaluating Drone Transport of Blood Products to Remote Hospitals in Sierra Leone: An Operational Feasibility Study

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**Published:** 01 August 2025 | **Received:** 02 May 2025 | **Accepted:** 04 July 2025

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**DOI:** [10.5281/zenodo.18531344](https://doi.org/10.5281/zenodo.18531344)

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## Abstract

Access to essential blood products in remote hospitals in Sierra Leone is constrained by poor road infrastructure, leading to stock-outs and treatment delays. Drone-based transport is a potential solution, but its operational feasibility in this context requires documentation. This short report assessed the operational feasibility of using drones to transport blood products from a central blood bank to remote hospitals in Sierra Leone. It aimed to evaluate logistical, technical, and acceptance factors influencing implementation. An operational feasibility study was conducted. A drone delivery corridor was established between a regional blood bank and two remote district hospitals. Data were collected on delivery times, costs, technical reliability, product integrity upon arrival, and health staff perceptions via structured interviews and monitoring. Drone transport reduced average delivery times from over six hours to under 90 minutes compared to road transport. Over 95% of flights were completed successfully without compromising the cold chain or product integrity. Operational challenges included initial staff training needs and regulatory coordination. Health workers expressed strong support for the service, citing improved reliability. Drone transport of blood products to remote areas in Sierra Leone is operationally feasible. It can improve delivery times and reliability compared to traditional road-based methods, potentially enhancing the availability of critical products. Scale the drone network to include more remote facilities. Develop a sustainable financing model and formalise regulatory frameworks for routine medical drone operations. Integrate drone logistics training into national health supply chain management programmes. drones, blood supply, logistics, remote health, Sierra Leone, operational research, health systems This study provides original field evidence on the operational feasibility of drone-based blood product delivery within a sub-Saharan African health system context.

**Keywords:** *Drone logistics, Blood supply chain, Sub-Saharan Africa, Operational feasibility, Remote healthcare delivery, Medical drones, Health systems strengthening*

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