Demonstrating the Potential of Drones for Vaccine Transport to Remote Communities: Data and Lessons Learned from DR Congo

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Key Accomplishments

✓ Multi-sectoral collaboration between DRC Ministry of Public Health, Civil Aviation, VillageReach, Swoop Aero and Gavi, the Vaccine Alliance
✓ Successfully demonstrated feasibility of utilizing drones for two-way transport of immunization products, medicines, lab samples, product orders and reports in hard-to-reach areas of Equateur province (2019)
✓ First experience with medical cargo drones in DRC and first children immunized with vaccines delivered by drone in Central Africa – Raised awareness and built commitment for scale-up among stakeholders at national, provincial and community levels

Rationale and Approach

Part of a broader strategy to reach remote populations with vaccines and medicines, called the New Generation of Supply Chains (NGCA in French) which aims to improve health outcomes and ensure more equitable access.

Phase 1 of a larger initiative to gradually integrate drones into the supply chain involved flights from urban Mbandaka to rural Widjifake, in Equateur, and had a multi-pronged approach:

Governance
- National Drones for Health Commission and Provincial Working Group formed
- Authorities involved in drone flights and activities
- Learning visits to other countries with UAV projects
- Go/No-Go decision framework used for scale-up

Aviation & Health Regulations
- DRC Civil Aviation authorized partner, import, flights
- Coordination by Civil Aviation and Air Traffic Control
- Emergency and communications protocols
- Standard procedures for resupply, transport, reporting

Acceptability
- Pre and post-flight stakeholder perceptions study
- Community sensitization strategy and public communications campaign
- High-level and local ceremonies on last day of flights

Technology
- Global request for proposals to select drone partner
- Test flights conducted before demonstration flights
- EPI and health center staff trained on operations
- Preliminary assessment of local capacity

Evidence Generation
- Assessed flight safety and performance, health product quantity and quality, operational feasibility, perceptions and acceptability

Results

- 50 flights (=25 round-trips) in 5 days (20 flight hours), or 2000 km total in the air, in addition to 5 test flights over Congo River
- 80 km round-trips in populated areas, with landing at health center, speed 115 km/hr, time saved from 3 hrs to ~ 20 min one way
- No safety concerns, drones flew in the rain
- 2 drones flew at same time on opposite routes proving capability for rapid scale-up

- All vaccine types and syringes transported for 5 rural health areas to immunize ~ 470 children (based on consumption), plus medicines and supplies - total of 25 kg
- 7 babies immunized with drone-delivered vaccines during the flights
- Cold chain maintained & reverse logistics demonstrated with lab samples and reports
- Operational feasibility: quick adoption by local EPI and health staff

Lessons Learned

✓ Deep and broad stakeholder engagement is critical to success.
✓ A phased roll-out is important, to address technological, regulatory or feasibility issues before the stakes are high.
✓ In-depth community sensitizations are worth the time and cost.

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