Photo credit: Paul Joseph Brown

Strengthening Public Health Supply Chains

An Integration Framework

Achieving **universal health coverage** (UHC) in low- and middle-income countries (LMICs) by 2030 requires building responsive primary health care (PHC) systems. Responsive PHC systems ensure that products and services are AVAILABLE for the hardest-to-reach communities, that they ADAPT to changes in demand and better absorb shocks and stresses and that they RESPOND to the needs and preferences of under-reached communities.[1]

Building responsive PHC systems requires strong public health supply chains. Today supply chains are inherently complex to manage due to the increasing volume of health products[2] and the challenge of forecasting dynamic national supply chain needs in LMICs. VillageReach has worked for over 20 years with ministries of health (MoH) in Africa to strengthen public health supply chains. Our experience and expertise in providing supply chain technical assistance has allowed us to identify country-specific strategies that ensure lifesaving health products are available when and where they are needed.

We recognize four main attributes in high-performing public health supply chains:

Equitable
ensures access to essential health products for under-reached communities

Resilient
maintains an uninterrupted supply of health products during emergencies

People-centered
responsive to emerging and evolving community needs and preferences

Sustainable
adequately funded even in the absence of external donors

Our **Supply Chain Integration Framework** offers a path towards building supply chains that are equitable, people-centered, resilient[3] and sustainable. It identifies six components of integration that can be adapted to country contexts for building high-performing supply chain.

1 Under-reached communities include people without access to culturally appropriate, gender responsive, conveniently located, respectful, safe, affordable and relevant care from their health systems. Our focus will remain on the under-reached and where health outcomes are the lowest, starting with women, adolescents and children.

2 IQVIA (2019) The Global Use of Medicine in 2019 and Outlook to 2023 [online] Available at **https://www.iqvia.com/insights/the-iqvia-institute/reports-and-publications/reports/the-global-use-of-medicine-in-2019-and-outlook-to-2023**

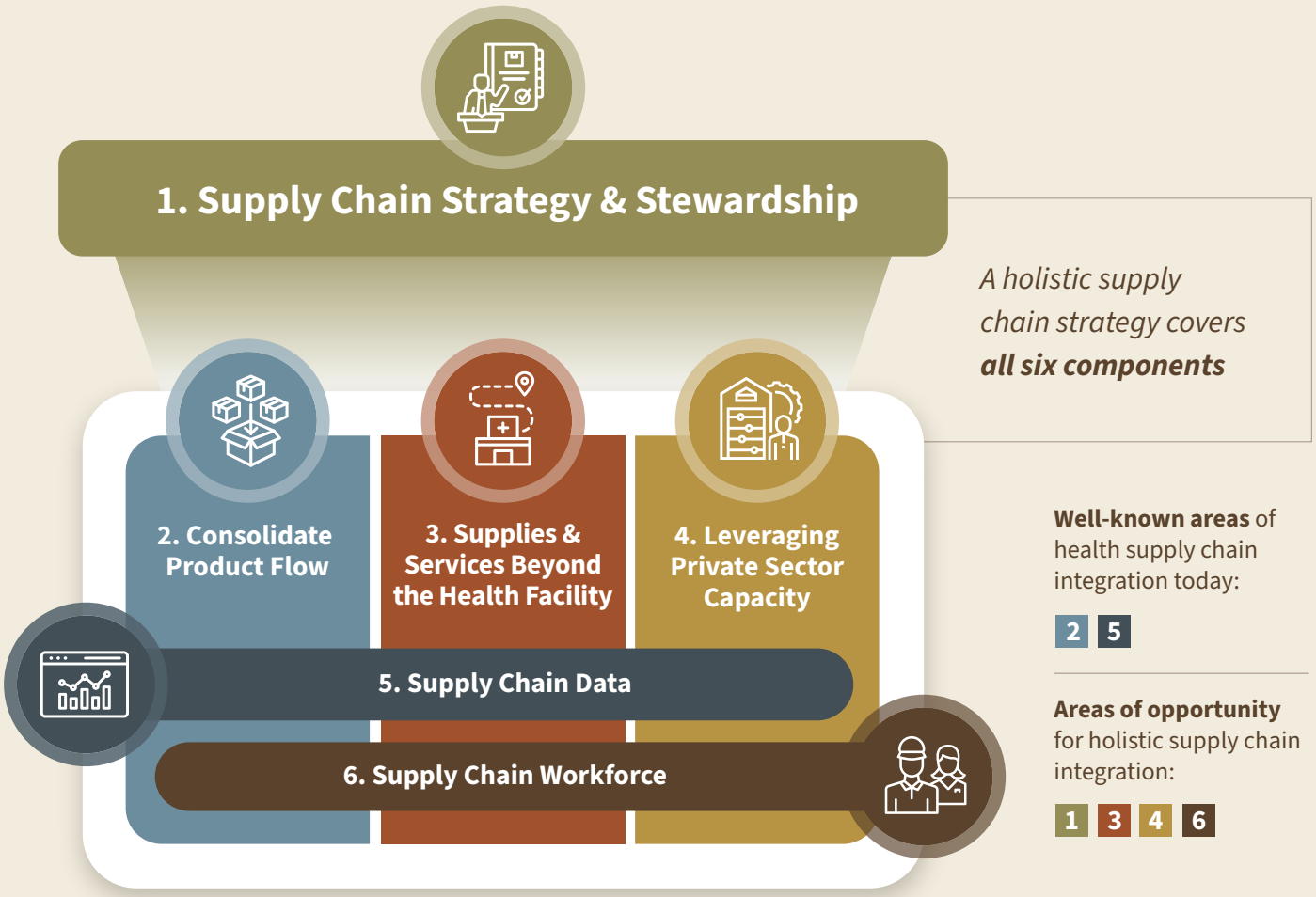
3 Resiliency is the ability to return to a position of equilibrium after experiencing an event that causes operational results to deviate from expectations (source: **Association for Supply Chain Management** (ASCM))

Integration: A Broader Vision

Supply chains in LMICs often suffer from duplicated efforts and inefficient allocation of limited resources due to split management between MoH departments and programs (such as HIV, TB, Malaria or Expanded Program on Immunization) or levels (national or provincial). Our broader vision honors the complex nuances involved in LMIC supply chains while simultaneously reducing inefficiencies.

A high-performing integrated public health supply chain is a coordinated network of organizations and stakeholders aimed at getting health products to the point of care. **The six components of the Supply Chain Integration Framework (Figure 1)** are supply chain strategy and stewardship, consolidated product flow, supplies and services beyond the health facility, leveraging private sector capacity, supply chain data and supply chain workforce. While integrating product procurement, storage and transport in LMICs has led to cost savings,[4] when viewed holistically supply chain integration must look beyond product integration to include community-level health services (e.g. by community health workers (CHWs) or provision of services through community pharmacies outside a traditional health facility), private sector and government capacity and ensuring supply chains have a well-trained and motivated workforce.

Figure 1: Supply Chain Integration Framework



4 Yadav P, Lydon P, Oswald J, Dicko M, Zaffran M. Integration of vaccine supply chains with other health commodity supply chains: a framework for decision making. Vaccine. 2014 Nov 28;32(50):6725-32. doi: 10.1016/j.vaccine.2014.10.001. Epub 2014 Oct 23. PMID: 25446826. **https://pubmed.ncbi.nlm.nih.gov/25446826/**

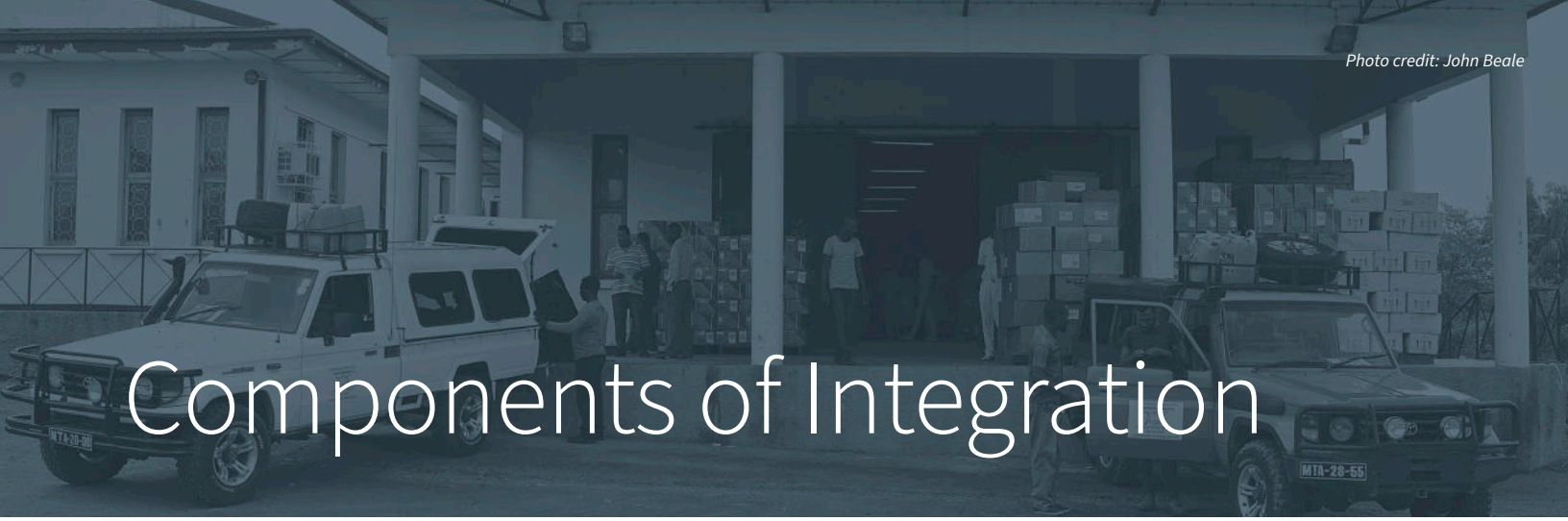


Photo credit: John Beale

Components of Integration

1. Supply Chain Strategy & Stewardship

An integrated high-performing supply chain requires government stewardship. Supply chain integration must be guided by clearly defined and costed national and sub-national supply chain strategies that are executed through effective coordination across government ministries, MoH departments, technical partners, funders and the private sector. This means the government must decide which resources to use, institutionalize when and how they will be used and coordinate resources on a subnational level.

A new leadership approach is needed within national and sub-national governments to set and drive this integration agenda. Managing these integration components requires the government to define and gain consensus on a clear supply chain strategy; mobilize and coordinate domestic and donor investments; and ensure effective execution through multiple stakeholders.

Effective supply chain strategy and stewardship makes supply chains more ***resilient*** and ***sustainable.***

INTEGRATION IN ACTION

Photo credit: Tresor Kalonda

The **Supply Chain Investment Coordination & Advocacy (SCICA) solution** aims to create better coordination of donor-funded and government-funded supply chain investments. Since 2020 we have been working with the Democratic Republic of Congo (DRC) government to implement an approach that manages investments in supply chain strengthening to:

- Improve supply chain performance; and
- Improve use of both donor-driven and domestic supply chain investments at the national and sub-national level.

2. Consolidate Product Flow

Access to essential medicines is one of the World Health Organization's building blocks for health systems strengthening (HSS)[5]. Integrating products (such as vaccines, medicines and medical supplies) can create a more efficient supply chain to replace the vertical organization that often sees health facilities receiving multiple shipments of health products at different times. This integration component must be considered within a country context and informed by robust segmentation analysis. When applied in a fit-for-purpose way, integrating some or all health product deliveries can reduce parallel logistics processes and redundant work.

Eliminating inefficiencies through segmenting and integrating product deliveries has tremendous cost-saving potential for governments, and it makes supply chains more ***sustainable***.

INTEGRATION IN ACTION

Photo credit: Paul Joseph Brown

In Mozambique, through our outsourced transport solution we worked closely with the government to **integrate health product delivery**, successfully moving from vertically managed programs to horizontally integrated systems. Through integration we were able to:

- Optimize the use of resources by eliminating duplication and reducing both operational and capital expenditure;
- Maximize transport and storage utilization;
- Leverage cost savings to increase the ability to finance ongoing improvements; and
- Decrease health worker time on logistics.

5 **https://iris.who.int/bitstream/handle/10665/258734/9789241564052-eng.pdf**

3. Supplies and Services Beyond the Health Facility

Reducing inequities in access to essential health services relies on our collective ability to design health care solutions that address the needs of under-reached communities. This means health products and services are available at all levels of the health system, including the community level. A combination of economic, social and geographical barriers keeps people from accessing traditional health care facilities.[6] In Africa, over 400 million people receive the majority of their health services at the community level,[7] but in many LMICs, supply chain planning does not go beyond the health facility. Getting supplies into communities includes mobile services, medicine collection lockers and expanding the preventive and curative home delivery health services that CHWs provide.[8]

CHWs are often the only touch point many communities' have with the public health system, making community level deliveries a critical service in the national health system. However, CHWs are stocked out of supplies one-third of the time,[9] and they cannot do their jobs effectively without consistent access to health products.

Supply chains that are strong at the community level are more ***people-centered*** and ***equitable***.

INTEGRATION IN ACTION

Photo credit: Homeline Media

- VillageReach's **Supply Chain for Community Health Workers (SC4CHWs)** solution helps to integrate CHWs into the national public health supply chain. The solution provides technical assistance in five key areas: human resources, data, supply chain financing, transport and advocacy to recognize CHWs as a professional workforce and integrate them into supply chain policy and planning.
- VillageReach is advocating to increase and standardize **CHWs role in immunization service delivery**. CHWs can **increase coverage and equitable access** to routine immunization by addressing vaccine hesitancy, identifying zero-dose and under-immunized children and supporting emergency response during vaccine-preventable disease outbreaks.

6 Tracking universal health coverage: 2017 global monitoring report. World Health Organization and International Bank for Reconstruction and Development / The World Bank; 2017. License: CC BY-NC-SA 3.0 IGO. **https://apps.who.int/iris/bitstream/handle/10665/259817/9789241513555-eng.pdf?sequence=1**

7 Protecting Community Health Workers PPE Needs and Recommendations for Policy Action, Center for Global development

8 **https://joinchic.org/resources/the-case-for-chws-champions-of-the-health-system/**

9 Olaniran, A., Briggs, J., Pradhan, A. et al. Stock-outs of essential medicines among community health workers (CHWs) in low- and middle-income countries (LMICs): a systematic literature review of the extent, reasons, and consequences. *Hum Resour Health* 20, 58 (2022). **https://doi.org/10.1186/s12960-022-00755-8**

4. Leveraging Private Sector Capacity

Private sector integration through commercial contracts uses available private sector resources to add capacity to the public health supply chain. There are **several ways to leverage private sector capacity** including: distributing health products, providing discrete activities (warehousing, transportation or cold chain maintenance) and integrating technology (warehouse management systems, vehicle tracking systems, temperature monitoring systems, network analysis and supply chain data analytics). Private sector resources can also provide specialized expertise that is often difficult to develop and maintain in the public sector. Integrating private sector resources into the public health supply chain is about assessing country needs and all local private sector resources to find the right fit.

Using existing private sector resources can help public health supply chains become more ***resilient***, by increasing resource availability, and affordability, since their fixed costs may be spread across multiple sectors and customers.

INTEGRATION IN ACTION

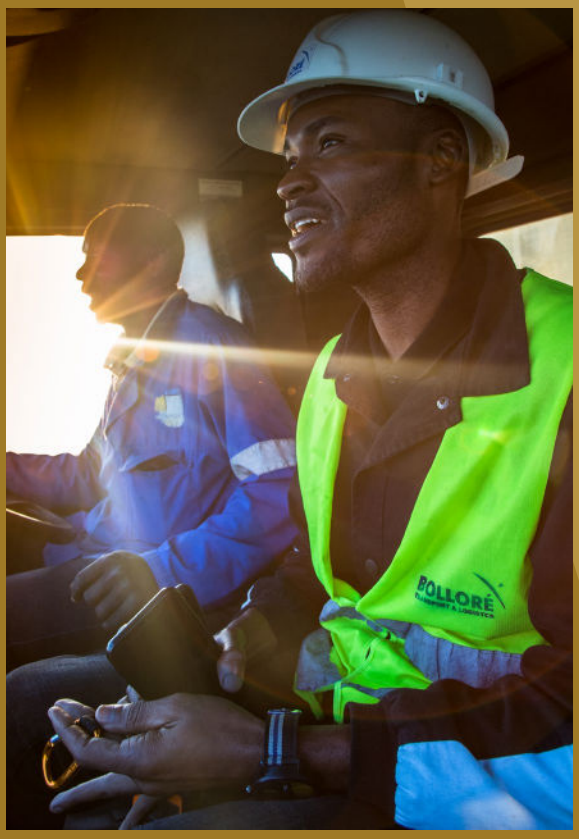


Photo credit: Denis Onyodi

- VillageReach has established a resource center to help increase the number of countries in Africa integrating outsourced transportation (i.e. ground vehicles such as trucks, cars, motorcycles; motorized and non-motorized boats; and air transport, such as planes and drones) as a lever for sustainable, high-performing supply chains. Learn more about **The Outsourced Transport Resource Center** at **otrcsupport.org**.
- VillageReach is working in DRC to integrate certified **private pharmaceutical distributors** and manufacturers in the public health supply chain.

5. Supply Chain Data

Effective integration requires accurate and timely data across the supply chain, accounting for health products from procurement all the way to point of service. This means supply chain managers need real time, reliable data from all distribution points, including at the community level and in return, health facilities need supply planning and distribution information from the national level to ensure resources are in place to store and distribute incoming products. In addition to data sharing within the public health supply chain, data sharing must include private sector partners.

Increased data visibility across the health supply chain creates ***resilience*** and agility.[10]

INTEGRATION IN ACTION

Photo credit: Paul Joseph Brown

OpenLMIS is a powerful open-source logistics management information system designed to support public health supply chains in having reliable data for decision-making.

OpenLMIS

10 Agility is the ability to quickly plan, source, make and delivery to adapt and respond to changes in the environment (ASCM).

6. Supply Chain Workforce

A strong health workforce must be well-trained, motivated and supported with appropriate working conditions. This includes the supply chain workforce. The health supply chain workforce consists of all the people who select, procure, store and distribute the medicines, vaccines and other products needed for health care delivery.

A health supply chain that integrates multiple products across all levels and all sectors needs a professionalized supply chain workforce to manage coordination, demand and supply planning and distribution. We define this professionalization as the standardization and institutionalization of national supply chain roles, competencies and training and certification requirements.

A professional supply chain workforce is critical for high-performing public health supply chains.

INTEGRATION IN ACTION

Photo credit: Ricardo Franco

VillageReach is a member of the **People that Deliver** coalition working to make the supply chain workforce a professional cadre in LMICs. **We focus our professionalization efforts** on creating educational and career pathways and working to improve gender balance in the supply chain workforce.

Using the Framework

We believe governments and their partners can use this framework to achieve holistic integration for high-performing public health supply chains that are equitable, people-centered, resilient and sustainable. Solutions and programs that address any of the above six components can make important strides in strengthening supply chains as part of a responsive PHC system that delivers health products and services to the most under-reached.

Learn more about how VillageReach is using this Integration Framework, and how we can help with supply chain integration efforts in your country. Contact Kim Hill, Senior Manager, Supply Chain **kim.hill@villagereach.org**

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Photo credit: Denis Onyodi