



Getting Products to People: Challenges with Last Mile Supply Chain Financing and Recommendations for Funders and Governments

January 2021

Health supply chains in low-income countries have improved markedly thanks to major investments in recent years. Yet the failure to finance last-mile delivery too often prevents products from reaching the people for whom they are intended. Limited access to PPE where routine, essential health services are provided is only the latest example of what, even before COVID-19, is traditionally a weak link.

Decentralization of government services has further complicated this challenge, making the funding path for products much like travel on a rural road – winding, rocky and far too long. Gavi disbursed more than US\$13 billion from 2000-2018 to support vaccination activities¹ and the Global Fund mobilizes and invests more than US\$4 billion a year for AIDS, tuberculosis and malaria programs.² Adequate financing and reliable financial flows for health product distribution to the service delivery points closest to the people are necessary to realize these investments and the promise of health care for all.

COVID-19 only heightens the need to get this right. ThinkWell used data from 10 costing studies in nine different countries and found the operational costs of vaccination campaigns may increase by 49-154% during COVID-19³ to ensure services can continue despite the pandemic. Layer in the cost of eventual COVID vaccines, and it is clear that now is the time to catalyze new approaches to financing last-mile delivery. As stated by partners in the Sustainable Health Financing Accelerator (SHFA), “times of crisis provide a unique window of opportunity to address persistent obstacles that have long remained out of reach.”⁴

This paper describes four challenges to last mile supply chain financing and draws from our collective experience supporting last mile supply chains, primarily in sub-Saharan Africa:

¹ Gavi, the Vaccine Alliance. *All Countries Commitments and Disbursements*. Accessed December 2020. <https://www.gavi.org/sites/default/files/All-Countries-Commitments-and-Disbursements-26112019.xlsx>.

² The Global Fund. *Financials*. <https://www.theglobalfund.org/en/financials/>

³ Banks C, Boonstoppel L. *Immunization campaigns during the COVID-19 pandemic: A rapid analysis of the additional operational cost*. 9 June 2020. <http://immunizationeconomics.org/recent-activity/2020/5/15/conducting-campaigns-during-the-covid-19-pandemic>

⁴ Skarphedinsdottir M, et al. *How COVID-19 is reshaping priorities for both domestic resources and development assistance in the health sector*. 18 June 2020. <https://www.gavi.org/vaccineswork/how-covid-19-reshaping-priorities-both-domestic-resources-and-development>

1. **Delayed or inefficient fund disbursement prevents timely health product distribution;**
2. **Inefficient use of available funds constrains their impact;**
3. **Insufficient financing for last mile supply chain operations impedes activities; and**
4. **Actual supply chain costs are unknown.**

In the following sections, we offer examples of how governments and donors have addressed these challenges and outline recommendations for both funders and governments.

CHALLENGES AND SOLUTIONS

1. Delayed or inefficient fund disbursement prevents timely health product distribution

Significant delays can occur in fund disbursement, interfering with planning and execution of critical last mile supply chain activities. Without funds for operating expenses like fuel or vehicle repair, drivers cannot transport products to facilities. Technicians cannot travel to maintain and repair cold chain equipment. And too many health workers still have to travel to pick up products, using their own resources to make the trip.

These delays occur at many levels, including the disbursement from funders to national governments. In Mozambique, for example, Gavi funds for 2020 were not received at the national level until May. Many factors can affect the delay from funders to governments for distribution and must be jointly addressed to resolve delays. Bureaucracy within a funder's systems, combined with complicated processes within the government system, can lead to slow payments. Inefficient management systems within government entities can also slow the release of funds. If a province is unable to justify the funds received, the funder may be unable to release the next payment.

Further delays often occur in disbursement to lower levels, and in some cases funds may never be fully disbursed. Financial flow interviews VillageReach previously conducted in six provinces in Mozambique showed the average percent of planned Gavi health system strengthening funds actually received at the provincial level was 76%, ranging from 66% to 86%.⁵ In Liberia, counties report sometimes not receiving allocated government funding until the second, third or even fourth quarter of the fiscal year, making it difficult to plan for and complete critical programming.

Government delays or defaults on co-financing requirements can also affect programming. Kenya experienced a stockout of measles vaccines at the end of 2019,⁶ allegedly due to delays in government financing for the vaccine.

A few successful approaches have been introduced to address these challenges:

- **Simplify and coordinate donor requirements.** Donor financial and reporting requirements are important to improve governance and accountability and ensure transparency. Establishing government-centric processes with streamlined requirements can help prevent delays. This could take various forms, depending on the context. For example, Gavi adapted its application for cold

⁵ VillageReach financial flows evaluation (not published). 2017.

⁶ The Standard. *Measles vaccine shortage*. 12 December 2019.

<https://www.standardmedia.co.ke/health/article/2001352962/measles-vaccine-shortage>

chain equipment in response to COVID-19, building on the Cold Chain Equipment Optimization Platform (CCEOP) but streamlining the [application process](#) to enable quick response and planning for the pandemic. Harmonizing financial reporting procedures amongst funders also can reduce the burden on governments.⁷

- **Strengthen financial management and build government capacity to manage funder relations.** In Mozambique, those involved in EPI vaccine distribution emphasized the importance of more formalized trainings at all administrative levels to support staff with financial management. They also advised strengthening supervisory competencies at the central level to support effective fund management and engaging a technical monitoring support group to assist with fund management. Disbursement speeds have improved dramatically in some provinces after building the human resource capacity at the district level. Now designated staff are prepared to participate in timely planning and budgeting activities. In Guinea, the Project Coordination and Implementation Unit (UCEP) was created with the aim of pooling and coordinating all the technical and financial partners' capacity building interventions. Another example may involve funders appointing liaisons to support countries in interpreting donor requirements, ensuring accountability, strengthening multi-sectoral linkages where necessary and coordinating between different sectors.
- **Increase transparency.** Increasing transparency and accountability calls for strengthening civil society's role in implementing and monitoring use of donor and government funds. Tanzania has established Council Health Management Teams (CHMT) that develop the health plan and budget, and then are responsible for receiving, disbursing, and monitoring the funds. The CHMT are complemented by a system of committees at the district and facility level that are set up to assure public participation, oversight and accountability over local health services.⁸
- **Improve coordination between ministries.** Often, improving engagement and coordination between ministries can help resolve critical bottlenecks related to fund releases and even allocation. In Punjab, Pakistan, the successful practice of inviting key finance ministry leaders to primary health stock takes helps illustrate this. Chaired by the Chief Minister of the province, these meetings highlighted clear examples of the impact delays in fund releases were having on performance on the ground. This was regularly used as a tool by key officials in the health ministry to unlock funds in a timely manner.

⁷ The Global Action Plan for Healthy Lives and Well-Being for All (GAP) may provide a mechanism for simplifying budgeting and reporting procedures. For example, Ghana has identified that its "primary health care system receives funding from multiple sources that are channeled through various financing agents, and the fragmentation in financing flows is a source of inefficiency. Furthermore, many of these organizations have different planning and budget implementation and reporting systems leading to delayed payments to health facilities." These challenges have been discussed with GAP signatories, who are "looking at ways to offer a comprehensive and cohesive package of technical and financial assistance to strengthen Ghana's National Health Financing Strategy and a prioritized operational plan to implement the UHC roadmap." (Source: WHO. *Global Action Plan Signatory Agencies back Ghana's Health Financing Reforms*. Accessed December 2020. <https://www.who.int/news-room/feature-stories/detail/global-action-plan-signatory-agencies-back-ghana-s-health-financing-reforms>.)

⁸ Boex J, Fuller L, Malik A. *Decentralized Local Health Services in Tanzania: Are Health Resources Reaching Primary Health Facilities, or Are They Getting Stuck at the District Level?* Urban Institute. April 2015. <https://www.urban.org/sites/default/files/publication/51206/2000215-Decentralized-Local-Health-Services-in-Tanzania.pdf>

2. Inefficient use of available funds constrains their impact

Sometimes poor planning or management can result in inefficient use of the funds that are available. For example, lack of data visibility into real-time stock levels can result in over- or under-stock, which could increase inventory-holding costs, could lead to expiries and stockouts, and could require emergency deliveries to avoid stockouts – all creating inefficiencies.

This can be compounded by the fact that supply chains for many products are run in parallel, each requiring their own infrastructure and operating through separate donor funding streams. Vaccines might be delivered separately from anti-retrovirals (ARVs), for example, requiring two canoes, motorbikes or trucks to make the same trip to the same facility, each with incomplete loads.

Successful strategies to address this challenge include:

- **Share resources or integrate health product distribution.** In the example above, transporting ARVs and vaccines within the same vehicle offers a more efficient and less resource intensive option. Successful integration requires coordination among funders and TA partners. In Mozambique, despite a government mandate for integration since 2012, health product distributions are still being organized to align with funding when the opposite should be true: funding should be reorganized to support the government’s programmatic objectives. This is beginning to change, with some funds from Gavi now going directly to strengthening systems beyond EPI, such as flexible use of Gavi-funded cold chain equipment for non-vaccine products like oxytocin.⁹ More coordination of this nature is required for insulin and other products.
- **Increase efficiencies within existing supply chains through system design.** Beyond integration, other system design options can create supply chain efficiencies. Delivering products directly from provincial warehouses to health facilities – bypassing district warehouses – allows for more direct routes, decreasing travel times and associated costs. Direct deliveries to health facilities also relieve health workers from having to travel to pick up products, which they may be unable to do if per diems are not available. Engaging private sector partners can help improve system efficiencies and allow task shifting so that government staff can focus on system management and donor compliance. Rapid supply chain cost modeling or economic evaluation, where appropriate, can help demonstrate variations in financial efficiencies for different designs.¹⁰ (See Case Study #1)

⁹ Gavi, the Vaccine Alliance. *Gavi Board calls for global access to COVID-19 vaccines*. 26 June 2020. <https://www.gavi.org/news/media-room/gavi-board-calls-global-access-covid-19-vaccines>

¹⁰ Rosen J. *Putting Cost into the Equation: Case Examples of Economic Evaluation of Public Health Supply Chains in Three African Countries*. USAID | DELIVER PROJECT. December 2015. https://publications.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=16847&lid=3

CASE STUDY #1: [System design to increase efficiencies in DRC](#). In the Democratic Republic of Congo, VillageReach worked on a BMGF and DRC Government funded project, in partnership with the Provincial Health Division in Equateur province, to redesign the immunization supply chain with a focus on network optimization, efficient data systems, and improved management and leadership in three health zones. System design changes included transporting products from different health programs together and delivering products directly to health centers and resupply points, rather than expecting health staff to travel to pick up products each month, among other interventions. After the initiative was implemented, stockouts were reduced from as high as 90% to zero, average monthly consumption of vaccines increased by 22%, and supply chain expenses reduced by an estimated 34%.

- **Use performance-based financing to incentivize efficient use of resources.** When used in the appropriate context, tying financial payments to performance of the supply chain can both incentivize and promote more efficient use of resources by offering greater flexibility for how resources are spent – as long as results are achieved. (See Case Study #2)

CASE STUDY #2: [Performance-based financing in Mozambique](#). In Mozambique in 2013, JSI, through the USAID | DELIVER project, supported testing a performance-based financing (PBF) model between USAID and the central medical store (CMAM), in which USAID released \$125,000 per quarter if CMAM met quarterly targets on six indicators. The hypothesis was that this system would lead to improved staff morale, improved coordination with other departments to meet performance targets, and increased infrastructure investments due to the availability of additional funds. After one year, performance improved against all indicators. “Matching records of stock and physical accounts improved from 70% at baseline to over 85%,” and collaboration with other departments improved.¹¹

3. Insufficient financing for last mile supply chain operations impedes activities

Even when used efficiently, funds for last mile supply chains may be insufficient to cover all planned activities. International cost analysis has shown that, on average, an additional 15-25% is needed, in addition to the cost of essential medicines, to deliver them to the last mile.¹² In interviews conducted with five provinces in Mozambique in 2018, all cited limited vehicles to conduct distributions and a lack of dedicated budget for vehicle and cold chain equipment maintenance as a challenge to a new approach to operating the immunization supply chain. Examples of strategies include:

- **Require domestic resource mobilization for health supply chains.** In DRC, the provincial level is responsible for distributing vaccines and other health products to service delivery points, but in many provinces including Equateur, home to approximately 2.5 million people,¹³ there had been no allocated funding. A sustainable health financing edict was passed on 5 December 2019. The

¹¹ Serumaga, B., Spisak, C., Rosen, J. et al. *Using performance-based financing (PBF) to motivate health commodity supply chain improvement at a central medical store in Mozambique*. BMC Health Serv Res 14, P148 (2014). <https://doi.org/10.1186/1472-6963-14-S2-P148>.

¹² Rosen, James E., Marie Tien, Andrew Inglis, Brian Serumaga, Odd Hanssen, Karin Stenberg, and Tessa Tan-Torres Edejer. 2016. *Estimating Supply Chain Costs Associated with Achieving the Health Sustainable Development Goals in 67 Countries*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 4.

¹³ The Humanitarian Data Exchange. *RDC - Statistiques des populations par zones de santé*. Accessed December 2020. <https://data.humdata.org/dataset/rdc-statistiques-des-populations>.

law emphasizes “domestic resource mobilization to address various health challenges that the province is facing including ensuring vaccines and products are available to address childhood disease and recurrent cholera, measles, Ebola and pneumonia outbreaks.” Additional provinces, such as Haut-Lomami and Nord-Kivu are now also devoting considerable resources in the health sector. In DRC’s experience, successful domestic resource mobilization has required raising awareness among provincial government officials and parliamentarians about ongoing resource needs.

- **Advocate for sufficient financing for last mile supply chain operations based on evidence from a costing assessment.** A costing assessment can help to appropriately plan funding needs, understand hidden costs, and improve design and planning of the supply chain system. Increasing subnational commitments can help ensure sufficient funding is available for supply chains and mitigate the impact of delayed fund disbursement from the central level. In Rwanda, in 2012, using results of a supply chain costing assessment led to successful advocacy for harmonizing management fees of the central medical stores, securing long-term financing for district pharmacies, and analyzing and addressing the cause of health products expiries.¹⁴

4. Actual supply chain costs are unknown

Although not an independent challenge, weaknesses in supply chain cost management at the national level contribute to many of the challenges described above. Costs include functions such as procurement, management, warehousing, transport and information systems. Unlike in the private sector, where each major cost category has targets and managers responsible for improving performance, actual supply chain costs in the public sector are often unknown. Supply chain finance is a weak if non-existent function.

Knowing the total costs of the system can provide useful information to assist governments and partners in meeting the financial requirements of operating and strengthening a country’s supply chain. Understanding the cost drivers of the supply chain can also help managers supervise and monitor their systems. Costing management can help governments and funders alike better understand where resources are being spent, where efficiencies are possible, and where additional resources are needed. It can also map out the organizations that support and fund the supply chain.¹⁵

One successful approach is the following:

- **Conduct a supply chain costing assessment to estimate the costs attributable to the activities that make commodities available to end customers.** It is not the same as an audit, as it does not rely only on accounting records; instead, it builds an estimate from numerous sources. It is also not the same as a budgeting exercise, as it requires collection of actual cost figures from the system for analysis. Through the USAID | DELIVER project in Peru, JSI assessed supply chain costs for La Libertad region, with results showing the percentage of costs for human resources, vehicle,

¹⁴ *The Right Cost: Analyzing Public Health Supply Chain Costs for Sustainability*. USAID | DELIVER PROJECT. September 2013. https://publications.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=16936&lid=3

¹⁵ McCord, Joseph, Marie Tien, and David Sarley. 2013. *Guide to Public Health Supply Chain Costing: A Basic Methodology*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 4. https://publications.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=18156&lid=3

warehouse equipment, per diem and storage space.¹⁶ Armed with this evidence of accurate costs, the region's budget allocation tripled in 2016, compared to the previous year, using the costing evidence for a results-based budget to improve distribution and availability of health products.

SUMMARY OF RECOMMENDATIONS

Based on our experiences, the following recommendations can help ensure sufficient, sustainable financing for last mile health product distribution.

For Funders:

1. **Simplify and harmonize budget procedures and reporting to reduce the burden on governments and expedite fund disbursement.** In addition to simplifying procedures and aligning with government procedures, funders should provide flexibility and support wherever possible to ensure timely distribution of funds. Where simplifications are not possible, funders should actively work with governments to plan around anticipated delays so that they do not impact program implementation.
2. **Allow investments in systems that can be leveraged for integrated product supply chains where appropriate.** Rather than strengthening separate supply chains for different health products, funders should begin now to invest in strengthening systems that have potential to ultimately be leveraged for different health products.
3. **Invest in strengthening government capacity to manage finances and funder relations.** Provide more formalized training and supervision at all levels to support staff with financial management. These should include trainings at lower administrative levels to minimize barriers at those levels. In some countries, funders and governments may also benefit from working together to establish positions to analyze, report and manage supply chain costs. Funders should consider funding positions both within their organizations and within national governments that provide leadership in supply chain finance.
4. **Explore fund disbursement directly to lower administrative levels.** This should be explored when and where capacity exists to manage financial reporting.
5. **Implement policies that include incentives for efficient resource use.** For example, performance-based financing, where appropriate, can be used to incentivize better results.
6. **Ensure any product donations factor in distribution costs.** In response to COVID-19, large quantities of donated products like PPE are being delivered to countries without accompanying resources to actually deliver products to health facilities or other service delivery points. Funders can ensure that donated products are accompanied by funds and a plan for distribution.

¹⁶ Sánchez Anabella, Juan Agudelo, Cecilia Novoa, Yovani Olivera, Dany Cruz . 2015. *Estudio de Costos de Almacenamiento y Transporte de Medicamentos: La Libertad, Perú*: USAID | PROYECTO DELIVER, Orden de Trabajo 4. <http://gestionensalud.medicina.unmsm.edu.pe/?p=1233>.

7. **Invest in participation of civil society to hold governments accountable to financing commitments.** Existing advocacy networks can be engaged to ensure accountability and advocate for increased domestic financing.
8. **Promote the use of cost benchmarking.** Identify actual cost levels (average, median, best-in-class) and develop a database that can be used to assess budgets and funding requests both by funders and governments.

For Governments:

1. **Prioritize interventions that streamline fund disbursement.** This may require mapping financial flows to identify bottlenecks and understand exactly where delays are occurring and why. This type of analysis can help identify where interventions would be most useful.
2. **Explore supply chain design changes that increase efficiencies and impact.** Where not already being pursued, governments can consider changes to supply chain design that might result in cost savings. These will have to be balanced with other imperatives – like adapting supply chains to meet the needs of underserved populations, which might require greater resource investments.
3. **Increase subnational financing for distribution of health products.** Committing resources at any level, but particularly the subnational level, reduces the opportunity for delayed disbursements that impact programs.
4. **Conduct supply chain costing assessment to understand the true costs of operating the supply chain.** Measuring and tracking distribution costs to better understand full distribution costs may be necessary to advocate for increased commitments.
5. **Define supply chain cost standards,** e.g. a percentage of the quantity allocated for distribution. Standards typically include ratios (cost per km, cost per call, etc.) and cost categories. Set objectives for each category, and assign responsibilities for cost management.
6. **Ensure the true costs of distribution are mapped and managed actively.** Track cost variance and cost evolution both at a national and subnational level. This will also require development and management of cost improvement plans.