Establishment of an on-demand lab specimen transport system (STS) for surveillance: lessons learnt from a multi country polio STS project

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Challenges in achieving Global Polio Eradication Initiative (GPEI) sample transportation time targets.

- Most delays in Polio Lab Sample Transport occur in-country between the point of collection at the community/health center & the district/provincial hospital (tier 1) and from there to national capital (tier 2).
- However, countries that must send Polio samples to a lab abroad also incur delays during int’l transit (tier 3).
- GPEI has set a target of just 3 days for samples to reach the lab, regardless of where the lab is located.

Reasons for delays:
- Vast distances, geographic barriers
- Areas of insecurity (samples must wait)
- Lack of incentives (fast reimbursement)
- Health staff turnover (retraining needed)
- Bureaucratic delays/extra stops
- Few means of transport at the last mile
- Transport delays (community to HF)
- Irregular flights & airline space constraints
- Limitations of integration across diseases
Polio Lab Sample Transport

Following national assessments in 2022, VillageReach and partners have been implementing customized programs in **15 countries** at risk for **polio outbreaks**, aiming to improve the **speed & quality** of AFP & ES sample transportation from communities/health facilities to national/int’l laboratories.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Sub-objectives</th>
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| **ACHIEVE COORDINATED & EFFECTIVE SAMPLE TRANSPORT SYSTEMS** | • Timeliness & reliability of transport  
• Sample quality (**good condition**)  
• Governance & coordination  
• Efficient response to outbreaks  
• Sustainable transport systems                                                                 |
| **IMPROVE SAMPLE TRACKING, DATA VISIBILITY & QUALITY** | • Enhanced, real-time **sample tracking**  
• Improved **data visibility** & proactive monitoring for Ministries of Health |

Visit the [Program website](#) to read our Country stories & view the film released on World Polio Day.
• Countries with **polio lab abroad** had difficulty reaching the transport timeliness target, but many challenges still at the last mile
• Most polio samples arrived in **good condition** at the labs (better measure of sample quality during transport than adequacy)
• Significant **data challenges** (availability, timeliness, quality) in some countries’ national Polio databases (reported to POLIS)
## Polio Sample Transport: Interventions Customized by Country

<table>
<thead>
<tr>
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<th>Timeliness of Transport</th>
<th>Quality</th>
<th>Data</th>
<th>People</th>
<th>Efficiency</th>
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<tr>
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<td>Transport system (re)design</td>
<td>Govt health staff transport &amp; incentives</td>
<td>Commercial transporters</td>
<td>Supplies &amp; equipment (i.e. cold chain)</td>
<td>M&amp;E data systems</td>
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Output Indicators

- 15 countries
  - VillageReach + 12 implementing partners

- 12 countries with new Polio Sample Transport SOPs

- 8765 health staff, local transporters, community focal points trained

- 1431 contracts with private transporters in 8 countries

- 5400+ people whose samples were transported

- 3334 GPS + temp monitoring devices for 11 countries

- 23 Freezers procured

- 912 Sample carriers

- 1000 Sample collection kits
Progress towards Objective:

**SOLUTIONS CO-DESIGNED WITH MOH, WHO, STAKEHOLDERS**

- **Local private transporters** introduced, in combination with (C)HWs - utilizing all available means of transport to pickup samples, manage trackers, return carriers/ice packs, etc.
- **On-demand, immediate transport** layered on top of routine/scheduled sample pickups in health facilities
- **Transport network redesign**, with level-jumping (more direct routes, eliminating stops, increased frequency of pickups)
- **Polio sample transport SOPs** developed, with health system staff at all levels and transporters trained or retrained
- **Digital GPS sample trackers** (to track geolocation in close to real-time, in areas with significant transport delays)
- **Integration** of transport and staff/resources across diseases whenever possible (for sustainability and cost efficiencies)
- **Faster reimbursement** (advance payments/mobile money) & equitable sharing of incentives for (C)HWs
- **Performance-based contracts** for transporters have incentivized speed of transport, chain of custody, data sharing

Transport Timeliness & Reliability

- **Countries where project reimbursed Health workers/Govt’ drivers for transport:**
  - 30 districts (out of 135)
  - 7 provinces (out of 10)
  - 2 regions (out of 10)
  - 12 counties (out of 79)

- **Countries with project-funded private transporters – piloted in specific areas:**
  - 20 LGAs (out of 774)
  - 1 region Tabora (out of 31)

- **Countries where on-demand private transport is the back-up/complementary system:**
  - Mozambique
  - Malawi

- **Countries using private transporters on large scale: country-wide or province-wide:**
  - DRC (7 provinces)
  - Guinea
  - Niger
  - Chad
Photo album: Transportation of polio samples across countries

INS technician loading drone with lab samples in Mozambique. Photo: Swoop Aero

Photo: Access for Humanity, S. Sudan

64S vehicle bringing samples to KEMRI Lab, Kenya. Photo: VillageReach

Lab sample transport at the last mile in Chad. Photo credit: ASRADD

Samples loaded onto airplane in DRC. Photo: VillageReach

Samples loaded onto airplane in DRC. Photo: VillageReach

Photo: VillageReach DRC
AFP Sample Transport Timeliness Improved Across Countries

Countries not meeting the 3-day target at baseline

Across 7 countries, our intervention contributed to:
• Avg 8.2 day decrease
• 39% reduction over the entire project period

Across 7 countries, our intervention contributed to:
• Avg 2.5 day decrease
• 35% reduction over the entire project period
Transition to Government

Countries ending project between 30 Nov 2023 and 31 Mar 2024 developed transition plans & timelines with MoH, WHO and in-country stakeholders

30 Nov - 31 Dec 2023
- Cameroon
- Maindombe, DRC
- South Sudan

29 Feb - 31 Mar 2024
- Ethiopia
- Kenya
- Uganda
- Zambia
- Tanzania
- Malawi
- Angola

31 Dec 2024
- DRC
- Guinea
- Niger
- Chad
- Mozambique
- Angola

* Angola project started 1 Nov 2023

1. Sustainability / Uninterrupted transport & service delivery
   - Who manages / who pays / who transports: If couriers, costing, contracting, (re)training + disease integration?

2. Legacy & Continued progress
   - What do we leave behind: Updated SOPs, best practices, data & documentation; post-transition monitoring of success?

3. Technology & Equipment
   - CCE & supplies: inventoried/transferred officially to local/nat’l govt.
   - Digital solutions: Subscriptions, data ownership, coaching MoH staff

4. Risk mitigation: Share data & advocate for adoption of successful project elements with funders/partners
Key lessons from establishment of an on-demand SRS

1. Management & Governance
   - Country driven and tailored solutions
   - Strong in-country collaboration
   - Capacity development – health workers, couriers
   - Tools & systems improvements e.g. SOPs development
   - Transition planning & sustainability

2. Transport Data Systems
   - Incomplete and inadequate data
   - Sample movement data visibility
   - Feedback and follow up

3. Technology & Innovation
   - Real-time sample notification & tracking technology
   - Use of drones in some countries

4. Transportation
   - Lab location and prevailing transport systems
   - Private couriers - performance based contracts
   - Faster reimbursement of health workers
   - Limited courier options at lower level
Thank You!

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