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.
- Organizing drone demonstration flights in country in collaboration with Ministries of Health, Civil Aviation Authorities, Customs Authorities and all other relevant local stakeholders.
- Selecting appropriate drone technology based on identified use case requirements.
- Supporting the development of regulatory environment for drone importation and use.
- Sensitizing and engaging local communities to increase understanding and acceptance of drone use.
- Developing implementation tools and trainings for drone operations.
- Coordinating relations between public (i.e. ministries, civil aviation, etc.) and private (i.e. drone manufacturers, service providers, local drone operators, etc.) partners and project management for an efficient implementation.
- Identifying and piloting operational and business models to ensure sustainability of drone service integration into health supply chains.
- Conducting research to generate evidence of benefits and costs of integrating drones into existing health transport system.

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 government and several drone companies, VillageReach has been investigating the use of drones for routine and emergency transport of the following:

1) Blood and medicines (for example, injectable oxytocin) for emergency situations;
2) Laboratory samples and results to accelerate diagnostics and/or treatment of COVID-19, Polio and other diseases; and
3) “Just-in-time” supply of vaccines and other health products (e.g. anti-malarials);

In addition, VillageReach conducts studies on costing and supply chain performance and business models that 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, Gavi-the Vaccine Alliance, BMGF, McGovern Foundation, Crown Family Foundation and private sector partners on a phased approach to test and integrate drones into the existing immunization supply chain and is also exploring future partnerships with the U.S. embassy on the potential use of the drone program in support of Ebola and COVID-19 response in Equateur, a large and logistically challenging province 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 demonstrated that community leaders and members also value the benefits of 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 six 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’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 three neighbouring health centers. The outcome of successful flights in 2019 led to the next phase of drone integration. Following the approval for drones importation by the DRC National Aviation, between March and April of 2020, planning meetings were held with government stakeholders. The outcome of these meetings included the selection of 25 hard-to-reach health facilities, from 10 health zones in Equateur as drone landing sites to begin ongoing delivery operations, which started in November.
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 blood tests for the diagnosis of HIV in infants and results and between health facilities and laboratories; VillageReach conducted the cost analysis that compared drones to the standard method of transporting samples via motorcycle.

In 2017 – 2019, funded by Grand Challenges Canada, VillageReach conducted another feasibility study on the emergency use of drones to transport blood and oxytocin to improve maternal health outcomes, working with two different drone companies. The study assessed stakeholder and community perceptions, identified the costs and benefits of drone transport, and developed a business case plan for using drones to transport medical commodities as part of an integrated public health supply chain system. VillageReach is currently working with Swoop Aero to explore a new partnership opportunity on drone operations in Nsanje and Chikhwawa districts of southern Malawi. While Swoop Aero is self-funding the flights, VillageReach continues to engage various donors and stakeholders on potential funding for operations in the two districts.

VillageReach has facilitated the formation of a – now vibrant – national multi-sectoral Remotely Piloted Aircraft Technical Working Group (TWG), and is acting as the secretariat. VillageReach, Swoop Aero and others supported the Ministry of Health and Population (MoHP) in developing the national drone roll-out concept note, “Expanding Access to Life Saving Commodities by Drones, Now and Beyond the COVID-19 Pandemic in Malawi” with the overall objective of mitigating the impact of COVID-19 pandemic on the primary health care system.

VillageReach is also working with the Department of Civil Aviation, the MoHP, and other key stakeholders to develop toolkits for future implementers of remotely powered aircrafts (RPAs) in Malawi.

By leveraging connections and working in a multi-sectoral space, VillageReach is building on its experiences in Malawi and beyond, focusing on medium to long-term projects that allow for RPA health impact measurements and the development of RPA integration models into health care delivery systems.

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 UK Aid, initially through Frontier Technology Livestreaming, the project aims to identify how UAVs can improve accessibility and responsiveness of the existing laboratory sample transportation system.

Swoop Aero and VillageReach conducted drone test flights in March, 2020, near Maputo in the presence of the Civil Aviation Authority of Mozambique (IACM) and Amovant, the local drone association which is a partner in the study. In October 2020, the study flights were completed marking the first use of drones for health in Mozambique, and a step towards the implementation of a long-term drone program focused on transport of HIV, TB and COVID samples.

The Central African Republic (CAR)

In 2020, VillageReach started working in CAR in collaboration with the Ministry of Health and the local WHO office on exploring the use of drone delivery technology for accelerating the disease diagnostic process. The objectives of this program is to build the local enabling environment to import and use drone technology in CAR and to demonstrate the safety and feasibility to use Long-Range (~300km) drones to transport laboratory samples, test results, and accelerate the diagnostic of COVID-19 and Polio diseases. Funded by the Gates Foundation, this long-range drone project is the first of its kind performed in Low and Middle Income Countries (LMIC) and represents a unique opportunity to test and evaluate a different category of drone for delivery (e.g. longer range, gas or hybrid powered, etc.).
Building a Community

To foster learning between organizations in the field, VillageReach began the UAV for Payload Delivery Working Group (UPDWG) to further 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 highlights webinars and UAV news, and ensures continued collaboration and information sharing. In September, 2020, UPDWG launched the Medical Drone Delivery Database (MD3). It is the first database of its kind to provide users with information to inform future drone operations, identify potential partners and donors, and share learnings on the impact of drones on health care access.

UPDWG now comprises more than 230 members from 100 organizations, including governments, donors, the private sector, non-profits, 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 transforms health care delivery to reach everyone.