Drones for Health

Boosting Access to Lifesaving Products

VillageReach has partnered with stakeholders at local, regional and global levels since 2015 to explore the use of unmanned aircraft systems (UAS) for health. UAS, also referred to as unmanned aerial vehicles (UAVs), or drones, are being evaluated for integration into health systems alongside traditional land- and water-based modes of transportation. Drones have the potential to improve the availability of health products, increase equity of access and save time and money compared to ground transportation particularly in geographically challenging areas.

VillageReach Areas of Expertise:

- Identifying appropriate use of drones based on local health needs.
- Supporting the development of a regulatory environment for drone importation and use.
- Sensitizing and engaging communities to increase understanding and acceptability of drones.
- Selecting appropriate drone technology based on an identified use case.
- Conducting research to generate data and evidence of benefits and costs of integrating drones into existing health transport systems.
- Facilitating in-country demonstrations of drone technology.
- Identifying and piloting operational and business models to ensure the sustainability of drone service integration.
- Developing implementation tools to facilitate drone introduction into existing delivery systems.
- Facilitating interactions among governments, manufacturers, technical partners and other potential collaborators.

VillageReach’s breadth of expertise ensures that we are equipped to partner with all parties who play a role in the integration of drones into existing delivery systems, at national, local and community levels. This includes ministerial authorities (for example, health, civil aviation, national security/defense, humanitarian affairs, communications), drone manufacturers and service providers.
Experience in the Air

In partnership with governments and several drone companies, VillageReach has been investigating the use of drones for routine transport of the following:

1) Blood and medicines (for example, injectable oxytocin) for emergency situations;
2) Laboratory samples and results to accelerate diagnostics and treatment; and
3) “Just-in-time” resupply of vaccines and other health products (e.g. anti-malarials). Studies on costing, supply chain performance and business models are helping to build the evidence base to integrate drones into existing delivery systems.

The Democratic Republic of Congo (DRC)

VillageReach is working with the Government of DRC and Gavi the Vaccine Alliance on a phased approach to test and integrate drones into the existing immunization supply chain in Équateur Province, a large and logistically challenging area in northwestern DRC.

A UAV vaccine transport system could provide a means to supply vaccines more quickly and efficiently to the most inaccessible health centers in the province. The community perception study conducted in Équateur Province demonstrated that community leaders and members also value these potential benefits, particularly the speed and safety of delivery.

Following a competitive global selection process, VillageReach recommended the drone company Swoop Aero to the civil aviation authority in DRC. In summer 2019, Swoop Aero conducted a series of test and demonstration drone flights to deliver vaccines, syringes, medicines and other supplies from Mbandaka town to the village of Widjifake, which is 6 hours away by road, but 20 minutes by drone. Flights were conducted across the Congo River, forests and the populated area of Mbandaka. In just five days, Swoop Aero’s drones conducted 50 flights to and from the health center, covering a total of 2000 km in the air and transporting over 25 kg of health products for Widjifake and four neighboring health centers. The results will inform programming and decision making regarding the next phase, including the integration of UAVs in the vaccine transport system to deliver immunization products, medicines and lab samples.
Malawi

VillageReach has supported the Government of Malawi in its leadership on drones. In 2016, VillageReach worked with UNICEF on a feasibility study for transporting dry blood samples for the diagnosis of HIV in infants and results between health facilities and laboratories. VillageReach also conducted the cost analysis that compared drones to the standard method of transporting samples via motorcycle.

In 2019, VillageReach collaborated with NextWing, the Malawi Ministry of Health and Population and the Malawi Blood Transfusion Service to assess the cost of using drones to transport blood and oxytocin to treat maternal bleeding. The cost model showed that drones can have lower monthly estimated costs than ground vehicles because drones take a more direct path, and traffic and poor road conditions do not impact them, thereby reducing vehicle and personnel costs.

VillageReach also has helped the government study the use of drones for maternal health emergencies, conducting stakeholder interviews to develop potential business models for the future. VillageReach conducted focus groups with more than 130 people to collect data on perceptions of drones and built out an extensive community mobilization strategy. VillageReach continues to serve as the secretariat for the national Remotely Piloted Aircraft Steering Committee, which is hosted by the Malawi Department of Civil Aviation and comprises partners from the health, agriculture and information technology sectors. VillageReach and the Steering Committee are developing an operational toolkit for implementers and drone companies that want to operate in country.

Mozambique

VillageReach, in collaboration with the Mozambique Ministry of Health and the Instituto Nacional de Saúde (INS), Mozambique’s National Public Health Institute, launched the Unmanned Aerial Systems for Tuberculosis (UAS4TB) project in Mozambique in 2018. Funded by DFID, initially through Frontier Technology Livestreaming, the project aims to identify how UAVs can improve accessibility and responsiveness of the existing laboratory sample transportation system. To date the program has conducted a community perceptions study and developed technical protocols, which are undergoing bioethics approvals. UAV flights from the central INS lab to a health facility in Maputo province and back will demonstrate the capability of UAVs to maintain the quality of TB samples for diagnosis and generate evidence on the associated costs and performance related to the sample referral network. Swoop Aero has been confirmed for flights in late 2019.
Building a Community

To foster learning between organizations in the field, VillageReach began the UAV for Payload Delivery Working Group (UPDWG). UPDWG is interested in the development, advancement and application of drones for use in public health and supply chain systems. Members share information, experiences and expertise, and are focused on collaborating, rather than competing. UPDWG.org is a website that highlights webinars and UAV news, and ensures continued collaboration and information sharing. UPDWG now comprises more than 230 members from 100 organizations, including governments, donors, the private sector, nonprofits, drone manufacturers, local universities, technologists, aviation experts, cartographers and disaster response teams.

More Responsive Supply Chains

The Drones for Health program aims to improve access to vaccines, lab samples and medical products in low-resource environments and hard-to-reach areas. Through collaboration with governments, the private sector and non-governmental organizations, it provides insights into the benefits of UAV integration into health systems, including time and cost savings compared to traditional delivery systems. VillageReach is an expert in managing proof-of-concept flights that can further guide decisions to invest in the implementation of UAVs in the supply chain. Although we are still investigating the benefits of drones for health, we are encouraged by the potential they have to ensure all people have access to the treatments they need.

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VillageReach works with governments to solve health care delivery challenges in low-resource communities.