Improving Community Logistics: Results from Use of Hovercraft to Improve the Distribution of Health Commodities in Madagascar

Project Location: Mitsinjo District, Boeny Region, Madagascar

Project Start Date: December 2012

Project Duration: 6 months

Introduction: The USAID-funded Madagascar Community-Based Integrated Health Programme, known locally as MAHEFA, is a five-year health programme that provides basic, quality healthcare to isolated populations in north and northwest Madagascar. It focuses on improving access to and use of an integrated package of maternal, newborn, and child health services, family planning, and improving safe water, hygiene, and sanitation. Transaid is one of the three partners in the programme consortium; the leading partner JSI Research and Training Institute, Inc. and The Manoff Group.

To address accessibility-related issues, Transaid was responsible for implementing innovative transport and logistics solutions for MAHEFA in three areas: Community Health Worker (CHW) mobility, emergency transport, and community logistics.

This case study summarises a Community Logistics Improvement Project that piloted a solution for the year-round distribution of essential medicines to communities deemed inaccessible for some or all of the year. The two main objectives of this project were to improve the availability of health commodities at the community level and reduce stock-outs.

Between December 2012 and June 2013, the Community Logistics Improvement Project used a combination of hovercraft and four wheel drive vehicles (4x4s) to supply health commodities to a *Point d'Approvisionnement* (PA) or supply point in each of the seven communes of Mitsinjo District, Boeny Region. A PA is a supply point, established by MAHEFA's partner organisation Population Services International (PSI), which allows CHWs to travel to a central point to collect health commodities for use in the community. Four communes were supplied by 4x4, while the most hard-to-reach areas which are inaccessible by road were supplied by hovercraft.

Hovercrafts are ideal for very specific geographical conditions as they can travel across land and water, they can be especially useful on rivers prone to significant changes in depth due to seasonal changes.

Methodology: This pilot project was designed to trial new solutions for distributing health commodities to PAs in difficult to access areas after reviewing the results of the Transport and Logistics Needs Assessment completed by the MAHEFA Transport Unit in November 2012. This assessment showed that some of the areas in both districts become inaccessible by 4x4 or are very hard to reach for six months per year, whereas some of the communities are not accessible at all by 4x4 all year. It was anticipated that if a more efficient solution was found to distribute health commodities to these two districts, this could have a positive impact on other hard-to-reach MAHEFA regions. It would show that it is possible to use a combination of different modes of transport effectively and, if feasible, it could pave the way for using hovercraft in other MAHEFA regions. The existence of an organisation that already operates hovercrafts in Madagascar (HoverAid) meant that MAHEFA could use an existing mode of transport in a region where it had not been used before.

Preparations for the pilot project began in October 2012 with a launch workshop attended by the three partners; MAHEFA, PSI and HoverAid. This workshop was used to define responsibilities of each of the partners, develop a high-level project plan and to conduct a risk assessment.

In order to test the applicability in different climatic contexts, the pilot project was designed to commence just prior to when the rains commenced, run throughout the rainy season and finish during the dry season.

The deliveries were facilitated on a six-weekly basis because this was deemed to be the ideal delivery frequency to keep CHWs restocked without building up unnecessary stock levels at PA level, thus reducing storage and product expiry issues. In addition, this ensured the impact of the pilot project could be effectively measured and was compatible with the mid-term and full-term evaluations after three and six months respectively.

Actual delivery volumes of each health commodity for each PA were agreed between the team taking into account a number of factors, including current stock out levels, recent demand and date of next delivery. The distribution model (previously established by PSI's social marketing strategy) is revenue generating for the stakeholders; PSI sell the health commodities to the PAs at a fixed price, the PAs are then entitled to sell these commodities on to the CHWs, again at a fixed price, but at a slightly inflated price. This therefore generates revenue for the PA and ensures that there is an additional motivation for supporting community health.

In order to measure the impact and effectiveness of the pilot project, a number of indicators were developed. To collect the data used to measure these indicators, two quantitative questionnaires were designed for the two different target groups (PAs and CHWs). These questionnaires were conducted on three occasions during the pilot project:

1. Baseline Evaluation: Prior to the commencement of the pilot

2. Mid-Term Evaluation: after the pilot had been operational for three months
3. Full-Term Evaluation: At completion of the pilot

The PA questionnaires were conducted with all operating PAs in the district at each evaluation point.

In addition, quantitative questionnaires were used to collect data from CHWs. The minimum desired sample size for each evaluation was 30% of operational CHWs.

Outcomes: The results of the evaluation outlined below demonstrate the positive impact of the intervention on CHW activity, stock levels in the community, and distances which CHWs must travel to resupply with health commodities.

Indicators	Baseline	Mid-Term	Final
Average visits by CHWs to PAs during the previous three months	11	48	45
% of CHWs that have resupplied in the last three months	59%	98%	100%
% of products out of stock at PA level during the previous three months	78%	25%	20%
Average % of products that have been out of stock at CHW level in the last three months	47%	17%	14%
% of CHWs required to travel more than 20 kilometres to reach a PA	50%	30%	40%

Prior to the commencement of the pilot project, only one commune of seven communes in Mitsinjo District had received a delivery of health commodities in the previous three months. Throughout the pilot, each PA received a delivery every six weeks. As a result, the number of CHW visits increased as the CHWs became more confident that the PA would have stock and were therefore prepared to undertake the journey to resupply. At the point of baseline, each PA only had an average of four of ten products (37%) available, but by the point of the final evaluation this had increased to approximately nine of ten (87%).

The introduction of six weekly deliveries for the duration of the pilot had a profound impact on availability. Prior to the intervention, three of ten products were out of stock at all PAs, while only one of the operational PAs had stock of a further three of ten products. By the final evaluation, just 20% of health commodities had been unavailable in the preceding three months compared to 78% at baseline. This is a considerable improvement that has undoubtedly impacted communities.

Conclusion: This project made significant progress towards overcoming the geographical and climatic challenges of distributing health commodities to hard-to-reach areas. The results show the significant effect that these deliveries have had on the availability of health commodities at both PA and CHW levels, and the impact that this has had at a community level.

In addition, a reduction in the distance that CHWs must travel to resupply has been achieved by the establishment of two new PAs (only easily accessible by hovercraft) and the six-weekly deliveries. This has reduced the burden of long travel times and should free up CHW time for service provision.

The project also tested the cost-effectiveness of the intervention. It demonstrated that it is not necessarily most effective to facilitate all commodity deliveries by the same means of transport, even in the same district. The most appropriate means of transport must be selected in terms of terrain, security (commodities and personnel) and also the time required to facilitate the deliveries.

The key recommendations detailed in the final report were:

- To continue commodity distribution by hovercraft to selected communes in Mitsinjo District
- Expand activities into Miandrivazo District.

The final evaluation report is available upon request.

These recommendations will enable commodity distribution in remote areas where there are no other viable alternatives. In addition, it is recommended that potential commercial partnerships are also pursued in order to, where possible, subsidise the fixed costs for operating the hovercraft.

Tools Utilised: PA questionnaire, CHW questionnaire.
Partners: PSI (USAID's social marketing partner that provides social marketing products for family planning and community health) and HoverAid (an international NGO that uses hovercrafts to support remote communities in Madagascar), MAHEFA, JSI Research and Training Inc. and The Manoff Group.

About Transaid:

Transaid is an international UK development charity that aims to reduce poverty and improve livelihoods across Africa and the developing world through creating better transport. Transaid was founded by Save the Children and the Chartered Institute of Logistics and Transport. Our Patron is HRH The Princess Royal. Transaid specializes in the following:

- Building the capacity of public health authorities to provide effective, safe and cost efficient transport management systems to promote equitable access to primary health care services.
- Developing and improving logistics and supply chain systems to enhance the delivery of medicines, equipment and relief services to vulnerable communities.
- Promoting effective partnerships to support and enhance community participation in developing sustainable transport solutions in rural areas.
- Developing and delivering transport and logistics training and qualifications for public and private sector operators.

Transaid has the capacity and reach to lead projects throughout the developing world, but is equally capable of providing niche technical assistance to large scale health systems strengthening projects. Transaid maintains strong relationships with a number of leading international organizations including donor agencies such as DfID, DANIDA and USAID, and implementing organizations such as Health Partners International, Options Consulting, John Snow Inc. and Management Sciences for Health.

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