



GRANTS FOR GLOBAL
INTERNATIONAL FUNDING PARTNERS

SAMPLE PROPOSAL · 2026

Strengthening Early Warning Systems: Community-Driven AI for Public Health Surveillance in Low-Resource Settings

This proposal outlines a 12-month initiative to deploy machine learning models and mobile-based reporting for real-time infectious disease surveillance.

Executive Summary

Infectious disease outbreaks remain a persistent threat to global health security, disproportionately impacting vulnerable populations in resource-constrained environments. Traditional surveillance mechanisms are frequently hindered by delayed reporting, manual data aggregation, and fragmented information channels. This project, titled 'Strengthening Early Warning Systems: Community-Driven AI for Public Health Surveillance in Low-Resource Settings,' addresses these critical vulnerabilities by introducing an integrated, AI-driven digital surveillance platform. Over a 12-month implementation period, the project will equip frontline health workers with mobile diagnostic and reporting tools powered by predictive machine learning algorithms. By synthesizing syndromic data, climatic indicators, and local health facility logs, the system will empower district health teams to detect anomaly disease clusters up to two weeks faster than standard protocols. Operating across 15 high-risk districts, the initiative directly aligns with global health security agendas, transforming reactive outbreak response into proactive, localized disease prevention.

Background and Context

Public health agencies in low- and middle-income countries face escalating challenges driven by climate variability, urbanization, and the rapid emergence of zoonotic and vector-borne diseases. Climate-sensitive illnesses such as dengue, malaria, and cholera are spreading into non-endemic geographic zones, stretching existing healthcare infrastructures past their limits. Historically, disease surveillance in these regions has relied on paper-based reporting systems that take weeks to travel from remote community clinics to national ministries of health. This structural lag creates a dangerous blind spot during the crucial initial phase of an outbreak when containment is most feasible. Recent advancements in mobile connectivity and lightweight machine learning models offer a transformative opportunity to modernize surveillance architectures. By decentralizing data entry to the point of care and automating anomaly detection through predictive algorithms, health systems can bridge the gap between grassroots observations and national epidemic intelligence.

Problem Statement

The primary operational bottleneck in current public health surveillance is the high latency between symptom onset in the community and official outbreak declaration at the national level. Frontline health workers in rural clinics routinely collect vital syndromic data—such as fever, respiratory distress, and acute gastrointestinal cases—but manual compilation and transit delays mean these signals are often analyzed too late to prevent community transmission. Furthermore, district health officers lack decision-support tools capable of correlating localized health complaints with external variables like heavy rainfall, temperature shifts, and population movement. This fragmentation results in delayed resource allocation, stock-outs of essential medicines, and preventable morbidity and mortality. Without immediate intervention to digitize and automate early warning workflows, public health systems will remain perpetually reactive to escalating disease burdens.

Goal

To enhance national and district-level health security in low-resource settings by deploying an AI-enabled, community-driven early warning system that accelerates infectious disease detection, prediction, and localized response.

Objectives

- Deploy a mobile-based syndromic data collection application across 75 rural health clinics within 15 target districts during the first 6 months of the project.
- Train 300 frontline health workers and district epidemiologists on digital data entry, interpretation of AI risk alerts, and rapid verification protocols by Month 4.
- Integrate and validate an open-source machine learning predictive model that analyzes real-time syndromic and environmental data to forecast localized disease surges with at least 80% accuracy by Month 6.
- Establish rapid-response coordination loops between community health workers and district rapid response teams, reducing average outbreak verification time from 14 days to 3 days by the end of the project.

Project Description

The project centers on the implementation of 'Episense,' an interoperable, privacy-compliant digital surveillance platform designed specifically for low-bandwidth environments. Episense combines a user-friendly mobile application for frontline workers with a centralized, cloud-hosted machine learning engine managed at the district health office. When community health workers log daily patient presentations and syndromic complaints, the application operates offline-first, syncing data automatically whenever an internet or cellular connection becomes available. The integrated AI engine continuously evaluates incoming data streams alongside open-source meteorological and hydrological datasets. When statistical anomalies or risk thresholds are breached, the system automatically generates an encrypted, high-priority alert to district epidemiologists, complete with spatial mapping and recommended intervention protocols. Community engagement is embedded into every phase of the project to ensure cultural appropriateness, data privacy adherence, and local ownership of the technological tools.

Key Activities

- Conduct participatory stakeholder workshops with national ministries of health, district health management teams, and community leaders to tailor the Episense platform to local workflows and regulatory frameworks.
- Customize and configure the machine learning anomaly detection algorithms to account for localized endemic baselines, seasonal disease patterns, and regional climate variables.
- Procure and distribute ruggedized smartphones and solar charging kits to 75 participating rural health facilities.
- Design and execute a comprehensive training-of-trainers (ToT) program for 300 frontline health workers, focusing on digital literacy, syndromic coding, and privacy protocols.
- Roll out the mobile data collection app across all 15 target districts, accompanied by supportive supervision visits during the first 90 days of deployment.
- Establish a joint task force of data scientists and district epidemiologists to review AI-generated risk alerts weekly and refine predictive model performance.
- Host quarterly regional learning symposia to share lessons learned, review surveillance metrics, and transition project management responsibilities to local health authorities.

Expected Outcomes

- A 75% reduction in reporting latency for suspected infectious disease cases across 75 target rural clinics.
- 300 frontline health workers and district epidemiologists fully trained and proficient in operating digital surveillance tools and interpreting predictive risk models.
- A validated, operational AI early warning system capable of identifying disease outbreaks up to 14 days prior to traditional epidemiological thresholds.
- Enhanced inter-sectoral collaboration between public health officials, meteorological agencies, and community leaders, resulting in faster and more targeted deployment of medical countermeasures.

Timeline

Month 1-2: Stakeholder engagement, baseline assessments, and algorithmic customization for the Episense platform.

Month 3-4: Procurement of hardware, software localization, and execution of the training-of- trainers program.

Month 5-6: Phased rollout of the mobile surveillance application across 75 clinics and calibration of the machine learning predictive models.

Month 7-9: Full operationalization of the early warning system, weekly alert generation, and implementation of rapid response feedback loops.

Month 10-11: Mid-term evaluation, system optimization based on user feedback, and scale-up planning with national health authorities. Month 12: Final project evaluation, stakeholder dissemination workshop, and institutional handoff of platform governance to the Ministry of Health.

Monitoring and Evaluation

The project will employ a robust Monitoring, Evaluation, and Learning (MEL) framework to track output delivery, outcome achievement, and system accuracy. A dedicated M&E officer will oversee quantitative metrics, including app uptime, data submission rates, alert false-positive ratios, and outbreak response turnaround times. Qualitative assessments, such as focus group discussions with frontline health workers and district managers, will evaluate user satisfaction, workflow integration, and perceived utility of the AI-generated insights. Baseline data collected during Month 1 will serve as the benchmark against which end-line improvements are measured. Quarterly progress reports will be shared with the donor and national health authorities, ensuring adaptive management and continuous improvement of the technological and operational frameworks throughout the 12-month lifecycle.

Risks and Mitigation

Several potential risks have been identified, along with proactive mitigation strategies. First, poor cellular connectivity in remote areas could disrupt real-time data syncs; this is mitigated by utilizing an offline-first mobile architecture that stores data locally and transmits when a signal is detected. Second, user resistance or digital fatigue among frontline workers could lead to incomplete reporting; this will be addressed through continuous mentorship, simplified user interfaces, and incentivized refresher trainings. Third, data privacy and security concerns regarding patient health information will be managed through strict adherence to national health data regulations, end-to-end encryption, and anonymization protocols before data reaches cloud servers. Finally, algorithmic bias or high rates of false positives could overwhelm district response teams; this risk is mitigated by maintaining human-in-the-loop verification where district epidemiologists review all AI alerts prior to dispatching field teams.

Sustainability

Project sustainability is embedded in the design from inception by aligning the Episense platform directly with existing national health information systems (such as DHIS2) rather than creating a parallel, unsustainable silo. Throughout the 12-month implementation period, capacity-building initiatives will transfer technical maintenance, user support, and algorithmic oversight skills to district and national ministry personnel. By Month 10, hosting responsibilities will be transitioned to government-managed cloud infrastructure. Open-source codebases and modular software architecture will ensure that the Ministry of Health can maintain, update, and scale the platform independently without recurring proprietary licensing costs, securing long-term public health benefits.

Project Management

The project will be executed by an experienced multidisciplinary team combining public health expertise, data science, and software engineering. A full-time Project Director with a background in digital health implementations will oversee administrative, financial, and programmatic delivery. A Senior Health Informatician will lead software deployment, training curricula, and health ministry engagement, supported by a dedicated Data Scientist responsible for machine learning model optimization and data governance. Financial management and grant compliance will be overseen by the organization's central operations department, ensuring transparent resource allocation and adherence to donor regulations. Steering committee meetings will be held monthly with key institutional partners to ensure strategic alignment and agile project execution.

Budget Overview

Personnel (Project Director, Senior Health Informatician, Data Scientist, M&E Officer)	\$120,000
Equipment & Technology (Ruggedized smartphones, solar chargers, cloud hosting, software licenses)	\$45,000
Training & Workshops (Stakeholder consultations, ToT sessions, regional symposia, travel)	\$35,000
Monitoring, Evaluation & Research (Baseline/endline surveys, data audits, evaluation reports)	\$15,000
Operational & Indirect Costs (Office supplies, local administrative support, communication)	\$10,000
Total Requested Grant	\$225,000

Conclusion

As climate change and shifting epidemiological landscapes accelerate the threat of infectious disease outbreaks, traditional public health surveillance systems are no longer sufficient. This project offers a proven, scalable pathway to modernize early warning infrastructure in low- resource settings by harmonizing frontline clinical observations with advanced machine learning capabilities. By investing in this 12-month initiative, donors will directly empower local health workers, protect vulnerable communities, and contribute to global health security through innovative, sustainable technological intervention.

GRANTS FOR GLOBAL



GRANTS FOR GLOBAL

INTERNATIONAL FUNDING PARTNERS

© 2026 Grants For Global. All rights reserved.

This sample proposal is provided by Grants For Global as an educational reference for NGOs and nonprofits preparing their own funding applications. It may be adapted for your organization's own proposal writing.

www.grantsforglobal.com