A Process Guide and Toolkit

for Strengthening

PUBLIC HEALTH SUPPLY CHAINS

through Capacity Development

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Any omissions or mistakes in the text or resource citations are fully the responsibility of the author. For any comments or queries, please contact Musonda Kasonde, Capacity Development Manager, UNICEF Supply Division (mkasonde@unicef.org).

Acronyms and **ABBREVIATIONS**

cm3	Cubic centimetres
CMS	Central Medical Stores
CPI	Continuous Performance Improvement
D-I-V-A	Diagnose-Intervene-Verify-Adjust
EU	European Union
EVM	Effective Vaccine Management
FAO	Food and Agriculture Organization of the United Nations
HIV	Human Immunodeficiency Virus
HSS	Health Systems Strengthening
HRH	Human Resources for Health
KPI	Key Performance Indicator
LMIC	Low- and Middle-Income Countries
LMIS	Logistics Management Information System
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MOHSW	Ministry of Health and Social Welfare of Liberia
NGO	Non-governmental Organization
NPPU	National Pharmaceutical Procurement Unit
PDSA	Plan-Do-Study-Act Cycle
SMART	Specific, Measurable, Achievable, Relevant, Time-bound
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNGA	United Nations General Assembly
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Key DEFINITIONS

Advocacy – a deliberate process, based on demonstrated evidence, to directly and indirectly influence decision makers, stakeholders and relevant audiences to support and implement actions.

Capacity development – process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives.

Client – a dependent organization or body within the supply chain.

Continuous improvement – an ongoing effort to improve products, services or processes.

Continuous performance improvement – an ongoing effort to improve the overall performance of a system or organization (or, in some contexts, an individual), as opposed to a specific process or service.

End user – patient or other individual who seeks health services and receives medicines or health supplies for their own use.

Health systems strengthening – any array of initiatives and strategies that improves one or more of the functions of the health system and that leads to better health through improvements in access, coverage, quality or efficiency.[1]

Learning – creating, acquiring and transferring knowledge, and modifying behaviour to reflect new knowledge and insights .

Performance monitoring – the continuous process of collecting and analysing data to compare how well a project, programme or policy is being implemented against expected results.[2]

Scope – the specific aspects (dimensions and elements) of the supply chain to be addressed by the strengthening process.

Strategy – a series of broad lines of action intended to achieve a set of goals and targets set out within a policy or programme.[3]

Supply chain – a set of interlinked players and processes – including assessment, planning, procurement, shipping, goods clearance, warehousing, and inventory management, in-country distribution, information management, and monitoring and evaluation – that ensure that the right quantities of the right supplies are delivered to the right locations at the right time, to meet the needs of the end users in the most efficient manner possible.

1 World Health Organization, 'Health Systems Strengthening Glossary', >.

2 Ibid.

3 World Health Organization, 'Health Impact Assessment Glossary', >.

Executive **SUMMARY**

While national governments, United Nations agencies and other development partners allocate significant resources to strengthening the public health supply chains of developing countries, performance often does not meet the expectations of these stakeholders or of the end users of the health supplies. In large part, performance deficits are due to limitations of locally available resources (human, infrastructure, financial, etc.) and capacities (individual, organizational and systemic). To develop the needed capacities in a sustainable manner, a strategic and continuous country-owned approach with a medium- to long-term horizon is required.

This *Process Guide and Toolkit for Strengthening Public Health Supply Chains through Capacity Development* aims to support country governments, UNICEF country offices and other development partners to strengthen national supply chains through a comprehensive capacity development approach, improving both performance and sustainability of the supply chain. The Process Guide and Toolkit fills an important gap in the global health supply chain literature, supporting countries to implement a comprehensive supply chain capacity development process. The toolkit provides a framework for approaching the challenge, a process guide that provides suggested steps and recommended practices, and a resource guide with explanations of and links to key tools, guidelines and other resources that will support application of specific methodologies. The purpose of this toolkit is not to reproduce or duplicate existing resources, but rather to guide the user to the external resources that are best suited to support implementation of the Framework.

The Framework for Public Health Supply Chain Strengthening provides a structure and process for strengthening the public health supply chains of lower- and middle-income countries, including not only technical areas but also the other required policy and support systems and the enabling environment. The Framework can be utilized to plan and implement an overall national supply chain strengthening strategy, a more narrow supply chain strengthening programme oriented to priority areas or a specific supply chain strengthening project. The process can be adapted to different scales of implementation and different national contexts.

The Framework includes three general, overarching components:

- **Desired outcomes**
  The Framework is designed to assist public health systems achieve the three fundamental objectives of supply chain strengthening: (1) to make health supplies available and accessible to end users, (2) to do so efficiently to optimize the use of limited resources, and (3) to sustainably develop national capacity and reduce external dependence. The first two outcomes are critical to meeting the 'six rights' of the supply chain (right product, right quantity, right place, right time, right quality, right costs), whereas the third outcome provides local ownership and sustainability.

- **Overarching principles**
  There are five principles that should be applied in implementing all the phases of the Framework: (1) the driving principle for the process should be meeting the needs of end users of health supplies (see Desired Outcomes), (2) the process should be led and coordinated by the government, (3) other key stakeholders should be genuinely engaged in the process and their efforts should be coordinated and aligned with the strategy, (4) participants in the process should be aware of the complex and long-term nature of supply chain strengthening and be genuinely committed to meeting the objective despite challenges, and (5) decisions and plans made as part of the process should be based on available data and evidence to the maximum extent possible.

- **Defining the scope**
  Public health supply chains are complex systems with many factors to consider; there are multiple programmes that require different supplies (e.g., immunization, nutrition, malaria, HIV), multiple levels to the supply chain (e.g., central, regional, facility, community), various supply chain functions (e.g., estimating needs, procurement, distribution), and different policy and support systems (e.g., financing, organizational structure, human resource system, information system). Typically, not all the elements in all these areas can be feasibly managed within a single supply chain strengthening cycle, or within any one phase of the Framework. Therefore, at each and every phase, consensual decisions must be made about the priority areas on which the stakeholders' joint efforts will focus.

The Framework includes a series of six phases that make up the supply chain strengthening process. The phases include:

- **Advocacy and engagement**
  The process of strengthening the supply chain must be led by the government and must include collaboration of key stakeholders. In many cases, an explicit advocacy process will be required to engage the government and/or partners. Coordination structures (such as a supply chain working group) are required to coordinate the different agencies in guiding, overseeing and implementing the supply chain strengthening process.

- **Situation analysis**
  When a country begins a strategic and holistic supply chain strengthening process, and at critical stages during the process, an analysis of the current situation will be required to ensure that all stakeholders agree on the key issues and performance gaps. In some countries, such a situation analysis can rely largely on previous assessments and reports. In many cases, some new assessments will be required, either for the system in general or for specific areas where information is lacking. This information

will be critical to developing a feasible strategy to overcome the root causes leading to underperformance.

- **Strategic and implementation planning**
  An essential piece for comprehensive system strengthening and capacity development is agreement between the government and its partners on a strategy. A strategic plan establishes the shared vision, objectives, performance goals and reforms that the strengthening process will comprise and should be designed to overcome the critical performance and capacity gaps, bottlenecks and/or risks identified through the situation analysis. The strategic plan should be accompanied by a specific implementation plan, or work plan, that clearly defines activities, responsible agencies, timelines, budgets and funding sources. The implementation plan will be the key document for putting the strategy into action.

- **Implementation**
  Implementation of the strategic plan is a demanding phase that often falters, as it requires the coordinated and continuous action of many organizations, units and individuals over an extended period, and the benefits are often not seen immediately. Implementation challenges can be mitigated through strong leadership and by focusing part of the implementation plan on the enabling factors that will support successful implementation – including change management. The activities and outputs defined in the implementation plan must be regularly monitored so that the challenges and delays in implementation are recognized, analysed and corrected.

- **Performance measurement**
  Performance measurement tells us whether implemented activities are having the expected impact in achieving the goals and expected outcomes of the strategy. Data on key performance indicators (KPIs) should demonstrate progress across the range of strategic objectives for the supply chain, whereas lower-level diagnostic indicators can identify the causes of performance gaps. Performance measurement requires routine data systems (monitoring) as well as periodic, targeted studies of progress (evaluations). Strengthening these systems is essential to tracking improvements in supply chain capacity and performance.

- **Learning and improvement**
  The true power of supply chain data is to inform decisions on where and how to change the existing policies, strategies, plans, systems, measures and procedures to improve overall performance. When some aspects of the planned implementation and performance lag behind expectations, the data should indicate where improvement and capacity development efforts should be directed or emphasized. Identifying the challenges, communicating them effectively, learning from them and improving the plan and its implementation in a continuous process will be critical to country-owned, sustained and holistic supply chain improvement.

For each phase of the supply chain strengthening Framework, the toolkit presents a general overview of What is this phase and why is it important; a Model process of activities for the phase, with sequencing, that should be adapted to country context; Recommended practices and lessons learned for implementing the phase, based on published case studies and guidelines as well as unpublished experiences shared through a broad interview and consultation process; and Key resources that refers to tools and guidelines that will benefit most countries in implementing the specific phase. The toolkit also provides several Country

case studies that show application of the recommended practices and some Key capacity development interventions that provide examples of innovative and beneficial supply chain strengthening approaches that should be considered within comprehensive supply chain strengthening programmes. Key capacity development interventions are provided for Supply chain system design, Integration and segmentation, Accessing capacity through outsourcing to the private sector, Network and route optimization, Human resource policies appropriate for the supply chain and Pre-service training in supply chain management.

The Process Guide and Toolkit undoubtedly has limitations, and many countries may find it difficult to implement the entire supply chain strengthening process as described here. Despite these limitations, the toolkit can help any and all supply chain strengthening efforts to use good practice approaches, rigorous methodologies and established tools, and to sustainably develop local capacity for managing well-performing public health supply chains.

Purpose and **USE**

Purpose of the toolkit

While national governments, United Nations agencies and other development partners allocate significant resources to strengthening the public health supply chains of developing countries, performance often does not meet the expectations of these stakeholders[4] or of end users.[5] In large part, performance deficits are due to limitations of available resources (human, infrastructure, financial, etc.) and capacities (individual, organizational and systemic). To develop the needed capacities in a sustainable manner, a strategic and continuous country-owned approach with a medium- to long-term horizon is required. The operational focus of supply chain management in public health systems, coupled with frequent operational emergencies, means that capacity development approaches are often ad hoc and lack clearly defined and measured long-term goals. The global health community is putting greater emphasis on strategic planning and implementation for health programmes in general;[6] for example, both Gavi (>) and The Global Fund (>) now focus grant support on alignment with national health plans and strategies to improve the planning and execution of grants. UNICEF developed this Process Guide and Toolkit for Strengthening Public Health Supply Chains through Capacity Development to support countries to engage in a holistic capacity development process for the health supply chain through strategic planning and implementation, measuring progress and continuing advancement through continuous performance improvement.

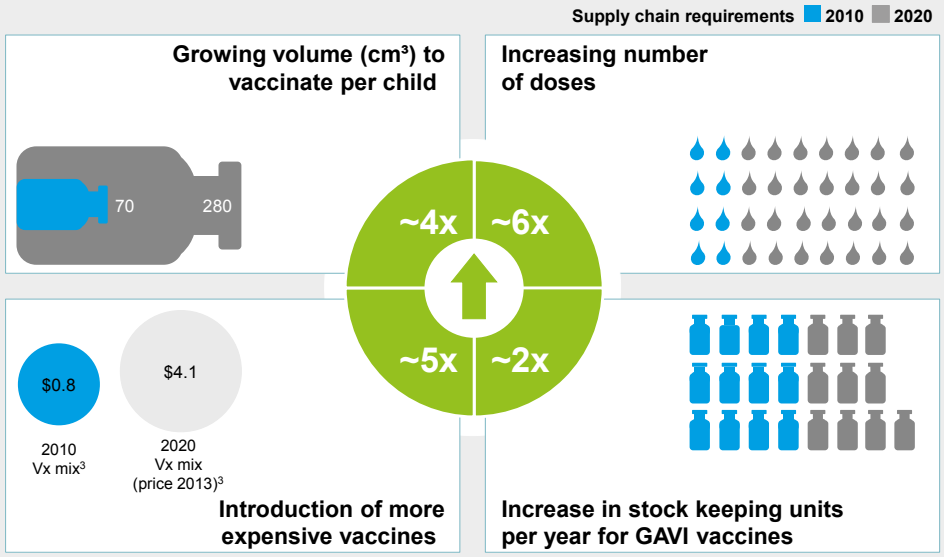
The Process Guide presents a Framework for Public Health Supply Chain Strengthening that outlines the components of a comprehensive and continuous process. The Framework unites supply chain capacity development with national strategic planning efforts for the supply chain,

4 In this document, 'stakeholders' refers to both governmental and non-governmental interested parties.

5 Note that, in this publication, the term 'end user' is used to refer to a patient or other individual who seeks health services and receives medicines or health supplies for his or her own use.

6 See World Health Organization and International Health Partnership discussions on the topic: > and >.

Figure 1: Immunization supply chain risk will increase drastically from 2010 through 2020, due to higher volumes, doses and vaccine cost. *Source: Gavi Alliance.*[8]



for two reasons: 1) in most developing countries, national strategic plans for the health supply chain largely focus on improving performance and efficiency through supply chain strengthening and capacity development; and 2) supply chain performance can best be strengthened in a sustainable fashion if the reforms are wholly owned by the country and implemented through their formal strategy and policy apparatus. While the Framework provided here is primarily oriented to support countries in supply chain strengthening through a comprehensive national supply chain strategy process, it can also support countries in strengthening processes that addresses specific priorities within the supply chain, including through individual programmes or projects.

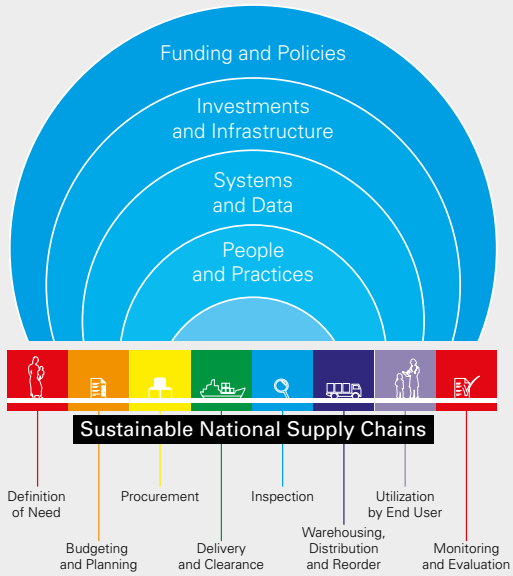
UNICEF's contribution

UNICEF plays a major role in the procurement and provision of medical supplies, procuring approximately $2.5 billion in supplies annually and providing support to more than 100 countries. The supply and complexity of medical supplies and functioning supply chains has reached unprecedented levels, and will continue to grow as more products are being procured and new products developed at an escalating rate (Figure 1). In-country supply chains are stressed by the demands, and often require increased support to ensure that the supplies are available and accessible to the intended users. UNICEF's Strategic Plan for 2014–2017[7] identifies capacity development as a primary long-standing implementation strategy, and UNICEF is playing an increasing role in supporting capacity development for health supply chains. UNICEF's strategic efforts for supply chain strengthening (>) are built around multi-year projects that consider the broader system and enabling environment and focus on sustainability, continuous improvement

7 United Nations Children's Fund, UNICEF Strategic Plan 2014–2017, UNICEF, New York, 2013, >.

8 Gavi Alliance Immunization Supply Chain Strategy presentation to the Gavi Programme and Policy Committee, 2014.

Figure 2: UNICEF's model for supporting national governments to strengthen health supply chains and improve sustainability, considering not only the supply chain itself but also the broader enabling environment.



and national ownership (Figure 2). UNICEF targets interventions to improve performance and reduce costs, stock-outs and wastage.

UNICEF developed this Process Guide and Toolkit to address the existing gap in the vast global health supply chain literature for a guideline that will support country governments and development partners, including UNICEF Country Offices, to conduct supply chain strengthening with a strategic and continuous approach that ultimately leads to sustained national capacity.

How to use the process guide and toolkit

This toolkit is not intended to be a narrative tool to be read from beginning to end. Rather, it is a reference that the user can interact with to access desired information. The user will benefit from reading the initial chapters of the toolkit to understand the rationale, logic and structure of the Framework. Then, utilizing the Framework as a guide, the user can move around within the toolkit according to particular interests and needs. Extensive links are provided to other parts of the document and to external sources to facilitate navigation and access to additional information.

A large number of diverse resources exist to support public health systems in managing their supply chains. The World Health Organization's (WHO's) Procurement and Supply Management Toolbox (>) is the flagship repository and clearinghouse for such resources, and Appendix 3 provides a list of various online clearinghouses for supply chain resources. The purpose of this Process Guide and Toolkit is not to reproduce or duplicate existing resources. Instead, the toolkit will provide the user with a practical framework to organize and structure a holistic systems strengthening and capacity development process, and guide the user to the external resources that are best suited to support implementation of the Framework and the phases therein.

For each phase of the supply chain strengthening Framework, the toolkit presents:

- A general overview of What is this phase and why is it important;
- A Model process of activities for the phase, with sequencing, that should be adapted to country context;
- Recommended practices and lessons learned for implementing the phase, based on published case studies and guidelines as well as unpublished experiences shared through a broad interview and consultation process;[9]
- Key resources, comprising resources likely to benefit most countries in the specific phase of the supply chain strengthening process. The Key resources are provided in Appendix 1 by phase, and in Appendix 2 as a filterable and searchable table.

The toolkit also provides several Country case studies that show application of the recommended practices within different phases of the supply chain strengthening process. Lastly, the toolkit provides brief descriptions of some Key capacity development interventions in the Strategic and Implementation Planning and Implementation Phases. The Key capacity development interventions are examples of innovative and beneficial supply chain strengthening approaches, which should be considered within comprehensive supply chain strengthening programmes; the Key capacity development interventions are not intended to be exhaustive.

Intended audience

The Process Guide and Toolkit is a highly adaptable resource that should be appropriate for use in virtually any lower- or middle-income country environment that faces significant challenges in the performance of its health supply chain. The Process Guide and Toolkit is oriented towards benefiting public sector institutions, but encourages input from other sectors within the process. Supply chain strengthening can be planned and executed at any level of the national health system, but the ability to manage comprehensive capacity development may be limited at sub-national levels.

The expected profiles of potential users for this document include:

- Central Medical Stores leadership and senior supply chain technical staff;
- senior programme managers in Ministries of Health, for example from logistics management units or specific programme offices (immunization, HIV, malaria, etc.);
- country-level partners and technical assistance providers supporting supply chain strengthening or operations, including United Nations Country Offices;
- global donor organizations and technical agencies supporting health supply chain strengthening; and
- sub-national authorities in contexts where significant planning for supply chain strengthening occurs at this level.

9 See organizations consulted in the Acknowledgements. Reliance on unpublished experiences is necessary as there is little documentation of what works and what does not work in terms of processes for global health supply chain strengthening or strategic planning. For example, despite the fact that many countries have received technical assistance for national supply chain strategic planning exercises in the last 5–10 years, only one written case study of the process was identified, and this document is not publicly available.

Models of CAPACITY DEVELOPMENT AND SYSTEMS STRENGTHENING

Health systems strengthening

Collectively, the world has made remarkable gains in improving outcomes for children and women. Since 1990, the number of children dying under 5 years of age has almost halved, while the world's population has increased by around 40 per cent. Similar progress has been made in maternal mortality. A small number of easily preventable conditions are responsible for almost 60 per cent of the remaining child deaths, and 75 per cent of these deaths occur in only 20 countries. Following the 2012 Washingtoncall for a renewed commitment to child survival, a total of 178 countries have declared their intent to end preventable maternal and child deaths by 2030.

However, further progress on reducing preventable mortality faces a number of threats. Perhaps the most widespread are persisting inequities in the rates of death, and illness more generally, among children and women, and stubborn difficulties in achieving high coverage of interventions known to reduce poor health. Recent analysis suggests that the urban-rural divide remains as wide as ever, and also highlights inequities between and within urban areas. Even for those with physical access to health care, poor quality and the associated direct and indirect costs limit the impact and uptake of available services, and can lead to further illness and immiseration.

This context has been exacerbated by broader developments. The epidemiologic transition is resulting in poor health outcomes across the life cycle, some based on predispositions acquired even before conception. Urbanization brings new risks, and governance of the public and burgeoning private health sectors is often weak and fragmented. The fragility of health systems in many low- and middle-income countries (LMIC) has been dramatically highlighted by the recent Ebola crisis in West Africa.

This situation is not due to global neglect. The 2000s saw large increases in development assistance funding for health, but these funds largely supported inputs for vertical programmes in poorer nations. Arguably, they have not strengthened the shallow foundations for health systems in many LMICs. Input-level interventions have limited impact on the enabling environment required for health systems to function effectively and efficiently (essential for the future achievement of universal health coverage(UHC), and flexibly, with resilience in case of emergency.

[10] UNICEF defines health systems strengthening (HSS) as actions that identify the need for and establish durable changes in the provision, utilization, quality and efficiency of health, nutrition, HIV, WASH and early childhood development services for children, adolescents and women and highlights supply chain management as a specific area of priority.

While donor assistance for vertical health programmes has often included a significant component for capacity building, these programmes have been criticized in the past for largely focusing on training and delivery for specific services, and not paying sufficient attention to developing broader institutional and systemic (or environmental) capacities.[11] Health systems strengthening attempts to de-emphasize interventions that focus vertically on improving a specific health programme, but rather improve the delivery of all health services by strengthening the key components common to all. Many existing donor and technical assistance programmes are intended to strengthen the national health systems more horizontally, and have made significant strides in strengthening systemic and environmental capacities.

WHO categorizes the health system into six 'building blocks', or key components: leadership and governance, health information systems, health financing, human resources for health, essential medical products and technologies, and service delivery. WHO emphasizes a systems approach to health systems strengthening – recognizing that health systems are complex and have multiple interdependencies and linkages among the different components (Figure 3).

Like other complex systems, the performance of the health supply chain in developing country environments is not fully under the control of those who manage it, having many external influencers (e.g., policy, financing, health system structure). Supply chain system strengthening should therefore be considered as a sub-component of the broader health system strengthening agenda. When designing on supply chain strengthening interventions, one should consider both how the interventions will impact other health systems components, and how those other components impact (constrain or facilitate) supply chain performance.

Capacity development

The United Nations General Assembly (UNGA) has identified capacity development as a core function of the United Nations development system.[12] Capacity development is a broad term that, while not specific to the health sector, has much in common with health systems strengthening. While systems strengthening emphasizes improving system performance and

10 United Nations Children's Fund, UNICEF Strategic Plan 2014–2017, UNICEF, New York, 2013, >

11 Definitions of 'capacity building' vary, and many equate it to 'capacity development' (see following section). As capacity building is frequently utilized in programmes that do not have comprehensive systems strengthening plans or approaches, it carries a connotation of building individual skills without developing the overall system. The term 'capacity building' is used in this more limited context within this toolkit.

12 United Nations Development Group, 'Capacity Development', <https://undg.org/home/guidance-policies/country-programming-principles/capacity-development>.

Figure 3: Diagrammatic representation of the interdependencies of different components of the health system. *Source: De Savigny and Adam.*[13]

outcomes (through local systems), capacity development emphasizes transformation through strengthening local capabilities (resulting in improved performance).

UNICEF adopts the UNGA definition of capacity development as the "process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives."[14] The capacity development process must take place at the individual level, the organizational level and the enabling environment level (Figure 4):

- The individual level comprises experience and knowledge that is vested in people, acquired through formal training and education, learning by doing and/or experience. It includes technical expertise in a particular sector, e.g. the skills, knowledge and experience of teachers, health workers and other service providers. It can also include management skills of managers and decision makers at sub-national and national levels as well as attitudes, perceptions and biases.

- The organizational level includes the internal policies, systems, procedures and frameworks that allow an organization, an institution or a community to operate and deliver on its mandate, and that enable the coming together of individual capacities to work together and achieve goals.

- The enabling environment is the broad national structure within which individuals and organizations function, such as national laws, regulations, policies and frameworks.

13 Savigny, Donald de, and Taghreed Adam, Systems Thinking for Health Systems Strengthening, World Health Organization, Geneva, 2009, >.

14 United Nations Children's Fund, Capacity Development for the Core Commitments for Children in Humanitarian Action, UNICEF, New York, 2011, >

Figure 4: The three levels of capacity development, with arrows indicating the interactions between the different levels. *Source: FAO.*[15]

These three levels are interlinked and interdependent, and investments in capacity development should be designed for impact at all levels to produce sustainable outcomes. These capacities are not developed in isolation from each other, but through interaction within the larger system (Figure 4).

Capacity development goes beyond training and building skills of individuals to address broader principles of institutional change, leadership and empowerment. It focuses on transformation by "empowering and strengthening endogenous capabilities,"[16] and assumes that, for sustainable impact, "developing countries should own, design, direct, implement and sustain the process themselves."[17] This capacity development process[18] was adapted for the Framework for Public Health Supply Chain Strengthening proposed below.

Continuous performance improvement

A fundamental concept of the supply chain strengthening framework presented below is that sustainable, country-owned improvement will require an iterative process of planning, implementing, measuring progress and utilizing the new data and information to improve the initial plans, implementation and measurements. Continuous improvement, as the name implies, is an ongoing effort to improve products, services or processes. Continuous performance

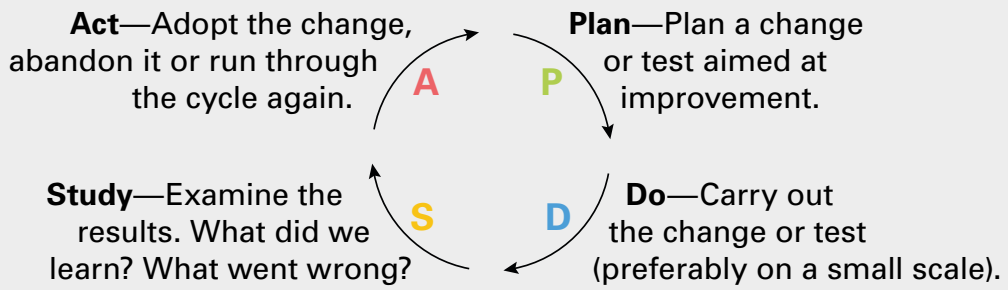
15 Food and Agriculture Organization of the United Nations, 'Capacity Development Portal', >.

16 United Nations Development Programme, Capacity Development: A UNDP primer, UNDP, New York, 2009, >.

17 Ibid.

18 Ibid.

Figure 5: The Plan-Do-Study-Act (PDSA) Cycle. Source: Moen and Norman.[20]



improvement[19] (CPI) is utilized when the object of the improvement process is the overall performance of a system or organization, as opposed to a specific process or service. As the focus of this toolkit is on a continuous, iterative process to improve system performance, 'continuous performance improvement' is the preferred term for use here. A core methodology of continuous improvement is the Plan-Do-Study-Act (PDSA) Cycle (Figure 5). The PDSA Cycle emphasizes the need to continuously analyse results to determine what can be done better, and to act on this information to improve policies, procedures or performance.

19 A variety of similar phrases are utilized to refer to related ideas, depending on the industry and context. Such phrases include 'process improvement', 'continuous quality improvement' or simply 'improvement'. Differentiating among these terms is beyond the scope of this toolkit.

20 Moen, Ronald D., and Clifford L. Norman, 'Circling Back: Clearing up myths about the Deming cycle and seeing how it keeps evolving', Quality Progress, vol. 43, no. 11, 2010, pp. 22–28, <http://apiweb.org/circling-back.pdf>.


VITAMIN A (RETINOL)

Supply Chain **STRENGTHENING**

Defining the public health supply chain

A supply chain is a set of interlinked players and processes – including assessment, planning, procurement, shipping, goods clearance, warehousing and inventory management, in-country distribution, information management, and monitoring and evaluation – that ensure that the right quantities of the right supplies are delivered to the right locations at the right time, to meet the needs of the end users in the most efficient manner possible. It also encompasses the reverse flow of supplies upstream for waste management and the flow of finances and information upstream and downstream to support and improve the management of supplies. Health supplies include pharmaceuticals and vaccines, other medical products (e.g., nutritional supplements, bed nets for malaria prevention, test kits, contraceptive devices), medical equipment and medical supplies (e.g., gloves, syringes, gauze, lab reagents).

In the context of this tool, the public health supply chain refers to the in-country planning, management and movement of all supplies critical for health care from the port of entry to the end users. In most developing country contexts, the health supply chain is managed by the Ministry of Health (MOH) or by parastatal organizations that receive funding and oversight from the government.

Supply chain strengthening

Stock-outs of essential products at service delivery sites have been a consistent problem, hampering health services in developing country public health systems for decades and continuing until today. Natural disasters and major disease outbreaks have repeatedly highlighted weaknesses in the public health supply chain and the extreme vulnerability to major shocks and emergencies. Strengthening the health supply chain is therefore a vital component of health systems strengthening, included under the 'Medicines and Technologies' component of the WHO systems strengthening building blocks.

Major international agreements such as the Paris Declaration of 2005 have put renewed emphasis on the need for strengthening the country supply systems, rather than bypassing them. Supply chain strengthening attempts to improve performance, reduce stock-outs and minimize costs and wastage in the local public health supply chain by developing capacity at the three levels described above. While many approaches to supply chain strengthening have been implemented, there is not an agreed-upon framework or process for strengthening supply chains within the global health arena. This Process Guide and Toolkit attempts to provide such a framework.

Framework for PUBLIC HEALTH SUPPLY CHAIN STRENGTHENING

The Framework for Public Health Supply Chain Strengthening developed by the UNICEF Supply Division is proposed in Figure 6. The Framework provides a structure and process for strengthening the public health supply chains of lower- and middle-income countries, including not only technical areas but also the other required policy and support systems and the enabling environment. The Framework unites the capacity development process with the continuous feedback loops of the Continuous Performance Improvement approach, utilizing terminology that will be highly familiar and intuitive to a global health audience. The Framework can be utilized to plan and implement an overall national supply chain strengthening strategy, a more narrow supply chain strengthening programme oriented to priority areas, or a specific supply chain strengthening project. The process can be adapted to different scales of implementation and different national contexts. The Framework includes three overarching components and six phases, which are summarized here and described in detail in the subsequent chapters.

The Framework includes three general, overarching components:

- Desired outcomes
  The Framework is designed to assist public health systems achieve the three fundamental objectives of supply chain strengthening: (1) to make health supplies available and accessible to end users, (2) to do so efficiently to optimize the use of limited resources, and (3) to sustainably develop national capacity and reduce external dependence. The first two outcomes are critical to meeting the 'six rights' of the supply chain (right product, right quantity, right place, right time, right quality, right costs), whereas the third outcome provides local ownership and sustainability.

- Overarching principles
  There are five principles that should be applied in implementing all the phases of the Framework: (1) the driving principle for the process should be meeting the needs of end users of health supplies(see Desired outcomes), (2) the process should be led and

coordinated by the government, (3) other key stakeholders should be genuinely engaged in the process and their efforts should be coordinated and aligned with the strategy, (4) participants in the process should be aware of the complex and long-term nature of supply chain strengthening and be genuinely committed to meeting the objective despite challenges, and (5) decisions and plans made as part of the process should be based on available data and evidence to the maximum extent possible.

- **Defining the scope**
  Public health supply chains are complex systems with many factors to consider; there are multiple programmes that require different supplies (e.g., immunization, nutrition, malaria, HIV), multiple levels to the supply chain (e.g., central, regional, facility, community), various supply chain functions (e.g., estimating needs, procurement, distribution), and different policy and support systems (e.g., financing, organizational structure, human resource system, information system). Typically, not all the elements in all these areas can be feasibly managed within a single supply chain strengthening cycle, or within any one phase of the Framework. Therefore, at each and every phase, consensual decisions must be made about the priority areas on which the stakeholders' joint efforts will focus. In some cases, the most pragmatic approach is to begin with a more restricted scope that can be broadened as reforms and strengthening activities are successfully implemented, building confidence in the overall process.

The Framework includes a series of six phases that make up the supply chain strengthening process. The overall process and each phase can be adapted to guide supply chain strengthening at the strategic level, programme level or project level. The phases include:

- **Advocacy and engagement**
  According to the overarching principles, the process of strengthening the supply chain must be led by the government and must include collaboration of key stakeholders. In many cases, an explicit advocacy process will be required to engage the government and/or partners. In some cases, the government may be the first to recognize the need for a strategic and continuous performance improvement process for the supply chain and will engage partners in the process. In other cases, a country partner – such as the UNICEF Country Office – may be the driver and need to engage the government and other stakeholders. Coordination structures (such as a supply chain working group) are required to coordinate the different agencies in guiding, overseeing and implementing the supply chain strengthening process.

- **Situation analysis**
  When a country begins a strategic and holistic supply chain strengthening process, and at critical stages during the process, an analysis of the current situation will be required to ensure that all stakeholders agree on the key issues and performance gaps. In some countries, such a situation analysis can rely largely on previous assessments and reports. In many cases, some new assessments will be required, either for the system in general or for specific areas where information is lacking. The situation analysis should not be limited to technical concerns, but also analyse political and enabling environment factors that may impact progress. This information will be critical to developing a feasible strategy to overcome the root causes leading to underperformance.

- **Strategic and implementation planning**
  An essential piece for comprehensive system strengthening and capacity development is agreement between the government and its partners on a strategy. What are the

desired performance goals that the system should achieve? What are the strategic objectives that the country must attain in order to meet those performance goals? How will the strategy be implemented? What capacities must be developed? Whether working at the level of a national strategy, a programme or a project, a strategic plan is required to define the goals, objectives and reforms that will guide the strengthening process. The strategic plan should be accompanied by a specific implementation plan, or work plan, that clearly defines activities, responsible agencies, timelines, budgets and funding sources. The implementation plan will be the key document for putting the strategy into action.

- **Implementation**

  A strategic plan is critical for supply chain strengthening, and many countries focus significant energy on this essential step. Implementation of the strategic plan is a demanding phase that often falters, as it requires the coordinated and continuous action of many organizations, units and individuals over an extended period, and the benefits are often not seen immediately. A supply chain strengthening process can lose momentum as efforts for the medium and long term come into conflict with daily operational tasks. Implementation challenges can be mitigated through strong leadership and by focusing part of the implementation plan on the enabling factors that will support successful implementation – including change management. The activities and outputs defined in the implementation plan must be regularly monitored so that the challenges and delays in implementation are recognized, analysed and corrected.

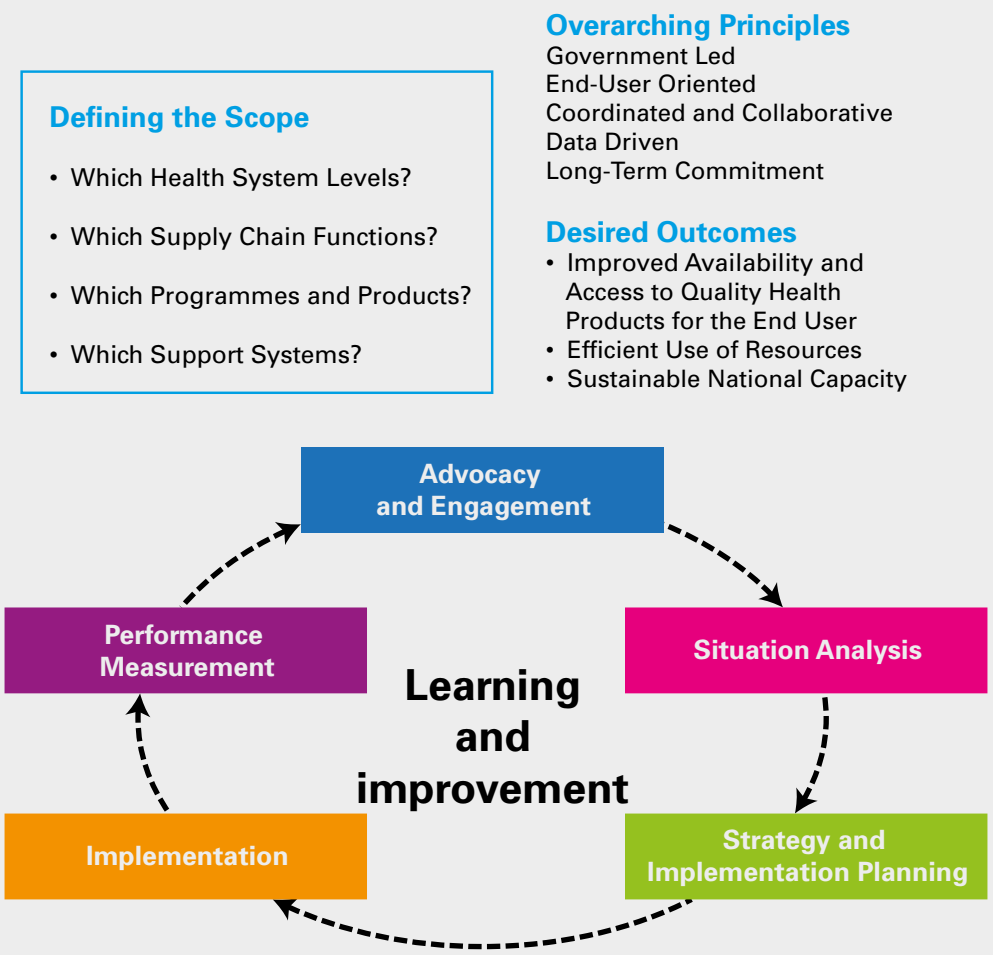
- **Performance measurement**

  Performance measurement tells us whether implemented activities are having the expected impact in achieving the goals and expected outcomes of the strategy. Data on key performance indicators (KPIs) should demonstrate progress across the range of strategic objectives for the supply chain, whereas lower-level diagnostic indicators can identify the causes of performance gaps. Many countries are still in the early stages of developing robust performance measurement systems for the health supply chain, which require routine data systems (monitoring) as well as periodic, targeted studies of progress (evaluations). Strengthening these systems is essential to tracking improvements in supply chain capacity and performance.

- **Learning and improvement**

  Monitoring strategic plan implementation and measuring supply chain performance are important for evaluating progress and demonstrating it to stakeholders. But the true power of these data is to inform decisions on where and how to change the existing policies, strategies, plans, systems, measures and procedures to improve overall performance. Most often, some aspects of the planned implementation and performance lag behind expectations. The data should indicate where improvement and capacity development efforts should be directed or emphasized. Perhaps some components of the strategy are not addressing root causes; perhaps the strategy is more difficult to implement than expected; perhaps other priorities are distracting from the implementation; or perhaps the defined indicators are not measuring progress effectively. Whatever the difficulties are, being able to identify them, communicate them effectively, learn from them and improve the plan and its implementation is critical to country-owned, sustained and holistic supply chain improvement.

Figure 6: The Framework for Public Health Supply Chain Strengthening



For each phase of the supply chain strengthening Framework, the toolkit presents a general overview of:

- What is this phase and why is it important; a Model process of activities for the phase, with sequencing, that should be adapted to country context;
- Recommended practices and lessons learned for implementing the phase, based on published case studies and guidelines as well as unpublished experiences shared through a broad interview and consultation processand
- Key resources that refers to tools and guidelines that will benefit most countries in implementing the specific phase.

The toolkit also provides several Country case studies that show application of the recommended practices and some Key capacity development interventions that provide examples of innovative and beneficial supply chain strengthening approaches that should be considered within comprehensive supply chain strengthening programmes.

Desired **OUTCOMES**

Improved availability and access to quality health products for the end user

The purpose of a health supply chain is to deliver an uninterrupted supply of required health products to the end user, in the required quantities and with the appropriate quality. The supply chain facilitates access to supplies by ensuring they reach communities or facilities that are convenient to users in the quantity and quality required. Thus, the primary objective of strengthening the supply chain is to ensure reliable product availability for health facilities and communities, and product access for end users, including vulnerable populations.

Efficient use of resources

The public health system is typically heavily resource-constrained in developing country contexts. Funding is rarely sufficient to meet the needs for procurement and supply chain operations, or for other critical components of the health system. In such an environment, the supply chain should maximize the use of resources. Sources of inefficiency include product wastage, duplication of efforts, weak planning and low worker productivity. Improving efficiency and providing greater value for money should be a desired outcome for any strategic public health supply chain strengthening process. Resources can be targeted to at-risk populations or to product groups that have the greatest health impact per dollar spent to improve cost efficiency.

Sustainable national capacity for supply chain management

National capacity is strong and sustainable[21] when local systems perform well without dependence on external assistance from development partners, in the short or long term. A high-performing supply chain may be achieved by a donor paying a world-class supply chain service provider to operate outside the national system; but this will not be sustained when the donor stops paying[22] and is likely to have perverse effects on the local system. The ultimate objective of a supply chain strengthening programme is to attain the desired supply chain performance goals through use of local plans, expertise, institutions and systems. Sustainability requires not only that the supply chain can be capably managed with existing capacity, but also that national institutions are able to develop and incorporate the capacities and system improvements that will be required to meet future needs.

Overarching **PRINCIPLES**

End-user oriented

This overarching principle is closely linked to the Desired outcome of Improved availability and access to quality health products for the end user. The end user,[23] i.e., the patient, should not be a distant, abstract end goal. Every step and intervention within the supply chain strengthening process should consider, How will this improve service for the end users? Otherwise, the strengthening processes risk becoming overly focused on relatively easy solutions that result in process improvements, but ultimately have little impact for end users. For example, a supply chain strengthening strategy may have a valid focus on obstacles at higher levels of the supply chain, leaving critical last-mile challenges for a later time; but increasing the efficiency and effectiveness of a central warehouse may not help the end users if the supplies get held up at district stores unable to handle the increased load. Meeting the needs of the end users for health supplies must be central in strategy development, implementation and measuring impact.

Government-led

Public health is a government responsibility. Furthermore, governments usually are the principal financier of the health system (even in many low-income settings) and the primary service providers. Governments should therefore set the strategic priorities for the public health supply chain and take ownership of the strengthening and capacity development process. The government must act as a steward of the process, coordinating the roles and input of all the different stakeholders and providing oversight. The government may need financial, technical or other assistance to play this role, and development partners are often willing to provide such support. Government leadership will usually be provided by the Ministry of Health leadership,

21 Financial sustainability is an additional, critical component of programmatic sustainability that is largely beyond the scope of this document, although it could be considered part of the enabling environment level of capacity development.

22 Assuming that the local government does not have the required financial resources and contract management capacity.

23 Note that, in this publication, the term 'end user' is used to refer to a patient or other individual who seeks health services and receives medicines or health supplies for his or her own use.

MOH programme staff and/or the Central Medical Stores. A government-led and country-owned process should not be equated with government-operated supply chain, as operations may be managed by parastatal or private sector organizations.

Coordinated and collaborative

While the government leads the supply chain strengthening process, other stakeholders who have a critical interest in the outcome should also be engaged throughout. Failing to involve the key stakeholders may undermine the entire process either by losing the support of key government or partner agencies, or by not incorporating important perspectives and knowledge that would have resulted in better strategies, implementation plans and measures. The government leadership, as steward of the process, must coordinate stakeholder participation in order to ensure a shared vision, aligned understanding of the process, and to avoid duplicative or conflicting activities. Without strong coordination, partners are likely to pull in different directions according to their organizational priorities. The stakeholders are many and diverse, so managing their collaboration may be complex; the government will need to develop appropriate structures to facilitate coordination (see Advocacy and engagement).

Long-term commitment

Supply chain strengthening is a long-term objective.[24] Both the government and partners should demonstrate sincere and profound understanding of the time and effort required to build strong systems and to develop the required individual, organizational and environmental capacities, as well as understanding of the potential benefits. They must be committed to the objective despite the likely challenges. While operational emergencies can be an important entry point for introducing supply chain strengthening approaches (see Advocacy and engagement), the commitment must go beyond trying to resolve immediate emergencies. Otherwise, when emergencies abate or when inevitable challenges emerge, the commitments may also fade. Where long-term commitment does not exist, the process and tools provided in this Toolkit can also be utilized to plan, implement, monitor and improve more narrow capacity development interventions and projects. Focused projects and interventions may help create the conditions for long-term commitment to a more comprehensive approach to build sustainable local systems.

Data-driven

The decisions and actions within each phase of the supply chain strengthening process should be informed by the best available data, information and experiences. Whenever possible, quantitative and qualitative data from the country system should be analysed to inform decisions. These should be supplemented with information on best practices, promising practices and failed practices from other countries and regions. The experiences and perceptions of stakeholders can be particularly informative when they are collective ones – i.e., when the different stakeholders agree on the challenges or required actions. The supply chain strengthening process is continuous and cyclical – requirements, research and information that are developed or collected during implementation should be utilized to update the implementation plan regularly, and even the strategy and performance measures as necessary.

24 Possibly medium-term where local capacity is already strong and dependence on partners is limited.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Defining THE SCOPE

Public health supply chains are complex systems with many factors to consider; there are multiple programmes that require different supplies (e.g., immunization, nutrition, malaria, HIV), multiple levels to the supply chain (e.g., central, regional, facility, community), various supply chain functions (e.g., estimating needs, procurement, distribution), and different policy and support systems (e.g., financing, organizational structure, human resource system, information system). Typically, not all the elements in all these areas can be feasibly managed within a single supply chain strengthening cycle, or within any one phase of the Framework. Therefore, at each and every phase, consensual decisions must be made about the priority areas on which the stakeholders' joint efforts will focus. In some cases, the most pragmatic approach is to begin with a more restricted scope that can be broadened as reforms and strengthening activities are successfully implemented, building confidence in the overall process.

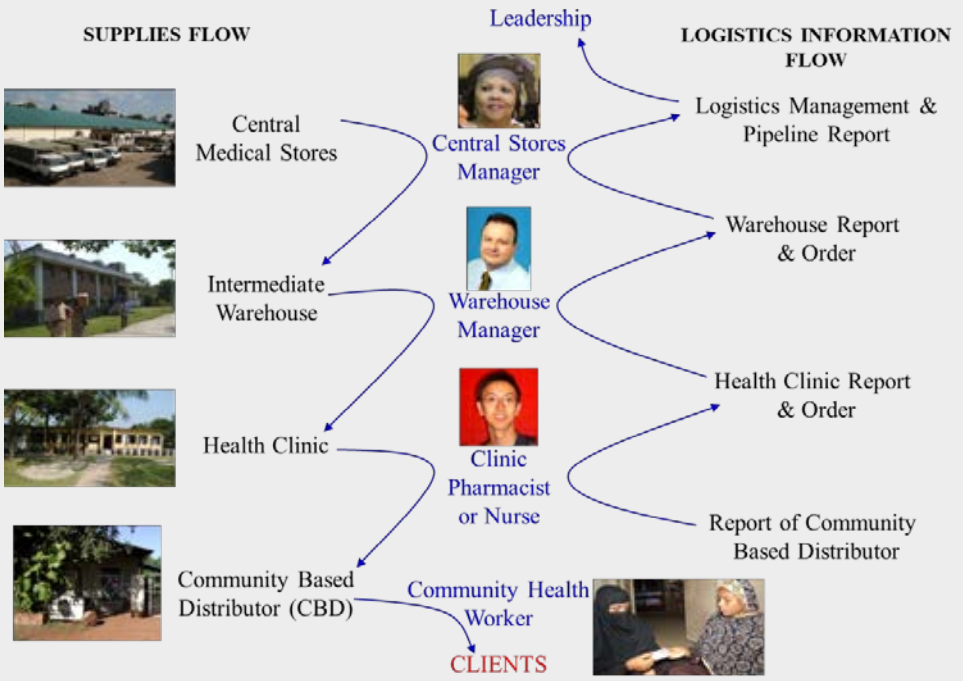
Defining the scope of the supply chain strengthening exercise is an important decision because it determines the top priorities on which efforts will be focused. In most contexts, scoping decisions will be required in every phase of the supply chain strengthening process. Scoping decisions should be collaborative ones that take into account the opinions of the different stakeholders. Finding a balance between addressing the top concerns of all the key stakeholders while keeping a manageable scope that is feasible to plan and implement can be quite complex when there are different opinions about priorities.

To help manage the complexity of the supply chain for the purpose of defining the scope, this toolkit characterizes the supply chain by four dimensions, each of which has multiple elements. The four dimensions are the supply chain levels, health programmes/products, supply chain functions, and policy and support systems. These dimensions are defined and characterized below. A checklist (Table 1) is also provided to assist in definition of the scope.

Table 1: Sample checklist for defining the scope at each supply chain strengthening phase.

	In or out of scope for the phase? (In/out)	If out of scope, presents risk to supply chain strengthening? (Yes/no)	If presents risks, what risk mitigation actions can be taken? (Describe)
Supply chain levels			
Central			
Provincial/regional			
District			
Hospitals			
Health facilities/clinics/posts			
Community			
Health programmes/products			
HIV			
Malaria			
Immunization			
Maternal and child health			
Nutrition			
Reproductive health			
Tuberculosis			
Laboratory			
Other essential medicines			
Other essential supplies and consumables			
Equipment			
Supply chain functions			
Definition of need			
Budgeting and planning			
Procurement			
Delivery and clearance			
Inspection			
Warehousing, distribution and reorder			
Utilization by end user			
Monitoring and evaluation			
Policy and support systems			
Policy			
Financing			
Management and leadership			
Organizational structure			
Human resource management			
Financial management			
Information management			

Figure 7: An illustration of supply chain levels, showing the infrastructure (left), key personnel (middle), and information flow (right) at each level. Source: People that Deliver.



Supply chain levels

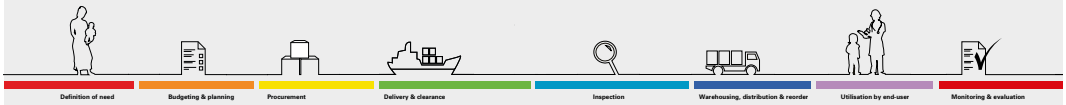
All supply chains have at least two levels, but public health supply chains typically have three, four or even more levels (Figure 7). Most often, the supply chain levels are based on the health system structure, which in turn are based on political and administrative structures. The supply chain does not stop where the warehouses stop, but where the product is provided to the final end user. One common, and lengthy, supply chain design is to have storage points at the central level, the regional level, the district level, the service delivery facility level and the community level (supplies managed by community health workers or in community pharmacies). In some cases, different programmes (e.g., vaccines, HIV and essential medicines) may have different supply chain structures and processes. The scope of the each supply chain strengthening phase must be defined in terms of which levels will be included.[25]

Supply chains function best when they are designed and managed from 'end to end' (for the in-country context, from port to community) as a single coordinated system (see discussion below). Therefore, a supply chain strengthening process should ideally consider all levels of the supply chain. However, there may be cases where this cannot be done, either because the mandate for the process does not cover all supply chain levels or because there are insufficient resources to cover all levels. In these cases, as many levels of the supply chain should be

25 Note that the strategic planning process may consider modifying the supply chain structure and the number levels.

26 People that Deliver, 'Improving Health Outcomes through Sustainable Health Workforce Excellence in Supply Chain Management', 3rd ed., People that Deliver, New York, 29 January 2012, >.

Figure 8: Public health supply chain functions.



included as possible. Due to resource constraints, the reality is that plans that theoretically encompass all levels of the supply chain often focus on the top levels.

Health programmes/products

Public health supply chains serve a multitude of health programmes, each of which utilizes a unique set of pharmaceuticals, other health products and equipment. Donor support to developing country programmes is sometimes 'vertical', focusing on a specific programme or programmes. The programmes that receive particular attention from donors, and often are also the top priorities for governments in developing countries, include immunization, HIV, malaria, maternal and child health, nutrition, reproductive health and tuberculosis. Each country defines its health programmes slightly differently.

The decision must be made as to whether all, or only some, programmes and product groups will be considered in the supply chain strengthening process. Where the supply chain is highly integrated across products, conducting a comprehensive supply chain strengthening process for a subset of programmes or products may be very challenging and will lead to inefficiencies and opportunity costs, since different programmes will have common characteristics. Where supply chains are largely vertical (with different supply chains for different programmes), it is more feasible to focus the process on a programme or set of programmes.

Supply chain functions

The supply chain consists of a series of interconnected functions. In some cases, there may be sufficient resources to include all these functions in the strategic planning, implementation and monitoring phases. Most often this will not be the case, however, and some of the functions will be of greater concern to supply chain stakeholders due to their weaker performance or the greater risk they present. The situation analysis should be utilized to determine which functions to prioritize for inclusion. Each country will have its own way of breaking up the supply chain into discrete functions. Figure 8 presents the supply chain functions according to UNICEF's characterization and definition, which are explained in detail below.[27]

Definition of need

Working with governments to design programmes and identify which supplies are needed and in what quantities, especially for products listed in the essential medicines list.

27 Source: United Nations Children's Fund, 'The UNICEF Supply Chain', >. Some definitions were modified for the present context.

Budgeting and planning
Identifying the amount and timing of the required budget and funding sources, and scheduling orders to ensure supplies arrive when and where needed.

Procurement
Buying the right products at the right price and quality via detailed specifications, competitive tendering, smart contracting and innovative funding mechanisms.

Delivery and clearance
Arranging transportation from suppliers to the port of entry and customs clearance.

Inspection
Verifying the supplies received are of the correct quantity, condition and quality.

Warehousing, distribution and reorder
Transporting supplies through a series of in-country warehouse or distribution points right to the end user. Also includes reverse logistics or waste management.

Utilization by end user
Supplies are provided to children and mothers as part of programme implementation by governments and partners.

Monitoring and evaluation
Closing the feedback loop in terms of on-time delivery and whether supplies were fit for purpose – to continuously improve products for children and strengthen supply chains.

Enabling environment and support systems

Like any organization or system, the supply chain must be supported by policies and management support systems. For example, to move a box of vaccine from a provincial warehouse to a district storeroom requires transportation, human resources, specialized equipment, information (how many boxes do they need, when), and payment of fuel and other costs. Each of these resources requires policies and structures that define how they are managed, and a system to manage them. Without any one of the required support systems, the vaccine could not leave the provincial warehouse.

The policy and support systems within the supply chain can be characterized in different ways; the categorization provided here is based on the seminal publication Managing access to medicines and other health technologies.[28] These systems are described here within the context of this toolkit.

Policy
The high-level and operational-level rules and guidelines that influence how the supply chain operates and is managed.

Financing
Funds available for the purchase of health supplies and for the operation of the supply chain,

28 Management Sciences for Health, 'Monitoring and Evaluation', ch. 48 in MDS-3: Managing Access to Medicines and Other Health Technologies, Management Sciences for Health, Arlington, Va., 2011, <>.

including for contracted services. Financing can come from government revenue or donor sources, and may flow through government channels or external channels.

Leadership and management

Guiding others in action by providing vision, common goals and inspiration (leadership) and by directing people and processes within an organized structure.

Supply chain structure and organizational structure

The hierarchical arrangement and lines of authority, communications and responsibility, both among the different supply chain nodes or bodies (e.g., warehouses, storerooms, health facilities) and within those bodies.

Human resource management

The systems, policies and practices used for organizing and managing the supply chain workforce, including human resource planning, recruitment, workforce development, retention and performance management, and professional development.

Financial management

The systems utilized to manage financial flows within the supply chain, including accounts payable and accounts receivable.

Information systems

The systems and procedures that are utilized to collect, transmit and analyse data and information for decision-making and action (including record-keeping documents, data-reporting forms, feedback reports) up and down the supply chain, which may be paper-based or electronic systems.

The supply chain strengthening process must decide which of these policy and support systems will be targets for capacity development. As for the other supply chain dimensions, including all the elements is usually not feasible due to resource and capacity constraints. Decisions on which to include should be based on the priority gaps, risks and bottlenecks.

Phase 1: ADVOCACY AND ENGAGEMENT

What is this phase and why is it important?

According to the overarching principles, the process of strengthening the supply chain must be led by the government and must include collaboration of key stakeholders. In many cases, an explicit advocacy process will be required to engage the government and/or partners. In some cases, the government may be the first to recognize the need for a strategic and continuous performance improvement process for the supply chain and will engage partners in the process. In other cases, a country partner – such as the UNICEF Country Office – may be the driver and need to engage the government and other stakeholders. Coordination structures (such as a supply chain working group) are required to coordinate the different agencies in guiding, overseeing and implementing the supply chain strengthening process.

At this early stage of the supply chain strengthening process, advocacy seeks to establish commitment from all key stakeholders to engage in the process in a substantial manner. From the government, the required commitment is to lead the process; this commitment must come from high-level decision makers who have a good understanding of the capacity development process. Establishing full understanding and commitment to the leadership role may require significant time for advocacy and communication, with both high-level and technical staff. Ultimately, the government should express its commitment through a formal communication and request for involvement from partners; a formal request for support would be required by some partners, including UNICEF.

The additional key stakeholders to be engaged may be many. Civil society can provide a voice for the public and ensure that the end user remains central to the strengthening process. Offices of the government beyond the Ministry of Health and Central Medical Stores may warrant involvement – such as those associated with health services (e.g., social services ministry; social security; AIDS, nutrition or family planning councils), ministries of finance and planning, or high-level offices (e.g., that of president or prime minister). All levels of the health

system should be engaged to guarantee that their primary challenges and concerns are being addressed.29 Donors who finance procurement or supply chain assistance and organizations that provide operational support and technical assistance should be involved to address their concerns and seek their buy-in for the plan to future implementation. Additional organizations providing supply chain services outside the public health system may also be included in the process where there is mutual benefit and potential conflicts of interest can be managed.

Attaining agreement that a rigorous capacity development process is necessary and beneficial may be a challenge. In an environment with many daily operational challenges, there may be concern that the additional burdens of planning, implementing and monitoring multi-year capacity development plans will create distractions without contributing useful and immediate solutions. However, frequent emergencies and recurrent stock-outs are themselves symptoms of a dysfunctional system that requires a strategic supply chain strengthening approach. Fundamental operational problems can only be solved by stepping back from the daily challenges, looking at root causes, and developing and implementing reforms. Thus, the emergencies can act as entry points to discuss deeper solutions; the recent Ebola outbreak in West Africa and the earthquake in Nepal are cases where an emergency situation led to recognition of the need to strengthen the health supply chain through a comprehensive programme. Entry opportunities can also be presented when high-level political statements are made about reducing stock-outs or improving service delivery. In some cases, partner agencies may make support for government-requested short-term support conditional on a longer-term strategic planning and capacity development exercise.

Specific advocacy arguments that can be made to follow a comprehensive supply chain strengthening approach, as described in this Process Guide and Toolkit, include the following:

- better supply chain performance, with increased ability to meet the needs of end users;
- more efficient supply chain operations, which will provide more services per dollar invested;
- less product lost to leakage, damage or expiry;
- fewer emergencies and stock-outs, allowing more time to focus on key drivers of performance;
- better information on what supplies are consumed and where gaps in services lie;
- additional opportunities for donor support, especially from those whose support must be aligned with national strategies, but also from other donors with increased confidence in the system; and
- potential for additional funds for the supply chain and the health system through performance-based payments, where they are included in the strategy.

Part of the Advocacy and Engagement phase should be identifying the structures through which the broad array of stakeholders will be involved. A typical management structure for a

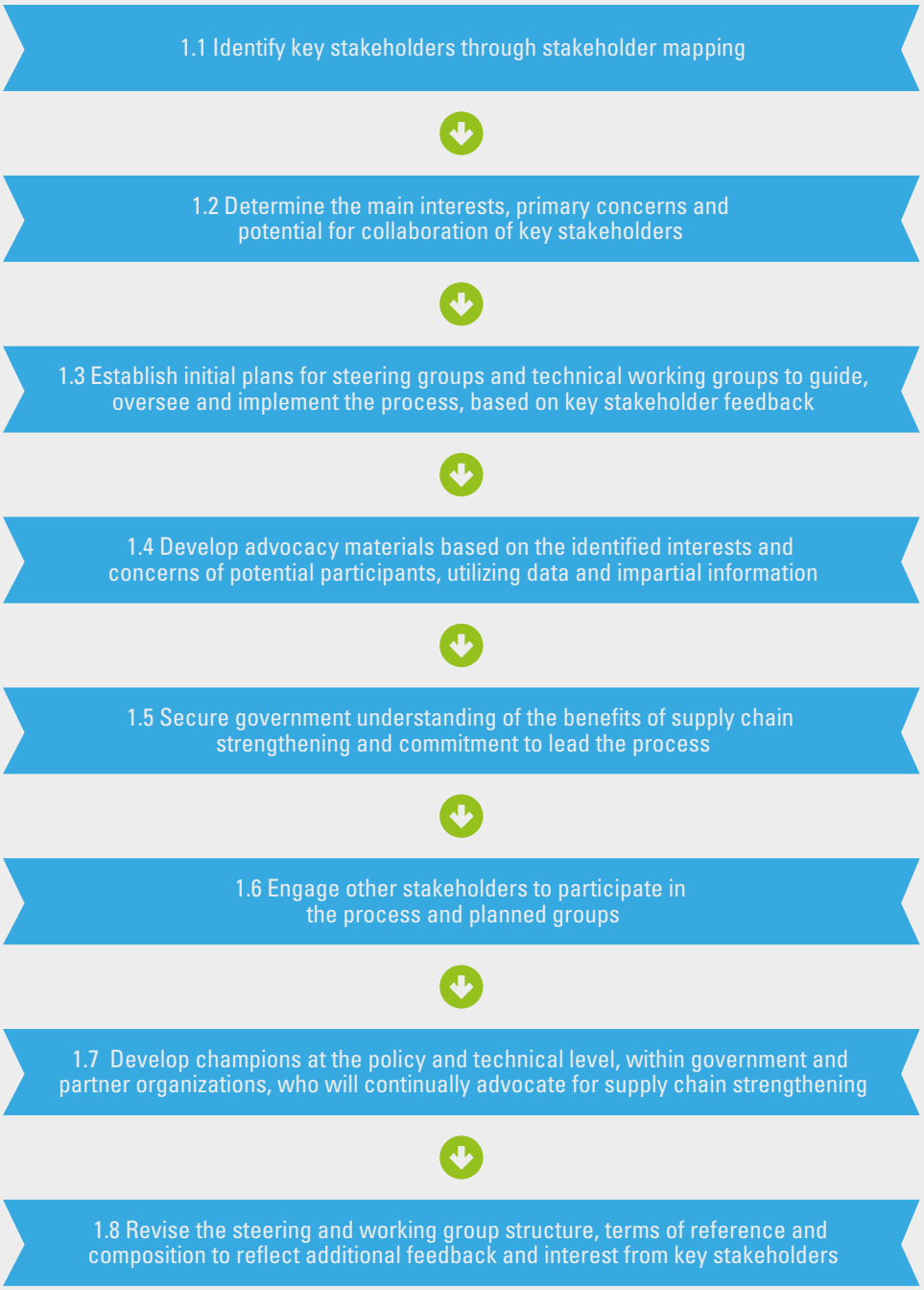
29 As discussed under Defining the scope, some processes may limit the strengthening activities to certain supply chain levels. This does not mean, however, that all levels should not be consulted, as activities at one level in a supply chain can have a profound impact at other levels.

Figure 9: A typical organizational structure to guide, oversee, plan and implement a strategic supply chain strengthening process.

national supply chain strategic planning process might include three types of groups (Figure 9) – technical working groups that develop the strategy and write the plans (and typically include technical people who will be instrumental in implementing the plan), a coordination group with broad membership that receives regular input (e.g., monthly or quarterly) and provides feedback, and a high-level steering group that provides overall guidance and oversight (see more discussion of the process management structures under Strategic and implementation planning and Implementation). For supply chain strengthening exercises that are limited in scope to a specific programme or project, the management structure can be lighter.

While the initial 'ask' of engaging stakeholders in the supply chain strengthening process may seem modest, it is extremely important for its long-term success; the awareness created at this early stage will facilitate a successful change management process during implementation. The level of engagement will indicate potential willingness to commit resources to implementation at later phases, and sustained engagement is more likely to result in buy-in of donors and partners to the results of the planning exercise.

Model process (1)



Recommended practices and lessons learned

- Involve influential people, i.e., opinion-shapers as well as advisers, to help develop and delivery advocacy arguments. Having high-level, mid-level and technical-level support is a good risk mitigation strategy for inevitable changes in leadership and staff.

- Conduct advocacy as a group or coalition to demonstrate that the objective is shared among multiple influential bodies/organizations/partners.
- Utilize data and evidence to clearly demonstrate the importance of the 'ask', including the potential impact of not acting.
- Indicate benefits for broader government-wide reforms that represent major national priorities, such as decentralization programmes or transparency programmes.
- Identify broad contextual factors that enable or constrain the supply chain and tailor advocacy messages to leverage or overcome these factors.
- Fine-tune the arguments and presentation to each stakeholder; a simple process of stakeholder mapping[30] can support this.
- Make the advocacy arguments compelling and attractive through the use of engaging visual, verbal and written communications of succinct and pertinent information.
- Utilize a high-level workshop to publicly affirm commitment from decision makers and technical staff, of both government and partner organizations, to the process. This can ensure a shared understanding of the overall goals, approaches and timelines involved.
- Seek input and participation from both the client[31] and the supplier of the supply chain levels that will be included in supply chain strengthening process.[32]

Resources – See Appendix 1

30 Stakeholder mapping tools can be found in: Management Sciences for Health, Managers Who Lead Toolkit—Resources to Support Managers Who Lead, Management Sciences for Health, Arlington, Va., 2005, <https://www.msh.org/resources/managers-who-lead-toolkit%E2%80%94resources-to-support-managers-who-lead>; and United Nations Children's Fund, 'Capacity Development for The Core Commitments for Children in Humanitarian Action', UNICEF, New York, 25 July 2011, >.

31 Note that, in this publication, the term 'client' is used to refer to a client (dependent) organization or body within the supply chain, not to the end user of the medicine or health product.

32 For example, if a plan will focus on strengthening the central and provincial levels of the supply chain, input and engagement should be sought from the district or facility levels (the provinces' clients) as well as the suppliers of the central level (e.g., product suppliers) to give input on the challenges they face in working with the supply chain.

COUNTRY CASE STUDY: BROAD STAKEHOLDER ENGAGEMENT IN SITUATION ANALYSIS SUCCESSFULLY LAUNCHES SUPPLY CHAIN REFORM IN SIERRA LEONE

At the end of the civil war in 2002, Sierra Leone's national health system was devastated and use of public health facilities was extremely low; stock-outs of essential medicines were the norm. In a financing agreement signed in that year, the Government of Sierra Leone and the European Union (EU) agreed to establish an autonomous supply chain entity to replace the existing governmental Central Medical Stores. The EU continued to develop the concept for an autonomous health supply chain body over the following years; however, the process was not sufficiently collaborative, and sincere buy-in from the government and other development partners was lacking. The concept was not implemented because of a lack of momentum and concerns over potential risks.

In 2009, the President of Sierra Leone approached UNICEF for support in resolving the continued challenges with the medicines supply chain. UNICEF and the Government agreed to a twin-track approach: first, UNICEF would procure and distribute health commodities to deal with immediate gaps; in addition, UNICEF would support a broader national supply chain capacity development initiative. Noting the challenges that the EU had faced previously, UNICEF facilitated a highly collaborative approach to capacity development. UNICEF agreed with the Government and partners that the first step should be an external assessment to make recommendations for strengthening the supply chain.

The Government and partner organizations were invited to jointly develop the terms of reference and to participate in the selection panel to contract the assessment firm. The assessment firm agreed with the need identified earlier by the EU for an autonomous supply chain management agency and, engaging closely with the government and partners, developed a detailed plan that included the legal, financial and technical requirements for the agency, as well as a capacity development approach. With broad partner and Government support, the concept moved forward and the National Pharmaceutical Procurement Unit (NPPU) was established by law in 2012. The terms of reference and the selection panel to contract a technical assistance organization to help establish and develop the capacity of the NPPU were conducted once again with full engagement of partners and Government. A three-year capacity development programme was awarded to Crown Agents and began implementation in 2013.

Two key lessons, highlighted throughout this toolkit, are clearly illustrated by this country case study. First, leadership from government and buy-in from key development partners is essential for a successful capacity development approach. Second, patience is required to enact real reform of the health supply chain; in this case, three years elapsed from the time the President approached UNICEF until the NPPU was created, and another three years were planned for strengthening the NPPU. Capacity development is not a short-term endeavour and requires a broad, collaborative and well-planned process.

Phase 2: SITUATION ANALYSIS

What is this phase and why is it important?

When a country begins a strategic and holistic supply chain strengthening process, and at critical stages during the process, an analysis of the current situation will be required to ensure that all stakeholders agree on the key issues and performance gaps. In some countries, such a situation analysis can rely largely on previous assessments and reports. In many cases, some new assessments will be required, either for the system in general or for specific areas where information is lacking. The situation analysis should not be limited to technical concerns, but also analyse political and enabling environment factors that may impact progress. This information will be critical to developing a feasible strategy to overcome the root causes leading to underperformance.

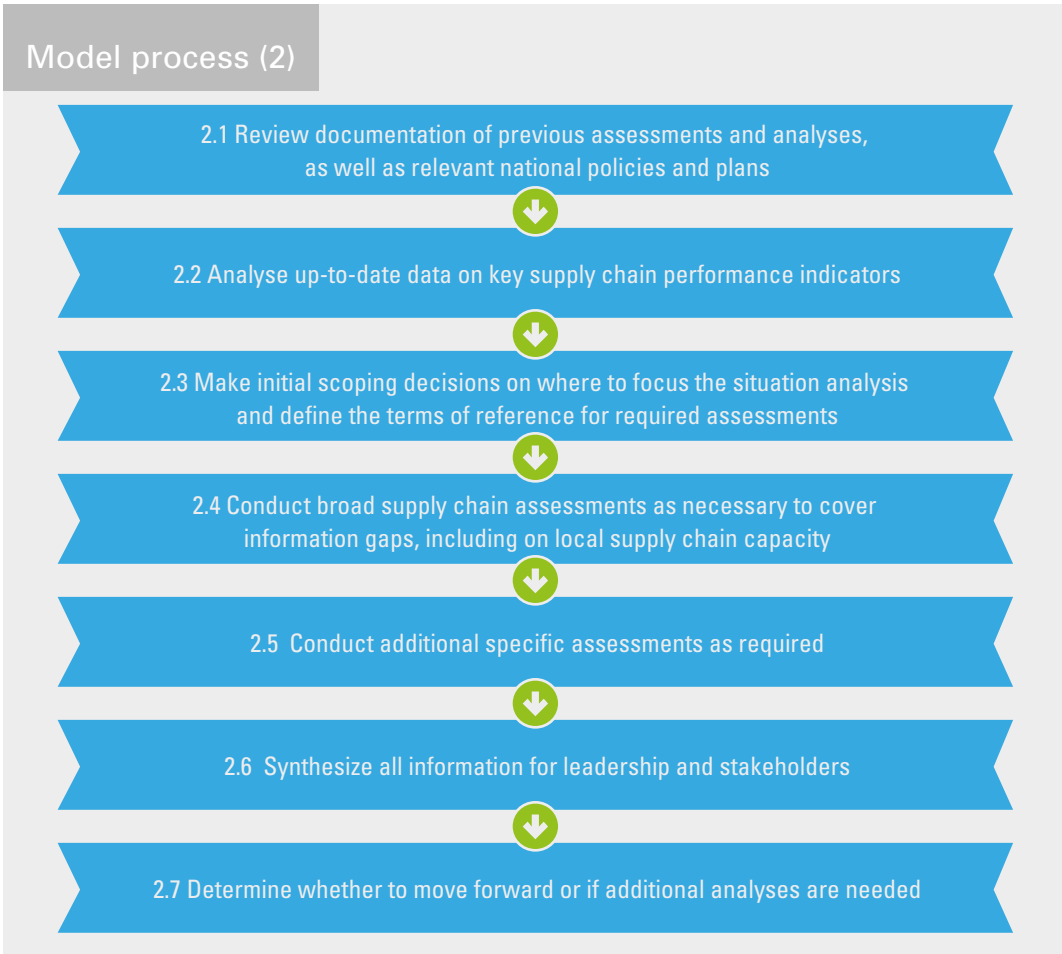
Systems strengthening requires a detailed situational analysis that documents the actual performance of the system, how this compares to desired performance, and the factors that may lead to success or failure. For a capacity development process, part of the situation analysis will be an assessment of how existing local capacities (at the individual, organizational and environmental levels) compare to the required capacities to manage a well-performing supply chain. The situation analysis is the precursor to the strategic and implementation planning process. Strategic planning should be based on a clear understanding of the system, the context in which it functions, its strengths and weaknesses, and the opportunities and threats that face it.

Analysing all aspects of all the elements of the public health supply chain is usually neither feasible nor productive (see Defining the scope). Some fundamental characteristics must be understood for virtually any public health supply chain situation analysis: supply chain structure and design, financing of product procurement and supply chain operations, general processes (not necessarily at a detailed level) and data on key indicators of performance for the supply chain. Decisions must be made about the depth to which different characteristics should

be analysed. These decisions are often driven by the perceptions of government and other stakeholders about where the greatest weaknesses and risks lie, and where subsequent strategy development may need to focus. Information from previous analyses and assessments should inform these decisions. Where such information is lacking, a broad supply chain assessment can be a useful first step to inform subsequent decisions about where additional information gathering efforts should be focused.

During the situation analysis, previously unrealized gaps in information/data are certain to appear. Moving forward without essential data or information could impede progress during subsequent phases, or lead to poor decisions on strategy. At the other extreme, one could continue collecting additional data on the supply chain endlessly, so it is necessary to be practical in determining when to move forward to the Strategic and implementation planning phase. This critical decision should be made by the leadership of the system strengthening process, ideally, a joint steering group.

When there is not time to conduct all the necessary studies and collect all the information of interest before the strategic planning begins, these can be included as activities within the strategy and implementation plan. Delaying studies until the implementation phase is especially reasonable when the study requires significant time to carry out and cannot be rushed (e.g., supply chain network design, information system design) or for studies that will not be essential in the initial strategy (e.g., if the initial strategy will focus on distribution systems and human resources, a review of procurement law is likely not to be essential for decisions in the first cycle of the supply chain strengthening process).



Recommended practices and lessons learned

- Stakeholders from government, development partners and other involved organizations should be included throughout the situation analysis process. Hold a workshop to launch the situation analysis process as well as a debrief workshop to update all stakeholders of the findings.

- Include a scan of the enabling environment to understand threats and opportunities that are beyond the control of the supply chain personnel. This may involve an analysis of the political economy of the supply chain to determine what reforms might not be politically feasible.

- Consider perspectives from all levels of the supply chain, not just the central or higher levels, to the maximum extent feasible.

- Compare performance across different geographic areas, warehouses and health facilities to identify top performers and promising practices.

- Assess the opportunities and capacities offered by the private sector, if private sector services may be part of the solution in your strategic plan (e.g., outsourcing, third party logistics or fourth party logistics).

- Consider using one of the many existing tools for assessing public health supply chains in low- and middle-income countries. See Appendix 1 for both general tools and specific assessment tools that focus on particular programmes, supply chain functions or support systems. Most existing supply chain assessment tools do not systematically discriminate between local versus partner capacity, so may overestimate local capacity. Some new resources do provide support in terms of required individual competencies as well as analysis of local ownership.33

- Use some of the many general management assessment and analysis approaches that exist to help identify priorities, needs and opportunities for strategic planning and implementation (Table 2). These approaches can be applied to the supply chain as a whole, or for specific components.

33 Resources that are most useful for supporting analysis of local supply chain capacity include the following, referenced under Key resources or Additional resources: the National Supply Chain Assessment Tool; the Human Resource Capacity Development in Public Health Supply Chain Management: Assessment Guide and Tool; the PtD Competency Compendium for Health Supply Chain Management; and the Effective Vaccine Management Tool.

Table 2: Various general management assessment and analysis approaches that are useful for the situation analysis phase of supply chain strengthening.

Analysis type	General objective	Value for supply chain strengthening	Relevant resources (Full references in Appendix 1)
Gap analysis	Compare the 'as is' state against the desired 'to be' state for capacity or performance.	Significant gaps between desired and actual capacity or performance indicate potential areas of focus for strategy development and implementation planning.	Capacity Development for The Core Commitments for Children in Humanitarian Action; Technical Note
Bottleneck analysis	Identify constraints that significantly limit the overall performance in a system.	Bottlenecks indicate potential areas of focus for strategy development and implementation planning.	How to Do a Bottleneck Analysis at District and Sub-district Level
Strengths, weaknesses, opportunities and threats (SWOT) analysis	Helps identify both positive and negative influences that are either under the control of the organization/ system (strengths and weaknesses) or beyond its control (opportunities and threats).	The strategic plan should leverage and build on existing strengths, improve weaknesses, take advantage of opportunities and plan how to mitigate threats.	Managing for Quality
Root cause analysis	Identify deeper-lying 'root' causes that result in performance gaps.	Develop strategies and interventions focused on overcoming root causes to have greater impact on performance.	Managers Who Lead Toolkit—Resources to Support Managers Who Lead Managing for Quality Capacity Development for The Core Commitments for Children in Humanitarian Action; Technical Note Building Capacity for Improvement
Risk analysis	Identifies the likelihood and potential impact of risks facing the supply chain, to determine the overall risk factor for each.	Indicates key areas of focus and priority by demonstrating the critical success factors, the areas that bring the greatest risk if not improved, and where the greatest rewards for reforms may lie.	Understanding Supply Chain Risk: A self-assessment workbook Supply Chain Risk Management Best practices guide Risk Management for Public Health Supply Chains: Toolkit for identifying, analyzing, and responding to supply chain risk in developing countries
Value stream mapping	Identifies higher-level processes, focusing at the strategic level and allowing the user to visualize the whole system.	Standardized metrics facilitate the detection of waste within the system, and indicates where interventions to reduce or remove waste should be oriented.	Value Stream Mapping in Non-Manufacturing Settings

Resources – See Appendix 1

COUNTRY CASE STUDY: CAPABILITY DIAGNOSTIC SETS STAGE FOR CAPACITY DEVELOPMENT IN NIGERIA

The National Primary Health Care Development Agency (NPHCDA) of Nigeria was established in 1992 to support policy, planning, management, resource mobilization and implementation of primary health care under the supervision of the Federal Ministry of Health. In 2014, the NPHCDA created a Department of Logistics and Health Commodities to ensure safe and timely delivery of public health commodities to all regions of the country. The Department seeks to be a top-class logistics provider and to drive transformative supply chain initiatives. The Department and partners, coordinating through the National Logistics Working Group, jointly considered what bottlenecks might limit the NPHCD's ability to achieve these goals and realized that capability gaps were a key challenge.

With support from the Gates Foundation and additional development partners, a comprehensive diagnostic assessment of the technical, managerial and behavioural capabilities of the Department at the individual and organizational level was conducted. The assessment interviewed staff at the national, zonal and state levels, to provide both self-assessed and interviewer-assessed skill ratings, and surveyed staff and partners on their perceptions of Department-wide capabilities. The diagnostic identified that the staff included strong, experienced managers with relatively new technical staff, most of whom had come to their roles recently. The technical staff felt that they were dependent on partners for technical support to carry out many core logistics functions. There was often a mismatch of skills, due to transfer of personnel between different technical roles within the Department. The staff had high aspirations for future capacity levels, and the partners and donors had even higher expectations. The diagnostic identified the specific areas where gaps between existing and desired aspirations were greatest.

In response to the assessment, the NPHCDA developed the Supply Chain Leadership Development Programme, which includes a comprehensive capability improvement programme for the Department and individual learning plans for each staff member. The Government took the lead on programme implementation and coordination, and the development partners took responsibility for supporting the programme. Costs were kept down by utilizing experienced staff from the NPHCDA and partners to provide the trainings, and by hosting the trainings in partner conference rooms. Programme implementation is monitored through a tracking document. With the skills developed so far, the NPHCDA is already taking the lead in some technical areas, including supply planning and quantification of vaccines. An impact assessment is planned for the end of the year to document the progress that has been made.

Key lessons and best practices that emerged from the NPHCDA logistics assessment include:

- Joint planning and coordination across stakeholders, using the National Logistics Working Group, led to broad buy-in and support for the assessment, planning and implementation process.
- The Government and partners jointly identified a critical bottleneck to achieving goals (Departmental and individual capability), where the diagnostic and gap analysis focused.
- The diagnostic assessed capability at the two levels where the NPHCDA Department of Logistics and Health Commodities works (national and zonal), as well as one lower level (state) where the Department does not work but that is critical to meeting the NPHCDA's goals.
- The targeted assessment drove programme and implementation planning and ensured that activities would address key gaps and bottlenecks.
- Commitment from Government and urgency among all stakeholders allowed the process to move forward very quickly – only a few months were required to move from assessment planning to implementation of the training plan.
- The programme is helping to transfer some of the duties currently being handled by development partners to the Department, while the partners maintain a technical advisory role.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Phase 3: STRATEGIC AND IMPLEMENTATION PLANNING

What is this phase and why is it important?

An essential piece for comprehensive system strengthening and capacity development is agreement between the government and its partners on a strategy. What are the desired performance goals that the system should achieve? What are the strategic objectives that the country must attain in order to meet those performance goals? How will the strategy be implemented? What capacities must be developed? Whether working at the level of a national strategy, a programme or a project, a strategic plan is required to define the goals, objectives and reforms that will guide the strengthening process. The strategic plan should be accompanied by a specific implementation plan, or work plan, that clearly defines activities, responsible agencies, timelines, budgets and funding sources. The implementation plan will be the key document for putting the strategy into action.

The WHO defines a strategy as "a series of broad lines of action intended to achieve a set of goals and targets set out within a policy or programme."[34] In the context of supply chain strengthening, a comprehensive reform process should be integrated into the national health supply chain strategic plan[35] or the health sector strategic plan. Some supply chain strengthening initiatives are more limited projects or programmes, and might require a more focused strategy. In either case, the strategy should be demarcated by a clearly Defined scope, and be designed to overcome the critical performance and capacity gaps, bottlenecks and/or risks identified through the Situation analysis. A strategic plan should be aspirational, but achievable. It should not be an exhaustive list of all that could or should be done to strengthen the supply chain, but should provide a clear and reasoned argument for the most important priorities and reforms to be implemented.

34 World Health Organization, 'Health Impact Assessment Glossary', >.

35 See the Health Commodity Supply Chain Master Plan of the Ministry of Health, Republic of Ghana, as an example of a good national supply chain strategic and implementation plan: <http://iaphl.org/files/2014/05/GhanaSCM-2013.pdf>.

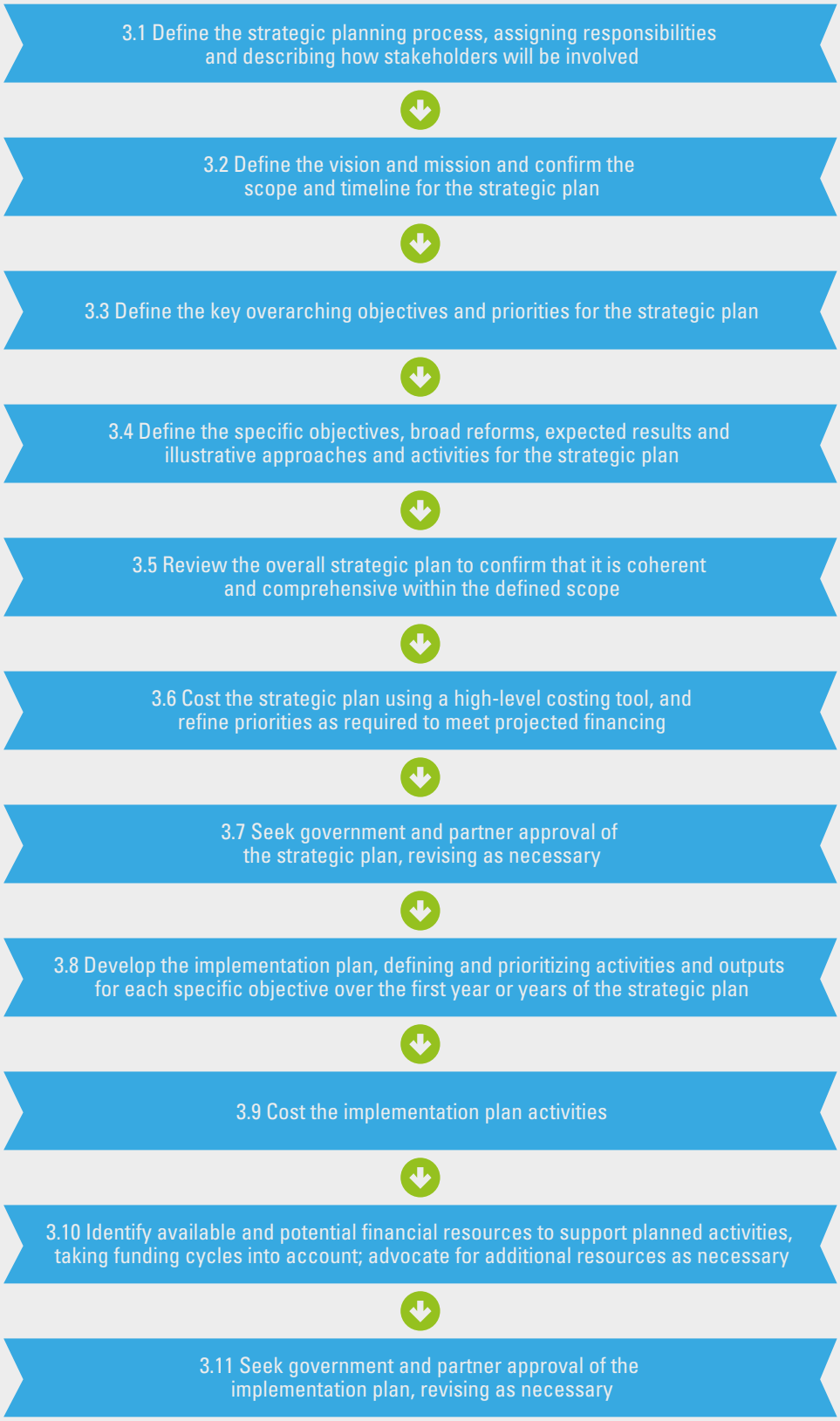
National strategic plans in developing country public health systems are typically five-year plans, and nearly always between three and ten years in length. A strategic plan typically includes a high-level vision (the desired end-state, which can go beyond the time frame and functions of the involved actors), a mission statement that defines the overall goal for the strategic plan itself (within the time frame and functions of the involved actors), multiple objectives, a performance framework for measuring progress (see Performance measurement) and cost estimates.36 As described in the Advocacy and engagement and Situation analysis chapters, structures should be created to guide, develop and oversee the strategic planning process. Since the strategic plan will set the overall direction for future reforms, active involvement of broad stakeholders is particularly critical during this phase. A strong supply chain strategy can serve as the basis for future funding proposals to donors and implementing partners.

Strategic plans have been a fundamental component of health systems planning for decades, but the actual activities and the associated budgets are often not contemplated or documented and the plans remain unimplemented. To improve implementation, strategies should be accompanied by implementation plans that describe the activities and interventions that will be employed to achieve the strategic objectives. Implementation plans also define the timeline, outputs, costs and responsible parties associated with each activity. Ideally, the source of funding for each activity should also be specified, although there may be financing gaps at the time the plan is finalized. Prioritization of the multitude of activities should be clear and available funding should be directed towards the highest priorities. Activities planned within the strategy and implementation plan should be proposed to both in-country and global donors, and must take into account the funding cycles of these organizations. Implementation plans should, in turn, drive the annual operational and fiscal plans that are typically developed at all levels of the health system. Those plans will also include basic, recurrent activities that need not be specified in the implementation plan.

Because of their greater specificity, implementation plans may have shorter timelines than strategic plans; or, they may have detailed activities and budgets for only the first year or years of the strategic plan, with notional activities and budgets for subsequent years. Implementation plans should be living documents that can be modified and updated frequently without arduous approval processes – timelines are likely to shift and results from some activities may make other planned activities obsolete, or indicate a need for previously unplanned activities. Implementation plans may also include studies or other data collection exercises that will inform and shape future plans and activities. Budgeting for implementation plans can be done at the activity or intervention level, utilizing the standard ingredients-based methods typical of government systems or donors such as the Global Fund. When implementation plans with clear costs are developed, costing of the broader strategic plan may not be necessary.

36 The OneHealth Tool is a specialized costing tool designed for use in strategic planning for health programmes, which allows interactive budgeting and target setting at the strategic level. See Key resources.

Model process (3)



Recommended practices and lessons learned

- Consider various options when developing strategic solutions, including options that may not have been tested in-country before. For example, look to private sector practices for possible solutions, innovations or lessons.

- Take into account the political and financial feasibility of potential reforms and interventions. Political economy analysis may be beneficial.

- Verify that strategies are compatible with the sector's capacities, resources and constraints, and are based on evidence and good practice. Consider effectiveness, efficiency and sustainability when designing interventions.

- Include risk management strategies within the overall supply chain strategy and plan, building on risk assessments carried out in the situation analysis phase and on identified critical success factors.

- Define strategic objectives that are aspirational – to drive new approaches and thinking – and SMART – specific, measurable, achievable, relevant (to achieving the overall vision and aligned with the other objectives) and time-bound.

- Create a technical working group to write the plan; avoid having a single individual or external consultants write the plan. Include the key personnel who operate the supply chain and will implement the plan in the working group, to ensure their input, buy-in and future support.

- Consider using experienced strategic and implementation planning consultants to assist in coordinating the overall process, developing and monitoring a schedule, facilitating workshops, and acting as objective and experienced reviewers/arbitrators. Ideally, consultants should have experience with the local supply chain and other national systems, and knowledge of global best practices.

- Design 'quick wins' that can rapidly demonstrate beneficial results (e.g., in less than one year) within the implementation plan. This will support the continued engagement and motivation of government and partners.

- Define clear outputs and outcomes for each activity in the implementation plan so that progress can be easily monitored; the output itself should provide added value to avoid additional work solely for the purpose of verification.

- Review implementation plans to assure that they are internally coherent, do not include duplicative activities and are appropriately sequenced.

- Explore use of the critical path method and/or project management tools to assist in implementation/project planning.[37]

37 See for example: Management Sciences for Health, 'Planning for Pharmaceutical Management', ch. 38 in MDS-3: Managing Access to Medicines and Other Health Technologies, Management Sciences for Health, Arlington, Va., 2011, <https://www.msh.org/sites/msh.org/files/mds3-ch38-planningmgmt-mar2012.pdf>.

38 This case study is based on: John Snow, Inc. and Ministry of Health and Social Welfare, 'How the Liberia Supply Chain Master Plan Was Developed', JSI, Arlington, Va., 2011. A draft of the strategy is available at: <http://tinyurl.com/l8vovgb>.

COUNTRY CASE STUDY: SUCCESSES AND CHALLENGES WITH COORDINATION FOR SUPPLY CHAIN STRATEGY DEVELOPMENT IN LIBERIA[38]

In Liberia, a number of parallel supply chains, working outside the government system, had been set up during and after the decade-long civil war (1989–1997). The fragmentation of the supply chain led to challenges in coordinating activities and to reactive management that focused on resolving emergencies rather than comprehensive strengthening. To overcome these challenges and develop the capacity of the government supply chain, the Ministry of Health and Social Welfare (MOHSW) decided to embark on a strategy and implementation planning ('Master Planning') process with partners.

Discussion of the plan began in 2007, but the strategic plan was not actually written until 2010 when it became a requirement for funding from the Global Fund. The situation analysis conducted for the Master Plan was based on previously conducted assessments and consultative discussions with stakeholders, rather than commissioning new assessments. Consultative workshops were utilized to bring stakeholders to consensus on a common vision for the supply chain. An integrated supply chain system was designed and submitted to senior leadership of the MOHSW and partners for approval. The strategy was written and approved in only three months. The country then engaged in Implementation Plan development over the next two months, which utilized workshops to translate the strategy into a detailed implementation plan with timeline, responsible parties and costs. The Implementation Plan organized and sequenced supply chain strengthening activities, providing a framework for prioritization, resource mobilization and monitoring of progress.

Various recommended practices for coordination were highlighted as success factors in the master planning process:

- Leadership, ownership and participation of the government was essential; they coordinated the process and developed consensus among partners on a single strategic vision; top leadership participated actively in the planning process, providing critical input and buy-in.
- Broad 'design teams' were created to develop the strategies. These teams had representation from all supply chain technical areas, and government representation was supplemented with complementary external expertise.
- A participative strategic planning process ensured common understanding of how supply chain roles and responsibilities would evolve.
- Concrete timelines (in this case, Global Fund proposal deadlines) created and maintained motivation to progress with the planning process.

The master planning process also identified some challenges to coordination to be aware of:

- Reaching agreement among partners on the planning approach and scope was difficult; ultimately the MOHSW and neutral partners needed to negotiate agreement among major partners who disagreed.
- Issues that remained unresolved at the end of the strategic planning process subsequently caused delays in implementation planning.
- Lack of continuity of the participations from the strategic to the implementation planning reopened some strategic decisions during the implementation planning phase.
- Partner funding cycles and requirements were not clearly communicated to all involved stakeholders, creating disappointment among some when delays were experienced between plan approval and the start of implementation.

COUNTRY CASE STUDY: LESSONS FROM THE NATIONAL SUPPLY CHAIN STRATEGY PROCESS IN ZAMBIA[39]

Zambia is a lower-middle-income country that faces significant health challenges, including high maternal and child mortality and a high burden of disease, especially malaria and HIV. The Minister of Health declared that "the capacity of the in-country supply chain to accurately forecast, procure and deliver essential medicines and health supplies on time to the health centres remains a major constraint" for the country to meet its health goals. The Government of Zambia, in coordination with development partners, therefore embarked on the elaboration of a National Supply Chain Strategy to guide the Government in improving supply chain performance and capacity.

The strategy was built upon a broad situation analysis for the supply chain, which included internal and external studies and an evaluation of the sector's strengths, weaknesses, opportunities and threats. The situation analysis and extensive consultations resulted in the identification of nine main objectives as well as nine supply chain functions or 'strategic pillars' for the National Strategy. Strategic interventions, critical success factors and indicators were identified for the objectives and pillars. Finally, the strategy was costed through a workshop led by the Ministry of Health Planning Department. The strategy development process was highly consultative, including several Ministries, the parastatal Medical Stores Limited (MSL), civil society organizations and many donors and technical partners.

The strategy identifies supply chain strengthening interventions at all levels of capacity development. Examples at the enabling environment level include: increasing government funding of health commodity procurement and supply chain operations; improving procurement coordination, engaging the private sector; and instituting fees for supply chain services by the Medical Stores Limited. Examples for strengthening organizational capacity include: defining the management structure for the supply chain at lower levels; enhancing the storage infrastructure; implementing a new LMIS system; creating a waste management system; creating a monitoring and evaluation framework; creating job descriptions; and creating a supply chain career path. Examples oriented towards strengthening individual capacity include: establishing an MOH budget line for supply chain training; creating a centre of excellence to conduct training; increasing data analysis capacity; and outsourcing to attain additional skills.

Participants in Zambia's supply chain strategic planning process highlighted many lessons learned, which are described in this process guide:

Coordinating the many partners and their differing priorities was a challenge, and slowed progress; this challenge was only overcome when the Government took leadership of the planning and coordination process.

An expert external consultant supported the consultation and planning process, and prepared an initial draft strategy; the final draft strategy was developed by a small team that included staff from both government (MSL) and partners.

Government involvement in the drafting team and MOH leadership of the costing exercise led to rapid endorsement of the plan once an acceptable draft was finalized.

Frequent consultations with all key stakeholders, open sharing of information among the different stakeholders, and consideration of political feasibility were all essential to producing an acceptable draft strategy.

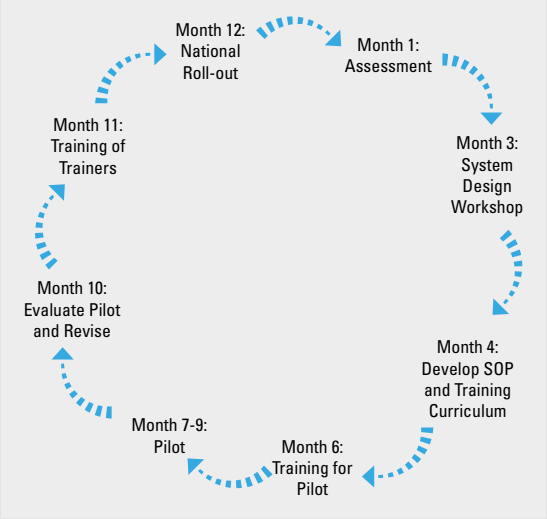
Key capacity development interventions [40]

Supply chain system design

When the capacity development process is integrated into a national supply chain strategy, one strategic decision to consider is whether the supply chain system itself should be modified – so that it operates more efficiently, provides better service or is more suitable to manage with local capabilities and systems. A supply chain system design process determines the key policies and procedures that govern the supply chain – especially those that will govern the logistics information management system, the inventory control system, storage and warehousing, and the distribution system; it should also identify the personnel and competencies required to manage the system. As such, supply chain system design is integrally related to the broader supply chain strategy, and decisions about one will affect the other.

The USAID | DELIVER Project[41] describes a recommended process for supply chain system design, based on their extensive experience in this area. As seen in the figure below,[42] the steps in a system design process are very similar to those for the overall supply chain strengthening process and can be integrated into the broader supply chain strengthening process. A newly designed supply chain system should be pilot-tested to identify potential difficulties or unforeseen consequences before national roll-out. Supply chain system implementation is an extended process requiring strong commitment and support from government and donors.

For immunization systems, a new tool has been developed that makes recommendations for both supply chain system design and network optimization (see below for more on Network optimization), based on modelling and simulation that utilize local vaccine system data and information.[43] The models can make projections about the impact of different system designs on key performance indicators such as vaccine availability, vaccine wastage, storage capacity utilization, transport capacity utilization or vaccine doses delivered.



39 Primary Resource: Ministry of Health of Zambia, National Supply Chain Strategy for Essential Medicines & Medical Supplies 2013–2016, Ministry of Health, Lusaka, 2014.

40 Several useful interventions to consider within a supply chain capacity development process are listed in the Strategic and implementation planning and Implementation chapters of the document. These are not intended to be exhaustive, but to give the user examples of innovative and beneficial supply chain strengthening approaches. Several of these are highlighted in: Gavi Alliance, 'Gavi Immunisation Supply Chain Strategy', Gavi Alliance, Geneva, 2014, >.

41 Intervention description is largely based on: USAID | DELIVER PROJECT, Planning and Implementing a Logistics System Design Activity, USAID | DELIVER PROJECT, Arlington, Va., 2009, <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/PlannImplLogiSyst.pdf>.

42 Source: USAID | DELIVER PROJECT, Planning and Implementing a Logistics System Design Activity, USAID | DELIVER PROJECT, Arlington, Va., 2009, <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/PlannImplLogiSyst.pdf>.

43 HERMES, 'Highly Extensible Resource for Modeling Event-Driven Supply Chains', <http://hermes.psc.edu/home.html>.

Integration and segmentation[44]

Three areas of significant interest for public health supply chains over the past years have been end-to-end (or vertical) integration, horizontal (or product) integration and segmentation. Each of these topics is likely to come up during the supply chain strategic planning and strengthening process, and each is briefly discussed below.

End-to-end integration refers to integrating the processes along the supply chain. When supply chains are not integrated from end to end, each level or functional area of the supply chain may have different priorities, objectives and perceptions of demand. This can lead to working at cross purposes and to distortion of basic supply chain information, resulting in overstocks and stock-outs. End-to-end integration seeks to avoid such distortions by sharing information and data among the different levels and functions of the supply chain and aligning their objectives. End-to-end integration is a best practice in the commercial sector supply chain, where the focus is typically on improving information sharing when there are different organizations involved at different levels. In public health supply chains, often the same agency (i.e., the Ministry of Health or Central Medical Stores) is responsible for the supply chain from procurement and customs clearing to delivery to the health facilities, but information sharing and alignment across levels is often weak. Such systems provide good opportunities for end-to-end integration. Typical interventions to support end-to-end integration include improving data visibility, establishing information feedback loops and creating incentives that align motivations and objectives across the supply chain.

Product (i.e., horizontal) integration seeks to incorporate different products within the same processes and system at a given point in the supply chain. In some systems, 'priority' products that receive significant donor funding are managed under separate supply chains, often outside the government system. Managing all health products within one, well-performing national supply chain (which could be a public or private sector system) should result in both operational efficiencies and greater sustainability. Many countries have made significant effort to integrate previously parallel supply chains into the main government supply chain. Beyond the technical and political challenges of doing this, another key challenge is willingness among partners to compromise on some performance and data visibility expectations when the priority products are integrated with hundreds or thousands within a broader system.

Even where products are integrated within a single supply chain, not all products can be treated equally. Many health products have special characteristics that require special treatment – these characteristics can include patterns of demand (high-velocity products, seasonal products), temperature requirements, shelf-life limitations, high value/risk of theft, or potential to contaminate other products. Segmentation is the process of identifying product groups that have similar characteristics and can be managed with the same procedures at a point within the supply chain. Segmentation should be a critical component of any supply chain system design (see above) or integration process.

44 Primary references:
World Health Organization, PATH, Integration of Vaccine Supply Chains with Other Health Commodity Supply Chains: A framework for decision-making, Seattle, Wash., WHO, PATH, 2013, <www.path.org/publications/files/TS_opt_integration_rpt.pdf>.
Allain, Linda, et al., Reengineering Public Health Supply Chains for Improved Performance: Guide for Applying Supply Chain Segmentation Framework, USAID I DELIVER PROJECT, Arlington, Va., 2010, <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/ReenPublHealSC.pdf>.

Accessing capacity through outsourcing to the private sector[45]

Supply chain strengthening does not require the development of all required supply chain capacities within the government or Central Medical Stores (CMS). Even world-class supply chain organizations outsource certain supply chain functions rather than build all required capacities in-house. Global development partners and countries are increasing looking at the private sector as a source for solutions to public health supply chain challenges. In many developing countries, the private sector has more advanced supply chain capacities and is more cost-efficient than the public sector, meaning that performance can be improved even while costs are reduced. The most common areas considered for outsourcing in public health supply chains include customs clearing, warehousing, transport and general services (e.g., maintenance or information technology development and support).

Outsourcing is not a panacea, however, and does not completely relieve government systems of the need to develop capacity in outsourced areas. The government must have the capacity to assess both cost and capability in the private sector before deciding to outsource a service; otherwise the government may turn to the private sector in areas where capacity is insufficient or costs are higher. Once the decision to outsource is made, the government must have sufficient technical capacity to write clear and complete technical requirements and terms for the service agreements, and to assess the proposals. After award, the government must have systems and capacity to manage the performance of the service provider – i.e., to monitor performance and to take corrective action when prescribed performance expectations are not met. The government must also have the financial liquidity and management systems to guarantee on-time payment for services. Lastly, the government must understand that it still has the ultimate responsibility for performance – fault for underperformance will rightly fall on the MOH or CMS if they are unable to award and manage the contract successfully.

Outsourcing can be a highly successful strategy for accessing external capacity, reducing the overall burden for capacity development, and increasing performance. However, outsourcing does not eliminate the need for capacity development – rather, it shifts the scale and the specific profile of individual, organizational and environmental capacities that must be developed.

Resources – See Appendix 1

45 Primary references: USAID I DELIVER PROJECT, Task Order 1. Emerging Trends in Supply Chain Management: Outsourcing public health logistics in developing countries, USAID I DELIVER PROJECT, Task Order 1, Arlington, Va., 2010, <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/EmerTrenSCM_Outs.pdf>; and
Bornbusch, Alan, et al., 'A Stewardship Approach to Shaping the Future of Public Health Supply Chain Systems', Global Health: Science and practice, vol. 2, no. 4, 2014, pp. 403–409, <www.ncbi.nlm.nih.gov/pmc/articles/PMC4307857>.

PEV

FICHE DES SERINGUES

N.B. : - une seringue par enfant et par injection
- une seringue de dilution par flacon de vaccin.

A	B	C	D	E	F	G	H	I	J
Date	Destinataire/Origine		Opération	Nombre de pièces			N° lot		
	Client/Fournisseur	ZS/Antenne	Objet	Entrées	Sorties	Fabriquant	LOT	Date Péremption	Quantité
				1600					

Minimum	STOCK (Doses)	
	Alerte	Maximum

Phase 4: IMPLEMENTATION

What is this phase and why is it important?

A strategic plan is critical for supply chain strengthening, and many countries focus significant energy on this essential step. Implementation of the strategic plan is a demanding phase that often falters, as it requires the coordinated and continuous action of many organizations, units and individuals over an extended period, and the benefits are often not seen immediately. A supply chain strengthening process can lose momentum as efforts for the medium and long term come into conflict with daily operational tasks. Implementation challenges can be mitigated through strong leadership and by focusing part of the implementation plan on the enabling factors that will support successful implementation – including change management. The activities and outputs defined in the implementation plan must be regularly monitored so that the challenges and delays in implementation are recognized, analysed and corrected.

Implementation is where the Strategic Plan is put into practice to improve supply chain performance and local capacity. All the previous phases of the Framework for Public Health Supply Chain Strengthening are designed to lead to successful implementation. As implementation is the phase where strategic and systems strengthening processes often break down, actions should be taken to mitigate the risk of failure.

A formal change management process is essential for successful implementation when significant reforms are envisioned. Changing behaviours that are entrenched is often a greater challenge than developing technical improvements. Staff can feel threatened when they are requested to undergo training or to change roles or behaviours; such proposals should be communicated as a positive opportunity to contribute to the overall improvement process, not as a response to poor prior performance. The UNDP states that capacity development, "whether intentional or not, can lead to shifts in roles and responsibilities. These can unsettle vested interests and established power structures and require changes in behaviour, norms and values. To be effective, supporting capacity development therefore requires us to

create appropriate political and social incentives and mobilize strong political ownership and commitment."[46] The purpose of a change management process is to identify and mitigate risk factors and create appropriate incentives and alignment.

Change management (see Figure 10 and Key resources) begins with creating a climate for change. The climate should have largely been developed in the preceding phases of the supply chain strengthening process – including the development of a powerful, guiding coalition (i.e., the coordination and steering groups) and creation of a shared vision (the strategy). Advocacy efforts are likely to be needed to ensure that the sense of urgency is sustained and not lost after the great efforts put into strategy development.

Engaging the whole organization in the change process is the next step. This starts with communicating the plan to all relevant actors. The strategic and implementation plans will be daunting documents to read, so actors should receive messages tailored to what is important for them, advocating and explaining the expected benefits (from the actor's perspective) and recognizing possible additional expectations or responsibilities. Communication about the plan should be reinforced through multiple different streams, both formal and informal, and should encourage interaction and discussion. Furthermore, the communication should be not just through words, but also through actions of senior figures in implementing the plan. Such actions can include integrating the strategy and implementation plan into the operational plans and budgets of both the government and partner organizations.

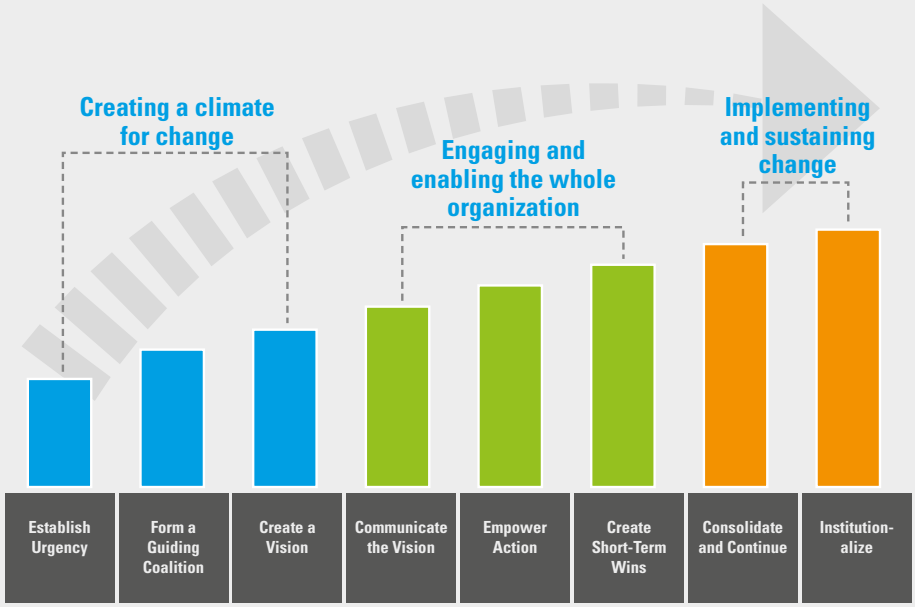
Actors in the supply chain should be empowered to try new approaches and the leadership should work to remove obstacles to innovation (e.g. bureaucracy, limitations of job descriptions). Actors in the supply chain should also receive strong motivation to implement the strategic plan through accountability and incentivization. Accountability for responsibilities defined in the plan should flow both up and down the supply chain, using defined structures. This can be done, for example, by incorporating implementation into performance reviews, by monitoring implementation through open meetings of the coordination groups established for preceding phases, and by sharing implementation monitoring reports widely and at all levels of the supply chain. Incentivization can be stimulated by creating individual or collective rewards for outcomes or activities that are in line with the strategy. Rewards can include direct monetary incentives (e.g., merit-based pay and performance evaluation systems) or non-monetary incentives (e.g., recognition, professional development, work environment), and can be provided to individuals or teams (encouraging teamwork).

Ultimately, for the implemented changes to be sustained, they must be institutionalized within the organizations and supply chain. The first step to institutionalization includes ensuring that plans, policies, standard operating procedures and training materials represent the new procedures and approaches. But it also requires continued effort to create and foster champions for the strategy – communicating both within and beyond the supply chain about the successes and the factors that led to them.

46 United Nations Development Programme, UNDP Practice Note: Capacity Development, UNDP, New York, 2008, >.

47 Figure adapted from Kotter, John P., and Dan S. Cohen, The Heart of Change: Real-life stories of how people change their organizations, Harvard Business Review Press, Cambridge, Mass., 2012.

Figure 10: Kotter's eight-step Change Management Model. Source: Kotter and Cohen.[47]



Model process (4)

4.1 Develop and implement a change management process to gain commitment and support implementation

4.2 Communicate the strategic plan and implementation plan to all key stakeholders and actors within and beyond the health supply chain with targeted messages

4.3 Include activities from the implementation plan in the annual operating plans and budgets at all levels; mobilize resources for unfunded or under-funded activities

4.4 Carry out activities according to the implementation plan timeline

4.5 Integrate changes required by the strategic plan into the formal supply chain policies, procedures and processes, once they have been pilot-tested and approved

4.6 Where alternative scenarios are proposed in the strategy, make decisions on which to implement based on new studies and information

4.7 Monitor implementation of activities according to the outputs specified in the implementation plan, at all relevant levels of the supply chain

4.8 Report progress up and down the supply chain, including to steering and coordination groups; continue advocacy to maintain attention and focus

4.9 Update the implementation plan, operational plans and budgets as necessary based on new data and information received

Recommended practices and lessons learned

- Analyse whether the appropriate enabling environment exists to facilitate change, and take actions to improve the environment where it is not supportive. Include analysis of individual incentives and stakeholder priorities that may not be aligned with strategic objectives.

- Verify that timelines for implementation are conservative and do not underestimate the time required for complex processes such as public procurement or hiring additional human resources; modify start dates as necessary to ensure activities can be completed on time.

- Identify the individuals responsible for each activity if the implementation plan only identifies responsibilities by organization or unit.

- Consider creating a central unit or team dedicated to overseeing implementation of the strategic plan and to support change management. Identify focal points for overseeing strategy implementation at each level and unit within the supply chain.

- Develop systems to support monitoring of the implementation of the plan at all levels of the supply chain, using the coordination and steering committees developed in previous phases.

- Establish accountability for implementation and provide rewards (financial or non-financial) for proactive implementation, to incentivize the change processes.

- Publicize 'quick win' achievements to create momentum and belief in the plan among both internal and external stakeholders.

- Build capacity for soft skills such as leadership, teamwork and change management.

48 Based on: Euro Health Group, 'Evaluation of UNICEF as Procurement and Supply Chain Partner for National HIV/AIDS Programme in Malawi', submitted to UNICEF, EHG, Søborg, Denmark, 2013.

COUNTRY CASE STUDY: PLANNING AND IMPLEMENTING SUPPLY CHAIN CAPACITY BUILDING ACTIVITIES IN MALAWI[48]

Between 2003 and 2012, the Government of Malawi had agreements with UNICEF to procure HIV products financed by the Global Fund and to manage the distribution of those products to treatment sites through a parallel, UNICEF-operated, supply chain. These agreements also specified that UNICEF would contribute to building the capacity of the Central Medical Stores and other actors for supply chain management.

An evaluation of UNICEF's work under the agreement showed that UNICEF was highly successful in procuring and distributing commodities to meet the needs of HIV patients in Malawi. However, the evaluation also indicated that the expectations of national counterparts for capacity building efforts were largely unfulfilled, attributable to the absence of shared goals and a defined strategy for capacity development. While the early agreements between UNICEF and the Ministry of Health (MOH) outlined some specific activities for capacity building, there was little clarity about what capacities should be built, for what purpose, and in what time frame. Nor was there an 'exit' or transition plan for when UNICEF would conclude operating a parallel system and transfer such responsibilities to the Government. In the absence of an enabling environment, capacity building activities were implemented in an ad hoc manner, without clear long-term objectives. Capacity building also became less of a priority once the supply chain was operating efficiently under UNICEF management. The evaluation concludes that little sustainable capacity was built as a result of the partnership.

In 2012, the MOH and National AIDS Council decided to begin procurement of these products through the Global Fund's Voluntary Pooled Procurement mechanism and to transition their distribution to an outsourced third party provider. UNICEF played an instrumental, life-saving role in ensuring availability of Global Fund–procured products for HIV patients in Malawi. Lack of successful capacity development of Government staff meant that the sustainability of UNICEF's programmatic success was jeopardized by the transition.

This case illustrates that successful implementation of a supply chain capacity development effort requires a clear plan, with agreed-upon objectives, activities and responsibilities as well as joint commitment and monitoring. A specific exit or handover strategy can be essential for planning what capacities must be transitioned when, and to maintain pressure on capacity development.

Key capacity development interventions[49]

Network and route optimization[50]

The design of public health supply chain networks (specifically, the supply chain levels and warehouse locations) typically mirror the administrative structure of government – each administrative area (province, district, etc.) has its own medicines warehouse, transport resources (e.g., trucks) and so forth located in the capital city. The administrative structures were not developed with supply chain efficiency in mind and, not surprisingly, more efficient designs can be devised through network optimization. Network optimization uses mathematical models, simulations and local supply chain data – e.g., product characteristics, road networks, available transport equipment, site locations (e.g., health facilities) and demand information – to determine the best performing and most efficient supply chain structures for a given set of key performance indicators and constraints that are defined by the users. The resulting solution(s) can demonstrate the theoretically ideal number of supply chain levels, number and location of warehouses, and delivery frequency. Optimization can also be used to plan the most efficient routes for trucks to utilize during distribution.

Network optimization can be a high-impact, system-level capacity development and supply chain strengthening intervention. The benefits of network and route optimization are many, and include:

- increased efficiency within the supply chain, in terms of both money (e.g., fuel, per diems, equipment purchase) and time (e.g., time spent on delivery routes);
- maximized utilization of resources and prioritization of new equipment for purchase (e.g., trucks of a specific size, for a specific location);
- reduced quantity of products required for procurement (e.g., by reducing stocking points or safety stock levels), reducing overall costs; and
- increased availability of medicines and reduced expiry (e.g., due to faster flow of products through the system).

With assistance from specialists in network optimization, developing the best network model and agreeing on it from a technical perspective is comparatively straightforward (though significant effort may be needed to collect the required data). Implementation of an optimized network, however, is not easy. The most significant optimization decisions (with the greatest potential impact) require policy change, structural changes, major investments and/or broad buy-in throughout the health system; they are also the most likely to generate resistance.

49 Several useful interventions to consider within a supply chain capacity development process are listed in the Strategic and implementation planning and Implementation chapters of the document. These are not intended to be exhaustive, but to give the user examples of innovative and beneficial supply chain strengthening approaches.

50 Primary references: Llamasoft, Inc., 'Winning through Better Supply Chain Design', Llamasoft, Inc., Ann Arbor, Mich., 2013, <www.llamasoft.com/wp-content/uploads/2012/12/WP-Winning-Through-Better-SCD-US.pdf>; and USAID I DELIVER PROJECT, 'Optimizing Supply Chains for Improved Performance', USAID I DELIVER PROJECT, Task Order 1, Arlington, Va., 2014, <http://deliver.jsi.com/dlvr_content/resources/allpubs/logisticsbriefs/OptiSuppChai.pdf>.

For example, reducing the number of levels in the supply chain will result in certain levels, and their administrators, losing some power and control over the health supplies. Changing warehouse location could require expensive new builds, and may move warehouses away from provincial and district capitals, where political power centres lie. Implementation of an optimized supply chain solution is likely to require not only a technical analysis, but also a political economy analysis to identify politically agreeable solutions and to recommend effective advocacy tactics to support acceptance and implementation. Nonetheless, the large potential rewards of network optimization warrant the effort.

Human resource policies appropriate for the supply chain

Human resources for health (HRH) is one of the WHO building blocks for health system strengthening. Within public health supply chain programmes, the focus for human resources has typically been on building individual knowledge and/or competencies through training. But as highlighted by the People that Deliver Initiative, this is only part of the story. Equally important is having an appropriate policy apparatus and system to attract, recruit, retain and maximize the performance of personnel (with the required knowledge and competencies). In many cases, this must be done within the context of broader health and civil service policies, but this does not preclude efforts to improve the policies and procedures specifically for supply chain personnel. In the case of autonomous, parastatal or fully private supply chain organizations, there may be fewer barriers to reform and those that exist may be easier to overcome.

Due to the complex nature of working in human resource systems, improving human resource policies and procedures for the supply chain is likely to require a specific plan itself, which ideally would be included within the broader national supply chain and human resources for health strategies. The planning and implementation process should involve key stakeholders from the human resources for health area (Ministry of Health and/or government HRH departments, as well as development partners working on HRH), even though these might not normally be involved in supply chain efforts. Engaging stakeholders in this effort can be challenging, as experts in both the supply chain field and HRH field may feel it is beyond their expertise or mandate. Nonetheless, without appropriate human resource policies for the supply chain, the sustainability of any capacity development activities is potentially endangered.

Several countries working with People that Deliver have conducted assessments, developed plans and begun implementation of reform in the area of human resources for supply chain. Namibia, for example, conducted a rigorous analysis of the required and existing competencies, responsibilities and workload for the supply chain, to create a comprehensive map of the needs and gaps for the supply chain workforce. Burkina Faso reformed the law to create a health logistician cadre within the civil service, and has begun their deployment. The Dominican Republic developed specific job descriptions for all supply chain personnel and developed a comprehensive performance management system. Mozambique created government- and donor-funded performance-based financing mechanisms to support motivation and retention of supply chain staff, while aligning their work to broader supply chain objectives.

Tools and guidance for strengthening human resource systems for the supply chain can be found at <www.peoplethatdeliver.org>.

Pre-service training in supply chain management

Training is undoubtedly a key part of individual capacity development for supply chain management, especially considering the limited skills in this area among health system workers. The conventional approach to training for supply chain management has been in-service training for staff who currently hold supply chain responsibilities. This approach is important, but also often expensive, due to the large number and nationwide distribution of staff operating the supply chain. The impact of in-service training is also limited by frequent staff turnover and lack of prioritization within the health system.

Several countries are now working to integrate supply chain management into the pre-service curricula for pharmacists, pharmacy technicians and nurses, who are responsible for operating the supply chain in most developing country public health systems. The USAID | DELIVER Project, which has played a leading role in establishing this innovative approach and has written a process guide[51] on the subject, highlights the following benefits of integrating supply chain management into pre-service curricula:

- Reduced training costs per worker,[52] with greater potential for sustainability.
- Greater sensitization to, and understanding of, the importance of supply chain management to health service delivery.
- Elimination of the lag time between health care worker deployment and attainment of knowledge about country-specific supply chain procedures.
- Understanding of commodity management as an integral part of duties, not as an additional task.
- Reduced requirements for in-service training, leaving more time for serving clients.

Ghana[53] has shown especially rapid progress in advancing pre-service training in supply chain management. Having started the development of pre-service supply chain training programmes in 2013, supply chain is now part of the curriculum in 3 pharmacy schools, 109 nursing schools and 4 other health institutions. Based on current plans and scale-up, more than 100,000 health workers will have received pre-service training on supply chain by 2020, compared to only 600 per year being reached by in-service training. Challenges remain, including demonstrating the impact of pre-service training on actual practice, ensuring sufficient local capacity exists for training and curriculum updates, and funding to sustain the programme. Nevertheless, this innovation shows great promise in terms of developing supply

51 Eomba, Motomoke, Gregory Roche, and Erin Hasselberg, Initiating In-Country Pre-Service Training in Supply Chain Management for Health Commodities: Process guide and sample curriculum outline, USAID | DELIVER PROJECT, Arlington, Va., 2010, <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/InitiatInCount_PreServeTrain.pdf>.

52 For example, per student in-service training costs were six times higher than the cost of pre-service training in Ethiopia, <www.peoplethatdeliver.org/sites/peoplethatdeliver.org/files/4.%20Ethiopia%20Comparing%20cost%20effectiveness%20O18.pdf>.

53 USAID | DELIVER PROJECT, 'Ghana: Future healthcare workers diversify skillset to reduce stockouts', USAID | DELIVER PROJECT, Arlington, Va., February 2015, <http://deliver.jsi.com/dlvr_content/resources/allpubs/logisticsbriefs/GH_FutuHealWork.pdf>.

chain capacity with an approach that is more easily institutionalized within national systems and sustained over time.

Pre-service training will not preclude the need for in-service capacity building, as knowledge and competencies must be maintained, updated and built upon. In-service capacity building remains a critical piece of supply chain strengthening and should include approaches beyond training and supervision, such as coaching, mentorship, peer networking and South-to-South exchanges.

Resources – See Appendix 1


Printed with support from
International Organization for Migration
CHILD HEALTH CARD
IMMUNIZATIONS
PROTECT YOUR CHILD
SIBLINGS
(BROTHERS & SISTERS)
SHOW THIS CARD ON EVERY VISIT
HAVE YOUR CHILD WEIGHED EVERY MONTH

Phase 5: PERFORMANCE MEASUREMENT

What is this phase and why is it important?

Performance measurement tells us whether implemented activities are having the expected impact in terms of achieving the goals and expected outcomes of the strategy. Data on key performance indicators (KPIs) should demonstrate progress across the range of strategic objectives for the supply chain, whereas lower-level diagnostic indicators can identify the causes of performance gaps. Many countries are still in the early stages of developing robust performance measurement systems for the health supply chain, which require routine data systems (monitoring) as well as periodic, targeted studies of progress (evaluations). Strengthening these systems is essential to tracking improvements in supply chain capacity and performance.

Both regular monitoring and periodic or focused evaluation are essential tools to measure performance. Within the supply chain, routine monitoring tends to be the principal method for measuring performance, although periodic evaluations and surveys also play an important role – especially in systems where the routine information system cannot capture quality logistics information from the facility level. Supply chain monitoring usually relies on data from the logistics management information system (LMIS), warehouse management systems and in some cases the general health information system. Evaluations that may provide essential supply chain performance information can take many forms; they may include surveys on stock availability or medicines use, audits of supply chain procedural compliance or assessments of operational challenges or bottom-up innovations. Evaluations are well-suited for measuring the impact of capacity development and strengthening approaches and projects, for example to determine what skills have been effectively transferred to local staff and what procedures have been institutionalized.

The national monitoring plan for the health supply chain is vital to performance measurement, and must be closely aligned with the strategic plan. Where no national supply chain monitoring

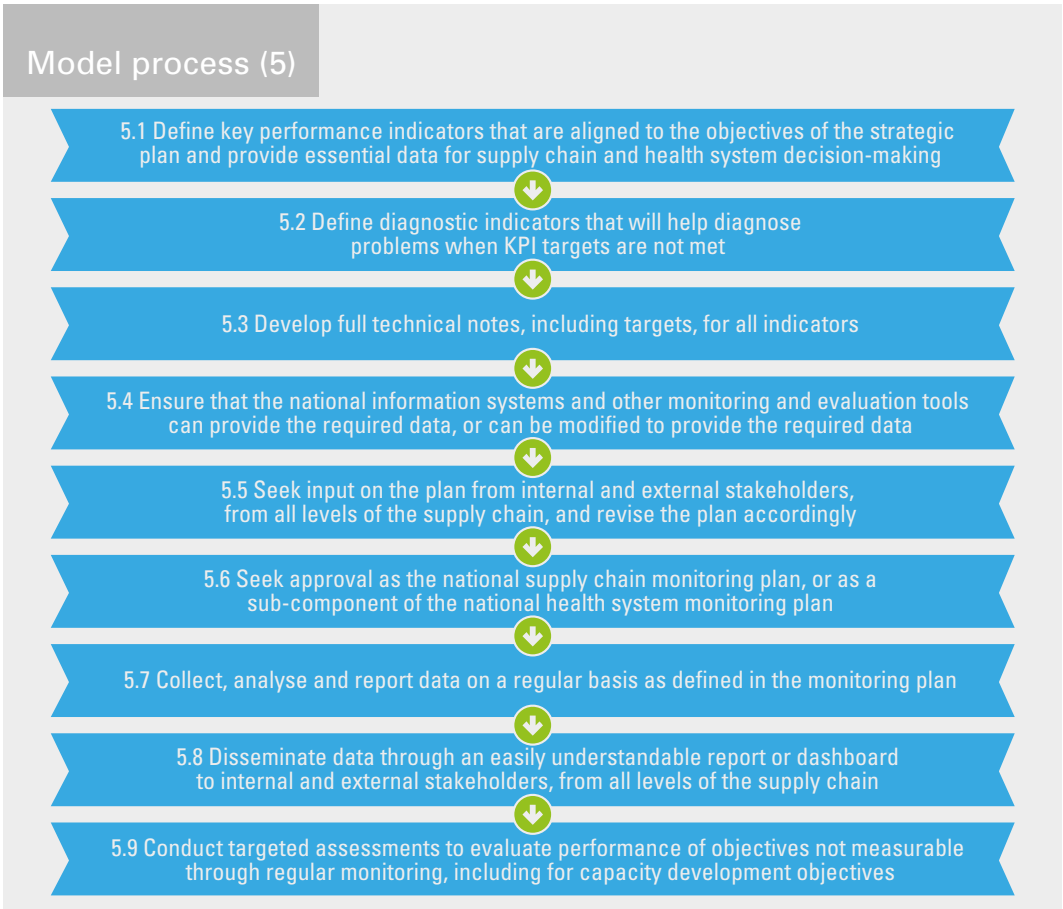
plan exists, one should be developed with KPIs that are clearly linked to the objectives of the strategic plan. Where a national supply chain monitoring plan does already exist, the plan should be reviewed and updated to assure alignment. This approach is preferred to having separate monitoring plans for the 'supply chain system' and for the strategic plan itself, which will lead to duplication of efforts and divergent goals.

In developing or aligning the supply chain monitoring plan, the first critical question is to identify what are the key measures for capturing the performance of the system and capacity development efforts, and for informing key supply chain decisions (i.e., the KPIs). Determining the KPIs will require consultation with leadership and other stakeholders, and may include gathering information from other countries, global recommendations (see Key resources at the end of this chapter) or KPIs used in the private sector. Examples of KPIs might include stock availability, order fill rates, price comparisons with reference prices or on-time reporting rates. Table 3 summarizes characteristics of good indicators. Supply chain data should be the driver for supply chain design and decisions, and the KPIs should be the primary source for the required data. By including the information required for supply chain decision-making in the regular monitoring plan, the system can ensure that information is available for leadership when it is needed. In addition to collecting and analysing the right data, the information should be presented in clear and digestible formats, such as data dashboards, to facilitate use in decision-making processes.

Table 3: Characteristics of good performance measures. From: Keebler et al. 1999.[54]

A good measure	Description
Is quantitative	The measure can be expressed as an objective value
Is easy to understand	The measure conveys at a glance what it is measuring, and how it is derived
Encourages appropriate behaviour	The measure is balanced to reward productive behaviour and discourage 'game playing'
Is visible	The effects of the measure are readily apparent to all involved in the process being measured
Is defined and mutually understood	The measure has been defined by and/or agreed to by all key process participants (internally and externally)
Encompasses both outputs and inputs	The measure integrates factors from all aspects of the process measured
Measures only what is important	The measure focuses on a key performance indicator that is of real value to managing the process
Is multidimensional	The measure is properly balanced between utilization, productivity and performance, and shows the trade-offs
Uses economies of effort	The benefits of the measure outweigh the costs of collection and analysis
Facilitates trust	The measure validates the participation among the various parties

54 Keebler, James S., et al., Keeping Score: Measuring the business value of logistics in the supply chain, Council of Logistics Management, Oak Brook, Ill, 1999.



In addition to KPIs, most systems also require lower-level, diagnostic indicators that focus more on supply chain functions. These should be linked to KPI performance and, if well-designed, can be used to determine the cause of underperformance in KPIs. The monitoring plan may therefore have a hierarchical structure, and lower-level indicators may only be analysed in detail when higher level indicators do not meet targets – thus reducing the total level of effort while having a rich and comprehensive supply chain monitoring plan. However, due to the many different interests and challenges in public health supply chains, monitoring plans are often large, broad and time-consuming.

Designing indicators to measure capacity development can be a challenge, and must reflect local context. Ideally, such indicators should be designed for the individual, organizational and enabling environment levels. The supply chain evolution framework[55] may help identify appropriate indicators. Among the Key resources provided, several offer recommended indicators that focus on improved performance and are relevant to supply chain strengthening. However, they generally lack indicators that specifically try to measure local capacity to deliver these results (vs. capacities that may be supported by development partners). Capacity development indicators are often less quantitative and suitable for continuous monitoring than other supply chain areas, hence targeted evaluation methods may often yield more valuable information. Some recommended indicators for different levels of capacity development are provided in Appendix 4.

55 McCord, Joseph, and Nadia Olson, Supply Chain Evolution: Introduction to a framework for supply chain strengthening of developing country public health programs, USAID I DELIVER PROJECT, Arlington, Va., 2011, <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/SuppChaiEvol.pdf>.

Recommended practices and lessons learned

- Plan how to measure capacity development and strengthening objectives from the beginning of the capacity development process. Indicators should measure both capacity and system improvements, and should continue beyond the formal implementation period to verify that improvements are sustained.

- Develop a single, unified national supply chain monitoring plan that consolidates all the indicators required for the government and partners, covers all levels of the supply chain and has clearly and fully defined indicators with regular reporting intervals. Encourage new partners and new projects to utilize indicators and targets already defined in the monitoring plan.

- Consider using a Balanced Scorecard approach to distribute the KPIs over different performance aspects of the supply chain. Typical Balanced Scorecards include measures focused on finance (e.g., cost-efficiency, financing gaps), clients (e.g., stock availability, fill rate), internal processes (e.g., timely and accurate requisitions and distributions) and learning (e.g., newly developed capacities, number of improved processes).

- Pilot-test proposed indicators to verify that they are feasible and manageable considering existing capacity and systems; where not feasible, consider how either the systems or the indicator can be modified.

- Define targets based on historical performance, other national plans and benchmarking against peer systems that represent best-in-class.56 Consider setting two levels of targets for indicators: aspirational targets that represent 'stretch goals' that encourage maximal performance improvement and conservative targets (or 'tolerances') that are more attainable.57

- Update the plan and targets annually, based on recent progress, strategic shifts and stakeholder consultations.

- Create a supply chain monitoring and evaluation or performance measurement unit that is responsible for coordinating the process and supporting the collection, analysis and reporting of supply chain information. Develop the required competencies within this unit.

- Present data from the monitoring plan to leadership and stakeholders not only through written reports but also through verbal and/or visual presentations of the most important KPIs. Dashboards can be highly effective by providing visually captivating summary data that can be utilized for decision-making. Consider also making supply chain performance data available to the public.

Resources – See Appendix 1

56 There are a few sources of publicly available data that a public health supply chain can utilize to benchmark general performance against peers. These are listed under Additional resources. Several of the assessment tools and guides listed as resources for the Situation analysis phase utilize benchmarking against a predefined scale. These include the Effective Vaccine Management Assessment, Supply Chain Evolution Framework, National Supply Chain Assessments, Supply Chain Compass, and Supply Chain and Logistics Internal Controls Evaluation. See references under Situation Analysis.

57 Conservative goals may be preferable for government accountability frameworks, performance-based financing, or other contexts where failing to meet targets would have serious negative consequences.

COUNTRY CASE STUDY: DEVELOPING LOCAL CAPACITY FOR PERFORMANCE MEASUREMENT IN MOZAMBIQUE

In early 2012, the Government of Mozambique decided that it needed to conduct more rigorous monitoring of the performance of the health supply chain. This decision was brought about in part by donor pressure to demonstrate progress in supply chain strengthening efforts, and by the need to provide regular and verifiable reporting on performance indicators for new performance-based financing programmes. A phased capacity development approach was utilized to develop a performance measurement capacity in the Central Medical Stores (CMS), within the Ministry of Health.

Technical advisers working within the CMS established and implemented the initial monitoring plan, working closely with the CMS leadership and technical staff, and consulting regularly with members of the national supply chain coordination group. Due to the large number of areas of concern and the requirements of various donor and government plans, the monitoring plan included more than 25 indicators covering virtually all the sections of the CMS and all levels of the supply chain. Internal technical assistance led the development of the terms of reference, tools and processes required for the performance management function. In mid-2013, the CMS established the Monitoring and Evaluation (M&E) Unit, and staffed it with three civil servants with distinct professional backgrounds. Technical assistance then focused on transferring the tools, procedures and skills for performance measurement to the CMS staff. The focus on skills transfer was aided by a concrete deadline for termination of the internal technical assistance to the Unit. After three reporting periods (quarters) of focused skills transfer, the M&E Unit was able to manage the performance monitoring process, collecting and analysing the data and reporting on all indicators, without technical assistance.

The approach was highly effective in rapidly developing local capacity to implement a monitoring plan that unified the Central Medical Stores' performance measurement requirements. Data verifications conducted by two donor organizations validated these reports. Performance data were presented as a regular agenda item at all supply chain coordination meetings, improving transparency and confidence among donors. Remaining challenges included the capacity to utilize performance data to improve the system, developing deeper M&E knowledge to drive improvements of the monitoring plan itself and lack of depth of M&E expertise among other personnel in case of staff turnover. These remain priorities for the Central Medical Stores for the present and future.

This case study shows that a focused capacity development effort with government commitment and concrete deadlines for transition of responsibility can create self-sufficient local capacity to execute a supply chain performance measurement plan.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Phase 6: LEARNING AND IMPROVEMENT

What is this phase and why is it important?

Monitoring strategic plan implementation and measuring supply chain performance are important for evaluating progress and demonstrating it to stakeholders. But the true power of these data is to inform decisions on where and how to change the existing policies, strategies, plans, systems, measures and procedures to improve overall performance. Most often, some aspects of the planned implementation and performance lag behind expectations. The data should indicate where improvement and capacity development efforts should be directed or emphasized. Perhaps some components of the strategy are not addressing root causes; perhaps the strategy is more difficult to implement than expected; perhaps other priorities are distracting from the implementation; or perhaps the defined indicators are not measuring progress effectively. Whatever the difficulties are, being able to identify them, communicate them effectively, learn from them and improve the plan and its implementation is critical to country-owned, sustained and holistic supply chain improvement.

As discussed throughout this Framework, systems strengthening requires a continuous process of identifying performance gaps and challenges and devising potential solutions to address and overcome them. This requires the actors in the supply chain to modify and improve the system in line with observations of successes and failures, or challenges, within the system. As stated by the UNDP, capacity development "results in unplanned consequences that must be . . . valued, tracked and evaluated."[58] Capturing lessons from routine data collection and using it to improve a system to overcome performance gaps is a daunting task, and perhaps is the least often operationalized phase within the programme cycle. But as even the most experienced strategic planners and practitioners are unlikely to develop a perfect strategy and implement it according to plan in the first try, the ability to continuously improve is mission-critical to strengthening supply chains.

58 United Nations Development Programme, Supporting Capacity Development: The UNDP approach, New York, UNDP, 2008, >.

Organizational learning is a complex process because knowledge gained in one part of an organization (or system) must be communicated and utilized by other parts of the organization. The opportunity for learning in a health supply chain is great, as supply chain units are replicated in large numbers (multiple warehouses, dozens of storerooms, hundreds or thousands of health facilities) where different innovations undoubtedly occur, resulting in new promising practices and lessons. However, organizational learning also faces huge barriers in health supply chains, which typically are geographically extended and have limited formal knowledge management systems. In public health supply chain systems, an essential way of ensuring that organizational learning is shared and implemented is to integrate the lessons and improvements into the relevant formal documents that guide the system – this should include the strategic plan, the implementation plan, the monitoring plan and other policies, procedures, work objectives, training plans and curricula. Capacity development for continuous improvement and learning should also be an explicit part of the capacity development strategy and implementation plan.

As described in the overview of continuous performance improvement, there are multiple approaches to improvement, including Lean, Six Sigma and Total Quality Management. All of these focus on continually gauging performance and learning as an organization to improve performance. The Effective Vaccine Management (EVM) process,59 developed by WHO and UNICEF, utilizes a continuous performance improvement approach for vaccine logistics. Experts agree that continuous improvement can succeed at the organizational or systemic level only if it is a priority for leadership, is ingrained into the organizational culture and involves staff from all levels and functions. One way of ensuring prioritization and reinforcing attention for continuous performance efforts is to include specific learning and improvement objectives in the supply chain monitoring plan, for example as part of the balanced scorecard of KPIs. If continuous improvement is not a priority, the process is likely to be left aside for other pressing matters or to become a perfunctory process without rigor that does not add value. Ultimately, this would lead to a continued short-term focus in the supply chain, with the resulting continued reoccurring emergencies and performance deficits. But by invigorating the supply chain actors to identify challenges and continuously work to improve performance, the supply chain can show enduring progress and an ability to meet and even exceed expectations.

Recommended practices and lessons learned

- Demonstrate the commitment of leadership to organizational learning and continuous improvement by being both champions of and participants in learning activities.

- Utilize participatory learning and action methods to encourage buy-in to organizational change from all levels. Encourage ideas and input from all levels of the system and all levels of staff on problems/challenges and on solutions/promising practices. Utilize evaluation methods to identify potential bottom-up innovations.

- Nurture collaboration among different units to improve learning and sharing of lessons. Create and support use of communities of practice, learning forums and other knowledge management tools and systems.

- Use diverse, collaborative groups to develop solutions to performance or implementation deficits; these can include different combinations of those who implement the

59 World Health Organization and United Nations Children's Fund, 'Effective Vaccine Management Initiative', >.

Model process (6)

processes in question, other technicians who are affected by the challenge, internal teams dedicated to learning and improvement, or external experts in technical issues or continuous improvement.

- Develop and track, in the supply chain monitoring plan, measures to monitor success in learning and improvement.
- Consider establishing a unit to be in charge of learning, such as an internal control or performance management unit.

Resources – See Appendix 1

CONCLUSIONS

This *Process Guide and Toolkit for Strengthening Public Health Supply Chains through Capacity Development* aims to support country governments, UNICEF country offices and other development partners to strengthen national supply chains through a comprehensive capacity development approach, improving both performance and sustainability. The Process Guide and Toolkit fills an important gap in the global health supply chain literature, supporting countries to implement a comprehensive supply chain capacity development process. The toolkit provides a framework for approaching the challenge, a process guide that provides suggested steps and recommended practices, and a resource guide with explanations of and links to key tools, guidelines and other resources that will support application of specific methodologies. All the components of the toolkit are intended to be flexible and adaptable to different country contexts, health programmes and levels of engagement, from broad and long-term system strengthening to more focused projects for capacity development. The Process Guide and Toolkit can also be used to support countries in broader national strategic planning processes for the supply chain that are not focused on capacity development.

The Process Guide and Toolkit undoubtedly has limitations. The process described is an idealized one, and there may be few country situations where the whole process can be applied as described. Countries will need to carefully consider how to adapt the recommended processes and practices to their countries, and which resources will be most useful to them. The resources provided are not exhaustive and some key resources may have been overlooked. The toolkit does not provided references to resources that focus on technical decision-making and implementation, which are extremely numerous and beyond the scope of this process-oriented guide (see Appendix 3 for a list of web-based resource clearinghouses for technical information). Despite these limitations, the toolkit can help any and all supply chain strengthening efforts to use good practice approaches, rigorous methodologies and established tools, and to have greater short- and long-term impact.

Countries that are ready to embark on a supply chain strengthening process are encouraged to engage with their local UNICEF Country Offices and other development partners for support. The UNICEF Supply Division and Programme Division and Regional Offices are ready to support their government counterparts in the design, implementation and measurement of this process as well.

Appendix 1 – Key resources by phase

Phase 1: Advocacy and engagement

Tools

United Nations Children's Fund, Advocacy Toolkit: A guide to influencing decisions that improve children's lives, New York, UNICEF, 2010. The Advocacy Toolkit stems from UNICEF's exceptional history of advocating to protect and promote children's and women's rights. The toolkit draws on this experience, systematizing and coordinating both internal and external advocacy expertise, as well as developing a few innovative approaches. The Toolkit provides a set of practical tools to help UNICEF staff and partners in the development and management of their advocacy work. <www.unicef.org/evaluation/files/Advocacy_Toolkit.pdf>.

PATH. Stronger Health Advocates, Greater Health Impacts: A workbook for policy advocacy strategy development, PATH, Seattle, Wash., 2014. This workbook provides the information and tools needed to develop a high-impact, outcome-oriented policy advocacy strategy. It will lead new and experienced advocates through a 10-part framework that includes identifying an advocacy issue and goal, targeting key decision-makers and influencers, and developing advocacy tactics and messages to influence change. The framework has been applied successfully across multiple issues and geographies. <www.path.org/publications/files/ER_app_workshop_workbook.pdf>.

Guidelines

Management Sciences for Health, 'Coordinating Complex Health Programs', The Manager, vol. 12, no. 4, 2003. This publication explores different types and mechanisms of coordination to help choose which type of coordination best meets the needs of your organization or programme. The issue reviews the forms of coordination for rapid response in health emergencies as well as for long-term sustainable action. There are guidelines for setting up a new coordinating body or breathing life into an existing entity. <www.msh.org/resources/coordinating-complex-health-programs>.

Programme-specific advocacy resources

Advocacy Partnership, TB/MDR-TB Advocacy Tool Kit, Advocacy Partnership, Leamington Spa, UK, 2011. The purpose of the toolkit is to help strengthen the advocacy skills of TB stakeholders and their ability to design and deliver campaigns that can be integrated into and enhance other TB programme work. It attempts to the many resources already available, but not necessarily accessible to everyone. <www.stoptb.org/assets/documents/global/awards/cfcs/TB_MDR%20Advocacy%20Tool%20Kit.pdf>.

K4Health, K4Health Toolkits: Family planning advocacy toolkit, online resource. This toolkit shares evidence-based advocacy guidance and tools to add family planning to the voices of existing advocacy networks, enable leaders at all levels in low- and middle-income countries to advocate for family planning, and grow family planning champions for sustainable organizations. <https://www.k4health.org/toolkits/family-planning-advocacy>.

Reproductive Health Supplies Coalition, Making a Case for Supplies: Leading voices in securing reproductive health supplies – An advocacy guide and toolkit, RHSC, Brussels, 2009. This guide and toolkit offers general information and guidance on advocacy communication that has been useful to many groups interested in advocating for improved reproductive health policy environments. The general information is complemented by examples and templates of advocacy tools targeted specifically to the aims the Reproductive Health Supplies Coalition has set forth for securing long-term availability of high-quality reproductive health supplies. Interactive online and PDF versions. <http://pdf.usaid.gov/pdf_docs/pnadp942.pdf>.

United Nations Commission on Life-Saving Commodities for Women and Children, Scaling Up Life-Saving Commodities for Women, Children, and Newborns: An advocacy toolkit, PATH, Washington, D.C., 2015. This toolkit provides information about the United Nations Commission on Life-Saving Commodities (the Commission), 13 priority commodities, and examples of how its 10 recommendations to improve access and availability are being applied globally and within countries. It also provides advocacy resources for utilizing the Commission platform to raise awareness and engage stakeholders in addressing commodity-related gaps in policy. <www.path.org/publications/files/APP_advocacy_toolkit.pdf>.

Phase 2: Situation analysis[60]

Supply chain assessment guidelines

Management Sciences for Health, 'Pharmaceutical Supply Systems Assessment', ch. 36 in MDS-3: Managing Access to Medicines and Other Health Technologies, MSH, Arlington, Va., 2011. This chapter of the renowned global health pharmaceutical reference manual Managing Drug Supply gives an overview of the need for situation analysis and assessment within global health pharmaceutical programmes, provides an overview of different approaches, and includes a list of key resources. <https://www.msh.org/sites/msh.org/files/mds3-ch36-supplysystems-mar2012.pdf>.

Broad supply chain assessment tools

Supply Chain Management System, The National Supply Chain Assessment, SCMS, Arlington, Va., 2013. NSCA is a comprehensive toolkit that assesses the capability and performance at all levels of a health supply chain. The results of the assessment help develop strategic and operational plans and monitor whether activities are achieving expected outcomes. This assessment tool is being used by the Interagency Supply Group as a basis for coordinated supply chain strengthening efforts across donor and partner organizations. <http://scms.pfscm.org/scms/docs/papers/National_Supply_Chain_Assessment_Brief_Final_1.pdf>.

USAID | DELIVER PROJECT, Task Order 1, Guide to Conducting Supply Chain Assessments Using the LSAT and LIAT, USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2011. This document is a guide to support countries in conducting supply chain assessments with the Logistics System Assessment Tool (LSAT) and the Logistics Indicators Assessment Tool (LIAT). It supports local implementation of and capacity building for the assessment methodologies, based on the previous experiences of evaluators. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/CondSCAsseLSATLIAT.pdf>.

USAID | DELIVER PROJECT, Task Order 1, 'Logistics Indicators Assessment Tool (LIAT)', USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2008. The LIAT is a quantitative data collection instrument used to conduct a facility-based survey to assess health commodity logistics system performance and commodity availability at health facilities. The LIAT can be used to monitor the performance of certain processes involved

60 Due to the large variety of situation analysis tools and guidelines available, Key Resources for this phase are divided according to their scope and objective, rather than by type of resource.

in the logistics management of health commodities over time, to evaluate certain outcomes of logistics interventions, to provide ongoing supervision and performance monitoring, and to monitor commodity availability. <http://deliver.jsi.com/dhome/whatwedo/monitoreval/meavailability/meliatlsatresources>.

USAID | DELIVER PROJECT, Task Order 1, 'Logistics System Assessment Tool (LSAT)', USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2009. The LSAT is designed to facilitate a comprehensive quality assessment of the separate components that make up a logistics system and the system's environment. The information collected using the LSAT is analysed to identify issues and opportunities and, from those, used to outline further assessment and/or appropriate interventions. <http://deliver.jsi.com/dhome/whatwedo/monitoreval/meavailability/meliatlsatresources>.

USAID | DELIVER PROJECT, Supply Chain Compass, online resource. Supply Chain Compass provides a quick, high-level diagnosis of how mature your public health supply chain is across key managerial and functional areas, and provides a customized report with ratings that describe the level of maturity for each supply chain area, as well as intervention recommendations. The tool does not provide an in-depth assessment or evaluation of your supply chain. <https://scc.deliver.jsi.com>.

United Nations Children's Fund and Management Sciences for Health, The Guidebook: Strengthening district management capacity for planning, implementation and monitoring for results with equity, UNICEF, New York, 2012. This guidebook describes UNICEF's approach to strengthening district health systems, designed to involve all levels of the health system. It explains how UNICEF's approach, D-I-V-A, aims to achieve better maternal and child health outcomes at the district level through an analytical process that improves district level management skills for human resources, finances, information, supply and service organization. A supply chain module for the D-I-V-A tool is in development. <http://ccmcentral.com/wp-content/uploads/2014/04/DIVA-Guidebook-Strengthening-district-mgmt-for-results-with-equity-_UNICEF-MSH_2012.pdf>.

Programme-specific supply chain assessment tools

World Health Organization and United Nations Children's Fund, Effective Vaccine Management, online resource. The EVM initiative provides materials and tools needed to monitor and assess vaccine supply chains and help countries to improve their supply chain performance. The EVM assessment tool is designed to help countries to build a vaccine supply chain based on the well-established principles of quality management used throughout the industrialized world. <www.who.int/immunization/programmes_systems/supply_chain/evm/en>.

Hare, Lisa, et al., SPARHCS: Strategic Pathway to Reproductive Health Commodity Security – A tool for assessment, planning, and implementation, Johns Hopkins Bloomberg School of Public Health, Baltimore, Md., 2004. The SPARHCS Tool is designed to help countries develop and implement strategies to secure essential supplies for family planning and reproductive health programmes. It provides a framework for bringing together a wide range of stakeholders to achieve reproductive health commodity security (RHCS) at the sub-national, national or regional level. SPARHCS has been used in 50 countries, all reflecting different stages of RHCS experience, donor support and health sector reform. <www.rhsupplies.org/fileadmin/uploads/rhsc/Tools/SPARHCS/Documents/SPARHCS_all_eng_1_.pdf> .

Raja, Rao, et al., The SPARHCS Process Guide: A planning resource to improve reproductive health commodity security, Johns Hopkins Bloomberg School of Public Health, Baltimore, Md., 2008. The SPARHCS Process Guide synthesizes the extensive field experience with the SPARHCS Tool to provide guidance to programmes to customize reproductive health commodity security (RHCS) assessments and planning. Programme managers, technical assistance providers and donors are encouraged to use the Guide as a companion to the SPARHCS Tool to develop a comprehensive policy and programmatic response to the RHCS challenge. <www.rhsupplies.org/fileadmin/uploads/rhsc/Tools/SPARHCS/Documents/SPARHCSProcessGuide_EngPDF_1_.pdf>.

USAID | DELIVER PROJECT, Task Order 1, Assessment Tool for Laboratory Services and Supply Chains (ATLAS), USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2010. The ATLAS is a diagnostic and monitoring tool that can be used as a baseline survey to complete an annual assessment or as an integral part of the work planning process. The ATLAS is both a quantitative and a qualitative tool. The information collected by using the ATLAS is analysed to identify issues and opportunities and to outline further assessment and/or appropriate interventions. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/AsseToolLab_ATLAS.pdf>.

Support system–specific assessments, guidelines and methodologies

Leadership in Public Financial Management Project, Supply Chain and Logistics Internal Controls Evaluation (SLICE) User's Manual, USAID, Washington, D.C., 2013. The Supply Chain and Logistics Internal Controls Evaluation (SLICE) identifies strengths and vulnerabilities in the supply chain, quantifies levels of inventory mismanagement and proposes recommendations to strengthen supply chain controls. SLICE rapidly identifies and documents internal control weaknesses at each level of the supply chain from the point of entry into the country to the end user (Port-to-Patient). <www.pmi.gov/docs/default-source/default-document-library/tools-curricula/usaid_slice_user_manual.pdf?sfvrsn=4>.

People that Deliver, PtD Competency Compendium for Health Supply Chain Management: A reference for health supply chains, People that Deliver, Copenhagen, 2014. The competency compendium provides comprehensive catalogue of competency areas with associated behavioural competencies relevant for managing and operating public health supply chains. Applying the competency compendium will help a country or programme outline the supply chain domains and competencies required for the workforce at different levels of the supply chain. <www.peoplethatdeliver.org/sites/peoplethatdeliver.org/files/Feb%2014th%20FINAL%20PtD%20Public%20Health%20SCM%20Competency%20Compendium%20with%20ISBN%20and%20CC%20and%20publisher.pdf>.

People that Deliver, Health Supply Chain Competency Framework for Managers and Leaders, The Australian Institute for Sustainable Communities, University of Canberra, Bruce, Australia, 2015. This report provides a competency framework for leaders and managers of health supply chains in the development context. The framework covers two general management domains (Professional and Personal, Resource Management) and four technical domains (Selection and Quantification, Procurement, Storage and Distribution, and Use). <www.peoplethatdeliver.org/sites/peoplethatdeliver.org/files/FINAL%20Validated%20SCM%20leadership%20%20management%20framework%2013th%20April%202015.pdf>.

USAID | DELIVER PROJECT, Task Order 1, 'Supply Chain Costing Tool'. USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2012. The Supply Chain Costing Tool (SCCT) is designed to support the implementation of public health supply chain costing exercises. Based in Excel, the software tool greatly facilitates data collection, analysis and report generation of a supply chain costing exercise. The User's Manual will help the user gain an understanding of the structure and organization of the tool and will help the user plan and prepare better for a costing exercise. The manual includes detailed instructions on every aspect of conducting a costing study using the SCCT. <http://deliver.jsi.com/dhome/whatwedo/commsecurity/csfinancing/cssupplychaincosting>.

USAID | DELIVER PROJECT, Task Order 4, Human Resource Capacity Development in Public Health Supply Chain Management: Assessment guide and tool, USAID | DELIVER PROJECT, Task Order 4, Arlington, Va., 2013. This tool is designed to help public health supply chain managers in developing countries assess and improve the management of their human resources. It provides a structured, rating-based methodology designed to collect data needed for a rapid, comprehensive assessment of the capacity of the human resource support system for a country's supply chain. <http://deliver.jsi.com/dhome/whatwedo/capbuilding/cbhrscm>.

General management toolkits with tools relevant to situation analysis

Management Sciences for Health, Managers Who Lead Toolkit: Resources to support managers who lead, MSH, Cambridge, Mass., 2005. This toolkit provides managers and facilitators with exercises, tools and guidelines, with step-by-step instructions, to improve managers' skills in leading and managing teams and strengthening individual and team performance to produce results. Relevant tools include creating a shared vision, prioritization, root cause analysis, mobilizing stakeholders, and others. <https://www.msh.org/sites/msh.org/files/resources-to-support-managers-who-lead.pdf>.

Management Sciences for Health and United Nations Children's Fund, Managing for Quality, online resource. This online toolkit provides general descriptions of a variety of common management tools useful for the situation analysis, including SWOT analysis, prioritization matrix and cause-and-effect diagram. <http://erc.msh.org/quality>.

United Nations Children's Fund, 'Capacity Development for The Core Commitments for Children in Humanitarian Action', Technical Note, UNICEF, New York, 2011. While this technical note is oriented towards capacity development in a distinct field (Core Commitments for Children), it provides informative background on UNICEF's role in Capacity Development as well as useful explanations/tools for Capacity Assessment, Risk Analysis, Stakeholder Analysis, Prioritization and Root Cause Analysis. <www.unicefinemergencies.com/downloads/eresource/docs/Capacity%20Development/CD%20for%20CCCs%20Technical%20Note%2025%20July%202011.pdf>.

USAID ASSIST Project, Building Capacity for Improvement, online resource. This online toolkit provides general descriptions of a variety of common management tools useful for the situation analysis, including cause and effect analysis, prioritization and benchmarking. <https://www.usaidassist.org/content/building-capacity-improvement>.

Bottleneck analysis[61]

United Nations Children's Fund and Management Sciences for Health, How to Do a Bottleneck Analysis at District and Sub-district Level, UNICEF, New York, 2012. This manual accompanies the D-I-V-A guidebook and specifically outlines a step-by-step approach to conducting a D-I-V-A bottleneck analysis at the district level. It could easily be utilized at other levels of the supply chain. <http://ccmcentral.com/wp-content/uploads/2014/04/DIVA-Manual-Bottleneck-analysis_UNICEF_2014.pdf>.

Risk assessment

Cranfield University, Understanding Supply Chain Risk: A self-assessment workbook, Cranfield University, Cranfield, UK, 2003. This Workbook provides a simple approach to enable managers to assess supply chain risk. It is a self-assessment process that enables teams to identify the vulnerabilities they have in their various supply chains and to support the planning of both mitigating and contingency actions. <www.som.cranfield.ac.uk/som/dinamic-content/research/lscm/downloads/60599WOR.PDF>.

Supply Chain Risk Leadership Council, Supply Chain Risk Management: A compilation of best practices, Supply Chain Risk Leadership Council, 2011. This document is a practitioner's guide to supply chain risk management and associated processes. This document provides guidelines and possible approaches an organization may wish to consider, including examples of tools other organizations have used. The concepts and processes included in this document should be adapted to fit the unique characteristics of each organization. <www.scrlc.com/articles/Supply_Chain_Risk_Management_A_Compilation_of_Best_Practices_final[1].pdf>.

61 See also the section General management toolkits with tools relevant to situation analysis, above

Watson, Noel, et al., Risk Management for Public Health Supply Chains: Toolkit for identifying, analyzing, and responding to supply chain risk in developing countries, USAID I DELIVER PROJECT, Task Order 4, Arlington, Va., 2013. This tool is designed to support programmes to structure supply chain operations around a risk management approach. It can provide public health supply chain managers in developing countries with a simple process for identifying and analysing the sources of risk within the supply chain and for developing a robust response to manage risk. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/RiskMgmtPublHealSC.pdf>.

Value stream mapping

Karin Martin Associates, Value Stream Mapping in Non-Manufacturing Settings, online resource. The value stream includes all the activities required to deliver a product or service to a customer. Value stream mapping focuses at the strategic level and allows the user to visualize the whole system and eliminate waste through re-engineering. This extensive presentation walks the reader through the process of value stream mapping, providing detailed recommendations and instructions at each step. <www.slideshare.net/AMEConnect/value-stream-mapping-for-non-manufacturingmartinreplacement>.

Model policies and procedures

World Health Organization, Guide to Good Storage Practices for Pharmaceuticals, WHO Technical Report Series, No. 908, WHO, Geneva, 2003. This guide describes WHO-approved recommendations for special measures considered appropriate for the storage and transportation of pharmaceuticals, in the format of a model policy.

World Health Organization, A Model Quality Assurance System for Procurement Agencies, WHO, Geneva, 2007. Provides United Nations–agency approved recommendations for quality assurance systems, focusing on prequalification of supplies and manufacturers, purchasing, storage and distribution of pharmaceutical products in the format of a model policy. <http://apps.who.int/medicinedocs/documents/s14866e/s14866e.pdf>.

World Health Organization, Good Distribution Practices for Pharmaceutical Products, WHO Technical Report Series, No. 957, Annex 5, 2010. This document describes WHO-approved guidelines for the distribution of pharmaceutical products, in the format of a model policy. <www.who.int/medicines/areas/quality_safety/quality_assurance/GoodDistributionPracticesTRS957Annex5.pdf>.

Phase 3: Strategic and implementation planning

Tools

People that Deliver, Country Guide: Applying for public health supply chain management Development Funds, People that Deliver, Copenhagen, 2014. This guide is created to aid health supply chain managers in their application for funds for development. The guide provides key points to consider when applying for funding and then discusses the primary global supply chain donor agencies, including their priorities, funding mechanisms and entry points. <www.peoplethatdeliver.org/sites/peoplethatdeliver.org/files/Country%20Guide%20Final%2030th%20May%202014%20with%20AISC%20CC%20ISBN.pdf>.

United Nations and Avenir Health, OneHealth Tool, software package. The OneHealth Tool is a model to be used for supporting the costing, budgeting, financing and national strategy development of the health sector in developing countries, with a focus on integrated planning and strengthening health systems. This model seeks to leverage the most useful components of the different tools that currently exist and is designed in

a modular fashion, allowing for programme-specific costing as well as health system component costing. <www.avenirhealth.org/software-onehealth>.

Watson, Noel, et al, Risk Management for Public Health Supply Chains: Toolkit for identifying, analyzing, and responding to supply chain risk in developing countries, USAID I DELIVER PROJECT, Task Order 4, Arlington, Va., 2013. This tool is designed to support programmes to structure supply chain operations around a risk management approach. It can provide public health supply chain managers in developing countries with a simple process for identifying and analysing the sources of risk within the supply chain and for developing a robust response to manage risk. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/RiskMgmtPublHealSC.pdf>.

General management toolkits

Management Sciences for Health, Managers Who Lead Toolkit: Resources to Support Managers Who Lead, MSH, Cambridge, Mass., 2005. This toolkit provides managers and facilitators with exercises, tools and guidelines, with step-by-step instructions, to improve managers' skills in leading and managing teams and strengthening individual and team performance to produce results. Relevant tools include creating a shared vision, prioritization, root cause analysis, mobilizing stakeholders, and others. <https://www.msh.org/sites/msh.org/files/resources-to-support-managers-who-lead.pdf>.

Management Sciences for Health and United Nations Children's Fund, Managing for Quality, online resource. This online toolkit provides general descriptions of a variety of common management tools useful for the situation analysis, including SWOT analysis, prioritization matrix, and cause-and-effect diagram. <http://erc.msh.org/quality>.

United Nations Children's Fund , 'Capacity Development for The Core Commitments for Children in Humanitarian Action', Technical Note, UNICEF, New York, 2011. While this technical note is oriented towards capacity development in a distinct field (Core Commitments for Children), it provides informative background on UNICEF's role in Capacity Development as well as useful explanations/tools for Capacity Assessment, Risk Analysis, Stakeholder Analysis, Prioritization and Root Cause Analysis. <www.unicefinemergencies.com/downloads/eresource/docs/Capacity%20Development/CD%20for%20CCCs%20Technical%20Note%2025%20July%202011.pdf>.

USAID ASSIST Project, Building Capacity for Improvement, online resource. This online toolkit provides general descriptions of a variety of common management tools useful for the situation analysis, including cause and effect analysis, prioritization and benchmarking. <https://www.usaidassist.org/content/building-capacity-improvement>.

Essential guidelines for strategic planning in health

World Health Organization, A Framework for National Health Policies, Strategies and Plans, WHO, Geneva, 2010. This paper reviews current practice in and the potential for enhanced support to countries as they develop more robust, effective and credible national health policies, strategies and plans, and cites many best practices that are equally relevant to supply chain strategic planning. <www.who.int/nationalpolicies/FrameworkNHPSP_final_en.pdf>.

ihp+, Joint Assessment of National Health Strategies Tool and Plans, Combined Joint Assessment Tool and Guidelines, ihp+, Geneva, 2013. Joint Assessment of National Health Strategies, or JANS, is a shared approach to assessing the strengths and weaknesses of a national health strategy or plan. While the tool would probably not be applied in the context of supply chain strategy development, the guideline provides excellent recommendations on components of a strong strategy and implementation plan. <www.internationalhealthpartnership.net/en/tools/jans-tool-and-guidelines>.

Other guidelines

Cranfield University, Creating Resilient Supply Chains: A practical guide, Cranfield University, Cranfield, UK, 2003. This report aims to clarify the complex issues inherent in the identification and management of supply chain vulnerability. Based on private sector experience and best practice, it provides insight and practical tools that will assist managers in improving the resilience of their organization's supply chain networks. <www.som.cranfield.ac.uk/som/dinamic-content/research/lscm/downloads/57081_Report_AW.pdf>.

Management Sciences for Health, 'Planning for Pharmaceutical Management', ch. 38 in MDS-3: Managing Access to Medicines and Other Health Technologies, MSH, Arlington, Va., 2011. This chapter of the renowned global health pharmaceutical reference manual Managing Drug Supply gives an overview of strategic planning, programme planning and work planning within global health pharmaceutical programmes, provides an overview of best practices, and includes a list of key resources. <https://www.msh.org/sites/msh.org/files/mds3-ch38-planningmgmt-mar2012.pdf>.

McCord, Joseph, and Nadia Olson, Supply Chain Evolution: Introduction to a framework for supply chain strengthening of developing country public health programs, USAID | DELIVER PROJECT, Task Order 4, Arlington, Va., 2011. This paper articulates a 'road map' for supply chain strengthening of developing country public health systems, taking them from a state of low logistics capacity and minimal organizational structure for logistics management to a fully integrated supply chain, characterized by high performance and effective coordination among internal partners and external stakeholders. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/SuppChaiEvol.pdf>

USAID | DELIVER PROJECT, Task Order 1, Planning and Implementing a Logistics System Design Activity, USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2009. This document serves as a guide to advisers and in-country partners to understand the process of designing an efficient, secure logistics system to improve product availability to clients and to move towards health commodity security. Based on experience designing logistics systems in many countries for many programmes, the process centres on the use of a system design workshop involving local participants. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/PlannImplLogiSyst.pdf>.

Recommended practices

Abaris Consulting Inc., Best Practices: Is your strategic plan up to snuff? Abaris Consulting Inc., London, Ontario, Canada, 2012. Provides brief tips on what to do and what not to do in Strategic Planning based on five different review studies conducted by The American Productivity and Quality Centre and the Hong Kong Productivity Council. <www.supportingadvancement.com/more_with_less/planning/abaris_consulting_strategic_plan.pdf>.

Center for Applied Research and Tru Group Inc., A Summary of Best Practice Approaches in Strategic Planning Processes, CFAR, Cambridge, Mass., 2005. Provides best practices for strategic planning based on multiple private sector practices and examples. <http://trugroup.com/whitepapers/tru-strategic-planning-best-practice.pdf>

USAID | DELIVER PROJECT, Task Order 1, Emerging Trends in Supply Chain Management: Outsourcing public health logistics in developing countries, USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2010. This paper examines the potential opportunity for public sector health systems to engage third party service providers to support the logistics functions – with an emphasis on distribution, warehousing and inventory management. It describes how outsourcing could be used, when to consider outsourcing, the decision-making process for a particular context, and how to begin the outsourcing process. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/EmerTrenSCM_Outs.pdf>.

Programme-specific strategic planning resources

Johns Hopkins School of Public Health, University of Pittsburgh School of Engineering and Pittsburgh Supercomputing Center, HERMES: Highly Extensible Resource for Modeling Event-Driven Supply Chains, online resource. HERMES is a software platform that allows users to generate a simulation model of any vaccine supply chain. This simulation model serves as a 'virtual laboratory' for decision makers to model a variety of scenarios and ask various questions regarding the operations and outcomes of the vaccine supply chain, with the objective of optimizing the system's design. <http://hermes.psc.edu/home.html>.

World Health Organization and PATH, Integration of Vaccine Supply Chains with Other Health Commodity Supply Chains: A framework for decision-making, WHO, PATH, Seattle, Wash., 2013. This technical report provides guidance on the benefits and potential risks of integrating vaccine supply chains with other health commodity supply chains. The report can support decision-making on what activities, if any, can yield benefits if integrated and can guide the alignment and coordination of various international initiatives around supply chain integration. <www.who.int/immunization/programmes_systems/supply_chain/optimize/vaccine_supply_chains_integration_report.pdf>.

Phase 4: Implementation

Tools

Reproductive Health Supplies Coalition and People that Deliver, LAPTOP: Learning and Professional Training Opportunities for Public Sector Health Commodity Managers, online resource. LAPTOP serves as an information clearinghouse on professional development opportunities for health commodity managers in developing countries. The database includes classroom-based courses and workshops, self-directed distance learning programmes, and degree programme courses that focus on the development of practical skills. <www.rhsupplies.org/resources-tools/laptop.html>.

SC4CCM, The Pathway to Supply Chain Sustainability: A planning tool for scaling and institutionalizing innovations within public sector supply chains, JSI/SC4CCM, Arlington, Va., 2012. This tool is designed to provide supply chain units with a set of criteria by which they can assess the degree to which the organizations are ready to take a supply chain innovation to scale and subsequently to institutionalize the establishment of the innovation as a standard business practice within the organization. <http://sc4ccm.jsi.com/files/2012/11/Pathway-to-Supply-Chain-Sustainability-Tool.pdf>.

USAID | DELIVER Project, Performance Management Toolkit for Health Logistics Workers, online resource. This toolkit provides step-by-step guidance and resources for health supply chain workers with personnel management responsibilities. The toolkit gives practical advice and ready-to-use tools, including templates for writing job descriptions, tips for goal setting, guidance on supportive supervision and sample forms for employee evaluation. <http://deliver.jsi.com/dhome/whatwedo/capbuilding/cbhrscm/cbpmtmain>.

Guidelines

Eichler, Rena, et al., Options Guide: Performance-based incentives to strengthen public health supply chains – Version 1, Health Systems 20/20 Project, Abt Associates Inc., Bethesda, Md., August 2012. Performance-based incentives (PBI) explicitly link financial investment to results. PBI financially rewards supply chain actors for achieving a predetermined performance target. The Options Guide offers the reader a systematic framework to structure and document his/her thought process, rationale and ultimate decisions made when designing a PBI initiative to strengthen supply chain performance. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/SC_Options_Guide.pdf>.

Kotter, John P. 'Leading Change: Why transformation efforts fail', Harvard Business Review, Harvard Business School Publishing, Cambridge, Mass., January 2007. Based on a 10-year study of more than 100 companies, this article explains the major errors that can doom change efforts and explains the general lessons that encourage success. The article sets out an 8-step change management process that has become a standard in the business world. <https://hbr.org/2007/01/leading-change-why-transformation-efforts-fail>.

Management Sciences for Health, Managers Who Lead: A handbook for improving health services, MSH, Cambridge, Mass., 2005. Managers Who Lead empowers health managers at all levels of an organization to lead teams to face challenges and achieve results. It offers a wealth of resources, including exercises for managers and facilitators. Real-life examples illustrate how to transform your work groups and organizations into high performers. <https://www.msh.org/resources/managers-who-lead-a-handbook-for-improving-health-services>.

Guidelines on the United Nations' approach to capacity development

Food and Agriculture Organization of the United Nations, Capacity development: Critical success factors emerging from FAO case studies, FAO, Rome, 2008. The Capacity Development Good Practices Case Studies Series is the result of a collaborative interdepartmental effort to document FAO good practices in capacity development in FAO's areas of expertise. This publication briefly describes each of the success factors, providing country examples. <www.fao.org/fileadmin/templates/capacitybuilding/pdf/case_studies_en.pdf>.

United Nations Development Programme, Supporting Capacity Development: The UNDP approach, UNDP, New York, 2009. This resource articulates a series of UNDP policy statements and services in support of capacity development efforts at global, regional and country levels. The statements of policy and the provision of these services are supported by research and analysis of capacity development theory, data sources, methodologies and applications across the various capacity development response strategies. >.

United Nations Children's Fund, 'Capacity Development for The Core Commitments for Children in Humanitarian Action', Technical Note, UNICEF, New York, 2011. While this technical note is oriented towards capacity development in a distinct field (Core Commitments for Children), it provides informative background on UNICEF's role in Capacity Development as well as useful explanations/tools for Capacity Assessment, Risk Analysis, Stakeholder Analysis, Prioritization and Root Cause Analysis. <www.unicefinemergencies.com/downloads/eresource/docs/Capacity%20Development/CD%20for%20CCCs%20Technical%20Note%2025%20July%202011.pdf>.

United Nations Development Programme, UNDP Practice Note: Capacity development, UNDP, New York, 2008. This Practice Note provides UNDP staff and other development practitioners with a basic understanding of core capacity issues, why such capacities are important, and how external partners can support countries' efforts to further deepen and effectively utilize such capacities to achieve their development goals. <www.undp.org/content/undp/en/home/librarypage/capacity-building/capacity-development-practice-note.html>.

Recommended practices

Saunders, Max, Robin Mann, and Robin Smith, 'Implementing strategic initiatives: A framework of leading practices', International Journal of Operations and Production Management, vol., 28, no. 11, 2008, pp. 1095–1123. This paper reports the leading operations management practices and a strategy deployment framework that emerged from a qualitative study that addressed the question of how managers implement strategy in an organizational excellence environment. <https://www.academia.edu/1156826/Implementing_strategic_initiatives_a_framework_of_leading_practices>.

Country case study

Spisak, Cary, and Lindsay Morgan, Use of Incentives in Health Supply Chains: A review of results-based financing in Mozambique's Central Medical Store, USAID | DELIVER PROJECT, Task Order 4, and Health Finance & Governance Project, Arlington, Va., 2014. This report reviews progress with a results-based financing (RBF) programme in Mozambique aimed at strengthening the supply chain, specifically the performance of the Central Medical Store. The performance-based government-to-government grant can provide lessons to other countries interested in performance-based incentives. <http://deliver.jsi.com/dlvr_content/resources/allpubs/countryreports/MZ_UseInceHeal.pdf>.

Phase 5: Performance measurement

Guidelines

Management Sciences for Health, 'Monitoring and Evaluation', ch. 48 in MDS-3: Managing Access to Medicines and Other Health Technologies, MSH, Arlington, Va., 2011. This chapter of the renowned global health pharmaceutical reference manual Managing Drug Supply gives an overview of monitoring and evaluation for global health pharmaceutical programmes, provides an overview of M&E approaches, and includes a list of key resources. <https://www.msh.org/sites/msh.org/files/mds3-ch48-monitoring-mar2012.pdf>.

USAID | DELIVER PROJECT, 'Monitoring and Evaluation of Supply Chains', ch. 9 in The Logistics Handbook: A practical guide for the supply chain management of health commodities, USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2011. The Handbook offers practical guidance in managing the supply chain, with an emphasis on health commodities. This chapter provides definitions and a high-level overview of monitoring and evaluation for global health supply chain systems. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/LogiHand.pdf>.

United Nations Development Programme, ' Innovations in Monitoring and Evaluating Results', Discussion Paper, UNDP, New York, 2013. This discussion paper highlights the innovative approaches being used to manage the performance of public policies, programmes and service delivery with the goal of fostering more inclusive, collaborative and responsive processes across the development cycle. The paper can provide beneficial insights into new approaches that may support supply chain performance measurement needs. <www.undp.org/content/dam/undp/library/capacity-development/English/Discussion%20Paper-%20Innovations%20in%20Monitoring%20&%20Evaluating%20Results%20%20(5).pdf>.

Model policies and procedures

Aronovich, Dana, et al., Measuring Supply Chain Performance: Guide to key performance indicators for public health managers, USAID | DELIVER PROJECT, Task Order 1, Arlington, Va., 2010. A guide to implementing supply chain performance indicators that improve day-to-day operations of logistics functions. Provides full sample technical details for a suite of 70 suggested indicators. <www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=11153&lid=3>.

Gavi Alliance , Gavi Monitoring & Evaluation Framework: Indicators, targets and periods covered, online resource. This framework provides information on the required indicators for a Gavi health systems strengthening grant, as well as the template for monitoring and evaluation. <www.gavi.org/support/apply>.

JSI Research & Training Institute, Inc., Recommended Indicators to Address In-Country Supply Chain Barriers: Developed for the UN Commission on Life-Saving Commodities for Women and Children, Supply and Awareness Technical Reference Team, JSI Research & Training Institute, Inc., Arlington, Va., 2014.

This document recommends supply chain and related performance indicators for health programmes to use to monitor and improve the availability of the 13 key life-saving commodities of the UN Commission on Life-Saving Commodities for Women and Children. These indicators are proposed in response to barriers to availability of these commodities. <http://jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=INTL&id=14834&thisSection=Resources>.

USAID | DELIVER PROJECT, Task Order 4, Procurement Performance Indicators Guide: Using procurement performance indicators to strengthen the procurement process for public health commodities, USAID | DELIVER PROJECT, Task Order 4, Arlington, Va., 2012. This Guide provides procurement managers with a small set of performance indicators and information on how to implement and use the performance indicators to monitor and improve procurement system performance. <http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/ProcIndiGuid.pdf>.

World Health Organization, Harmonized Monitoring and Evaluation Indicators for Procurement and Supply Management Systems: Early-warning indicators to prevent stock-outs and overstocking of antiretroviral, antituberculosis and antimalaria medicines, WHO, Geneva, 2011. This document presents 12 core indicators for monitoring and evaluating PSM at national level. Six of the 12 indicators are defined as early-warning indicators of stock-outs and overstocking of medicines, which, in this document, are antiretroviral agents (ARVs) and medicines to treat tuberculosis and malaria. <www.who.int/hiv/pub/amds/monitoring_evaluation/en>.

Recommended practices

Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, Promising Practices: Data management, Management Sciences for Health, Arlington, Va., 2014. This brief provides promising practices that may be used to address specific supply chain barriers related to data management and performance monitoring for public health supply chains. <http://siapsprogram.org/wp-content/uploads/2014/07/6_Data-Management-final.pdf>.

Datasets for benchmarking

USAID | DELIVER Project, Contraceptive Security Index, USAID | DELIVER PROJECT, Task Order 4, Arlington, Va., 2012. The Contraceptive Security (CS) Index is a powerful tool for raising awareness about CS and the interrelationships between programme components, different sectors and programme outcomes. The CS Index can be used to set priorities, plan and advocate to support policies, identify areas of relative strength and weakness, and target stakeholder resources effectively. <http://deliver.jsi.com/dhome/whatwedo/commsecurity/csmeasuring/csindex>.

USAID | DELIVER Project, Compendium of Public Health Supply Chain Cost Data, online resource. This Compendium brings together information on public health supply chain costs from a range of studies in developing countries. The purpose is to provide analysts and policymakers with information on costs for planning and comparison. These costs can be used for advocacy around funding needed to support high-performing supply chains. <http://deliver.jsi.com/dlvr_content/resources/allpubs/factsheets/CompSuppChaiCosts.xlsx>.

USAID | DELIVER Project, Contraceptive Security Indicators, online resource. The systematic tracking of contraceptive security (CS) indicators can be an effective way for in-country stakeholders to regularly monitor their country's CS status to inform decision-making, advocacy, and programme planning. It also provides an opportunity for stakeholders to look at trends across countries related to the five component areas measured: leadership and coordination, finance and procurement, commodities, policies, and supply chain. <http://deliver.jsi.com/dhome/whatwedo/commsecurity/csmeasuring/csindicators>.

World Health Organization and United Nations Children's Fund, Effective Vaccine Management (EVM) Global Data Analysis, 2010–2013, WHO, Geneva, 2014. This presentation provides an analysis of results from more than 70 EVM assessments conducted between 2009 and 2013. This is the first publicly available analysis of both the EVM Criterion scores and the raw questionnaire responses. The analysis will be updated annually. >.

Phase 6: Learning and improvement

Guidelines

Bhuiyan, Nadia, and Amit Baghel, 'An Overview of Continuous Improvement: From the past to the present', Management Decision, vol. 43, no. 5, 2005, pp. 761–771. This peer-reviewed article overviews the history, evolution and existing research on continuous improvement, and provides useful and concise advice on recommended practices for improving systems. >.

Garvin, David A., 'Building a Learning Organization', Harvard Business Review, Harvard Business Publishing, Cambridge, Mass., July–August 1993. This Harvard Business Review articles describes what it takes to build a 'learning organization', with several useful case studies from the private sector. <https://hbr.org/1993/07/building-a-learning-organization>.

Smith Milway, Katie, and Amy Saxton, 'The Challenge of Organizational Learning', Stanford Social Innovation Review, Stanford University, Stanford, Calif., Summer 2011. This study describes three common barriers to knowledge sharing across non-profits and their networks, as well as ways and means to overcome them. <www.ssireview.org/articles/entry/the_challenge_of_organizational_learning>.

Appendix 2 – Searchable and filterable matrix of cited key resources


SCS Resource Database v1.1_for Toc

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Advocacy and Engagement	Guideline	Coordinating Complex Health Programs	Management Sciences for Health. 2003. Coordinating Complex Health Programs. The Manager, Volume 12:4. MSH, Arlington, VA, USA.	This issue of The Manager explores different types and mechanisms of coordination to help choose which type of coordination best meets the needs of your organization or program. The issue reviews the forms of coordination for rapid response in health emergencies as well as for long-term sustainable action. There are guidelines for setting up a new coordinating body or breathing life into an existing entity.	https://www.msh.org/resources/coordinating-complex-health-programs	General		English
Advocacy and Engagement	Tool	Advocacy Toolkit: A Guide to Influencing Decisions that Improve Children's Lives	United Nations Children's Fund. 2010. Advocacy Toolkit: A Guide to Influencing Decisions that Improve Children's Lives. UNICEF, New York.	The Advocacy Toolkit stems from UNICEF's exceptional history of advocating to protect and promote children's and women's rights. The toolkit draws on this experience, systematizing and coordinating both internal and external advocacy expertise, as well developing a few innovative approaches. The Toolkit provides a set of practical tools to help UNICEF staff and partners in the development and management of their advocacy work.	http://www.unicef.org/evaluation/files/Advocacy_Toolkit.pdf (accessed 26/Dec/2024)	General		English
Advocacy and Engagement	Tool	Scaling Up Life-Saving Commodities for Women, Children, and Newborns: An Advocacy Toolkit	UN Commission on Life-Saving Commodities for Women and Children. 2015. Scaling Up Life-Saving Commodities for Women, Children, and Newborns: An Advocacy Toolkit. PATH, Washington, DC.	This toolkit provides information about the UN Commission on Life-Saving Commodities (the Commission), 13 priority commodities, and examples of how its ten recommendations to improve access and availability are being applied globally and within countries. It also provides advocacy resources for utilizing the Commission platform to raise awareness and engage stakeholders in addressing commodity-related gaps in policy.	http://www.path.org/publications/detail.php?i=2381	Specific	High Priority	English +1

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Advocacy and Engagement	Tool	TB/MDR-TB Advocacy Tool Kit	Advocacy Partnership. 2011. TB/MDR-TB Advocacy Tool Kit. Advocacy Partnership, Leamington Spa, UK.	The purpose of the tool kit is to help strengthen the advocacy skills of TB stakeholders and their ability to design and deliver campaigns that can be integrated into and enhance other TB programme work. It attempts to the many resources already available, but not necessarily accessible to everyone.	http://www.stoptb.org/assets/documents/global/awards/cfcs/TB_MDR%20Advocacy%20Tool%20Kit.pdf	Specific	High Priority	English
Advocacy and Engagement	Toolkit	Family Planning Advocacy Toolkit	K4Health. K4Health Toolkits: Family Planning Advocacy Toolkit. Online resource.	This toolkit shares evidence-based advocacy guidance and tools to add family planning to the voices of existing advocacy networks, enable leaders at all levels in low- and middle-income countries to advocate for family planning, and grow family planning champions for sustainable organizations.	https://www.k4health.org/toolkits/family-planning-advocacy	Specific	High Priority	English
Advocacy and Engagement	Toolkit	Make a Case for Supplies. Leading Voices in Securing Reproductive Health Supplies: An Advocacy Guide and Toolkit	Reproductive Health Supplies Coalition. 2009. Making a Case for Supplies. Leading Voices in Securing Reproductive Health Supplies: An Advocacy Guide and Toolkit. RHSC, Brussels.	This guide and toolkit offers general information and guidance on advocacy communication that has been useful to many groups interested in advocating for improved RH policy environments. The general information is complemented by examples and templates of advocacy tools targeted specifically to the aims the Reproductive Health Supplies Coalition has set forth for securing long-term availability of high-quality RH supplies. Interactive online and PDF versions.	http://www.rhsupplies.org/guide-new.html	Specific	High Priority	English +2

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Advocacy and Engagement	Toolkit	Stronger Health Advocates, Greater Health Impacts: A workbook for policy advocacy strategy development.	PATH. 2014. Stronger Health Advocates, Greater Health Impacts: A workbook for policy advocacy strategy development. PATH, Seattle, WA, USA.	This workbook provides the information and tools needed to develop a high-impact, outcome-oriented policy advocacy strategy. It will lead new and experienced advocates through a 10-part framework that includes identifying an advocacy issue and goal, targeting key decision-makers and influencers, and developing advocacy tactics and messages to influence change. The framework has been applied successfully across multiple issues and geographies.	http://sites.path.org/advocacyimpact/our-tools/	General		English
Implementation	Country Case Study	Use of Incentives in Health Supply Chains—A Review of Results-Based Financing in Mozambique's Central Medical Store.	Spisak, C; Morgan, L. 2014. Use of Incentives in Health Supply Chains—A Review of Results-Based Financing in Mozambique's Central Medical Store. USAID I DELIVER PROJECT, Task Order 4& Health Finance & Governance Project, Arlington, VA, USA.	This report reviews progress with a results-based financing (RBF) program in Mozambique aimed at strengthening the supply chain, specifically the performance of the Central Medical Store. The performance-based government-to-government grant can provide lessons to other countries interested in performance based incentives.	http://deliver.jsi.com/dlvr_content/resources/allpubs/countryreports/MZ_UseInceHeal.pdf	Specific	Important gap	English
Implementation	Guideline	Leading Change: Why Transformation Efforts Fail.	Kotter, JP. 2007. Leading Change: Why Transformation Efforts Fail. Harvard Business Review. Harvard Business School Publsihing, Cambridge, MA, USA.	Based on a ten-year study of more than 100 companies, this article explains the major errors that can doom change efforts and explains the general lessons that encourage success. The article sets out an 8-step change management process which has become a standard in the business world.	https://hbr.org/2007/01/leading-change-why-transformation-efforts-fail	Non-Health		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Implementation	Guideline	Managers Who Lead: A Handbook for Improving Health Services	Management Sciences for Health. 2005. Managers Who Lead: A Handbook for Improving Health Services. MSH, Cambridge, MA, USA.	Managers Who Lead empowers health managers at all levels of an organization to lead teams to face challenges and achieve results. It offers a wealth of resources, including exercises for managers and facilitators. Real-life examples illustrate how to transform your work groups and organizations into high performers	https://www.msh.org/resources/managers-who-lead-a-handbook-for-improving-health-services	General		English + >2
Implementation	Guideline	Options Guide: Performance-Based Incentives to Strengthen Public Health Supply Chains – Version 1.	Eichler, R; Ergo, A; Serumaga, B; Rosen, J; Miles, G; Tukai, M. August 2012. Options Guide: Performance-Based Incentives to Strengthen Public Health Supply Chains – Version 1. Health Systems 20/20 Project, Abt Associates Inc., Bethesda, MD, USA.	Performance-based incentives (PBI) explicitly link financial investment to results. PBI financially rewards supply chain actors for achieving a predetermined performance target The Options Guide offers the reader a systematic framework to structure and document his/her thought process, rationale, and ultimate decisions made when designing a PBI initiative to strengthen supply chain performance.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/SC_Options_Guide.pdf	General		English
Implementation	Recommended Practices	Implementing strategic initiatives: A framework of leading practices.	Saunders, M; Mann, R; Smith, R. 2008. Implementing strategic initiatives: A framework of leading practices. International Journal of Operations and Production Management 28(11). 1095-1123.	This paper reports the leading operations management practices and a strategy deployment framework that emerged from a qualitative study that addressed the question of how managers implement strategy in an organisational excellence environment.	https://www.academia.edu/1156826/Implementing_strategic_initiatives_a_framework_of_leading_practices	Non-Health		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Implementation	Tool	LAPTOP: Learning and Professional Training Opportunities for Public Sector Health Commodity Managers	Reproductive Health Supplies Coalition; People that Deliver. LAPTOP: Learning and Professional Training Opportunities for Public Sector Health Commodity Managers. Online Resource.	LAPTOP serves as an information clearinghouse on professional development opportunities for health commodity managers in developing countries. The database includes classroom-based courses and workshops, self-directed distance learning programs, and degree programs courses that focus on the development of practical skills.	http://www.rhsupplies.org/resources-tools/laptop.html	General		English
Implementation	Tool	The Pathway to Supply Chain Sustainability: A Planning Tool for Scaling & Institutionalizing Innovations within Public Sector Supply Chains.	SC4CCM. 2012. The Pathway to Supply Chain Sustainability: A Planning Tool for Scaling & Institutionalizing Innovations within Public Sector Supply Chains. JSI/SC4CCM, Arlington, VA, USA.	This tool is designed to provide supply chain units with a set of criteria by which they can assess the degree to which the organizations are ready to take a supply chain innovation to scale and subsequently to institutionalize the establishment of the innovation as a standard business practice within the organization.	http://sc4ccm.jsi.com/files/2012/11/Pathway-to-Supply-Chain-Sustainability-Tool.pdf	General		English
Implementation	Toolkit	Performance Management Toolkit for Health Logistics Workers	USAID | DELIVER Project. Performance Management Toolkit for Health Logistics Workers. Online resource.	This toolkit provides step-by-step guidance and resources for health supply chain workers with personnel management responsibilities. The toolkit gives practical advice and ready-to-use tools, including templates for writing job descriptions, tips for goal setting, guidance on supportive supervision, and sample forms for employee evaluation.	http://deliver.jsi.com/dhome/whatwedo/capbuilding/cbhrscm/cbpmtmain	General		English
Learning & Improvement	Guideline	An overview of continuous improvement: from the past to the present	Bhuiyan, N.; Baghel, A. 2005. An overview of continuous improvement: from the past to the present. Management Decision 43(5). 761-771.	This peer-reviewed article overviews the history, evolution, and existing research on continuous improvement, and provides useful and concise advice on recommended practices for improving systems.	http://www.iem.unifei.edu.br/turrioni/PosGraduacao/PQM07/Continuous_improvement_aula_4_e_5/0010430509%20melhoria%20continua.pdf	Non-Health		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Learning & Improvement	Guideline	Building a Learning Organization	Garvin, DA. 1993. Building a Learning Organization. Harvard Business Review. Harvard Business Publishing, Cambridge, MA, USA.	This Harvard Business Review articles describes what it takes to build a "learning organization", with several useful case studies from the private sector.	https://hbr.org/1993/07/building-a-learning-organization	Non-Health		English
Learning & Improvement	Guideline	The Challenge of Organizational Learning	Smith Milway, K; Saxton, A. 2011. The Challenge of Organizational Learning. Stanford Social Innovation Review. Stanford University, Stanford, CA, USA.	This study describes three common barriers to knowledge sharing across non-profits and their networks, as well as ways and means to overcome them.	http://www.ssireview.org/articles/entry/the_challenge_of_organizational_learning	Non-Health		English
Performance Measurement	Dataset for Benchmarking	Compendium of Public Health Supply Chain Cost Data	USAID | DELIVER Project. Compendium of Public Health Supply Chain Cost Data. Online Resource.	This Compendium brings together information on public health supply chain costs from a range of studies in developing countries. The purpose is to provide analysts and policymakers with information on costs for planning and comparison. These costs can be used for advocacy around funding needed to support high-performing supply chains.	http://deliver.jsi.com/dlvr_content/resources/allpubs/factsheets/CompSuppChaiCosts.xlsx	General		English
Performance Measurement	Dataset for Benchmarking	Contraceptive Security Index	USAID | DELIVER Project. 2012. Contraceptive Security Index. USAID | DELIVER PROJECT, Task Order 4, Arlington, VA, USA.	The Contraceptive Security (CS) Index is a powerful tool for raising awareness about CS and the interrelationships between program components, different sectors, and program outcomes. The CS Index can be used to set priorities, plan and advocate to support policies, identify areas of relative strength and weakness, and target stakeholder resources effectively.	http://deliver.jsi.com/dhome/whatwedo/commsecurity/csmeasuring/csindex	Specific	High Priority	English +2

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Performance Measurement	Dataset for Benchmarking	Contraceptive Security Indicators	USAID I DELIVER Project. Contraceptive Security Indicators. Online Resource.	The systematic tracking of contraceptive security (CS) indicators can be an effective way for in-country stakeholders to regularly monitor their country's CS status to inform decision-making, advocacy, and program planning. It also provides an opportunity for stakeholders to look at trends across countries related to the five component areas measured: leadership and coordination, finance and procurement, commodities, policies, and supply chain.	http://deliver.jsi.com/dhome/whatwedo/commsecurity/csmeasuring/csindicators	Specific	High Priority	English
Performance Measurement	Dataset for Benchmarking	Effective Vaccine Management (EVM) Global Data Analysis, 2010-2013	World Health Organization; United Nationals Children's Fund. 2014. Effective Vaccine Management (EVM) Global Data Analysis, 2010-2013. WHO, Geneva.	This presentation provides an analysis of results from more than 70 EVM assessments conducted between 2009 and 2013. This is the first publicly-available analysis of both the EVM Criterion scores and the raw questionnaire responses. The analysis will be updated annually.	http://www.who.int/immunization/programmes_systems/supply_chain/evm/en/index4.html	Specific	High Priority	English +1
Performance Measurement	Guideline	Chapter 9: Monitoring and Evaluation of Supply Chains	USAID I DELIVER PROJECT. 2011. Chapter 9: Monitoring and Evaluation of Supply Chains. In: The Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities. USAID I DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	The Handbook offers practical guidance in managing the supply chain, with an emphasis on health commodities. This chapter provides definitions and a high level overview of monitoring and evaluation for global health supply chain systems.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/LogiHand.pdf	General		English
Performance Measurement	Guideline	GAVI HSS Monitoring & Evaluation Framework: Indicators, Targets and Periods Covered	GAVI Alliance. 2013. GAVI Monitoring & Evaluation Framework: Indicators, Targets and Periods Covered. Online Resource.	This framework provides information on the required indicators for a GAVI Health Systems Strengthening grant, as well as the template for monitoring and evaluation.	http://www.gavi.org/support/apply/	Specific	High Priority	English +1

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Performance Measurement	Guideline	MDS-3, Chapter 48: Monitoring and Evaluation	Management Sciences for Health. 2011. Chapter 48: Monitoring and Evaluation. In: MDS-3: Managing Access to Medicines and Other Health Technologies. MSH, Arlington, VA, USA.	This chapter of the renowned global health pharmaceutical reference manual, Managing Drug Supply, gives an overview of monitoring and evaluation for global health pharmaceutical programs, provides an overview of M&E approaches, and a list of key resources.	https://www.msh.org/sites/msh.org/files/mds3-ch48-monitoring-mar2012.pdf	General		English
Performance Measurement	Model Policies and Procedures	Harmonized monitoring and evaluation indicators for procurement and supply management systems: early-warning indicators to prevent stock-outs and overstocking of antiretroviral, antituberculosis and antimalaria medicines.	World Health Organization. 2011. Harmonized monitoring and evaluation indicators for procurement and supply management systems: early-warning indicators to prevent stock-outs and overstocking of antiretroviral, antituberculosis and antimalaria medicines. WHO, Geneva.	This document presents 12 core indicators for monitoring and evaluating PSM at national level. Six of the 12 indicators are defined as early-warning indicators of stock-outs and overstocking of medicines, which, in this document, are antiretroviral agents (ARVs) and medicines to treat tuberculosis and malaria.	http://www.who.int/hiv/pub/amds/monitoring_evaluation/en/	Generalizable		English
Performance Measurement	Model Policies and Procedures	Measuring Supply Chain Performance: Guide to Key Performance Indicators for Public Health Managers	Aronovich, D; Tien, M; Collins, E; Sommerlatte, A; Allain, L. 2010. Measuring Supply Chain Performance: Guide to Key Performance Indicators for Public Health Managers. USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	A guide to implementing supply chain performance indicators that improve day-to-day operations of logistics functions. Provides full sample technical details for a suite of 70 suggested indicators.	http://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=11153&lid=3	General		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Performance Measurement	Model Policies and Procedures	Procurement Performance Indicators Guide—Using Procurement Performance Indicators to Strengthen the Procurement Process for Public Health Commodities.	USAID | DELIVER PROJECT, Task Order 4. 2012. Procurement Performance Indicators Guide—Using Procurement Performance Indicators to Strengthen the Procurement Process for Public Health Commodities. USAID | DELIVER PROJECT, Task Order 4, Arlington, VA, USA.	This Guide provides procurement managers with a small set of performance indicators and information on how to implement and use the performance indicators to monitor and improve procurement system performance.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/ProcIndiGuid.pdf	Specific	Important gap	English
Performance Measurement	Model Policies and Procedures	Recommended Indicators to Address In-Country Supply Chain Barriers: Developed for the UN Commission on Life-Saving Commodities for Women and Children, Supply and Awareness Technical Reference Team	JSI Research & Training Institute, Inc. 2014. Recommended Indicators to Address In-Country Supply Chain Barriers: Developed for the UN Commission on Life-Saving Commodities for Women and Children, Supply and Awareness Technical Reference Team. JSI Research & Training Institute, Inc, Arlington, VA, USA.	This document recommends supply chain and related performance indicators for health programs to use to monitor and improve the availability of the 13 key life-saving commodities of the UN Commission on Life-Saving Commodities for Women and Children. These indicators are proposed in response to barriers to availability of these commodities.	http://jsi.com/JSIInternet/Resources/publication/display.m?txtGeoArea=INTL&id=14834&thisSection=Resources	Specific	High Priority	English +1
Performance Measurement	Recommended Practices	Discussion Paper: Innovations in Monitoring & Evaluating Results	United Nations Development Program. 2013. Discussion Paper: Innovations in Monitoring & Evaluating Results. UNDP, New York.	This discussion paper highlights the innovative approaches being used to manage the performance of public policies, programmes and service delivery with the goal of fostering more inclusive, collaborative and responsive processes across the development cycle. The paper can provide beneficial insights into new approaches that may support supply chain performance measurement needs.	http://www.undp.org/content/dam/undp/library/capacity-development/English/Discussion%20Paper-%20Innovations%20in%20Monitoring%20&%20Evaluating%20Results%20%20(5).pdf	Non-Health		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Performance Measurement	Recommended Practices	Promising Practices: Data Management	Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. 2014. Promising Practices: Data Management. Arlington, VA: Management Sciences for Health.	This brief provides promising practices that may be used to address specific supply chain barriers related to data management and performance monitoring for public health supply chains.	http://siapsprogram.org/wp-content/uploads/2014/07/6_Data-Management-final.pdf	General		English
Situation Analysis	Guideline	DIVA Manuals: Practical Guidance. How to do a bottleneck analysis at district and sub-district level	United Nationals Children's Fund; Management Sciences for Health. 2012. How to do a bottleneck analysis at district and sub-district level. UNICEF, New York.	This manual accompanies the DIVA guidebook and specifically outlines a step-by-step approach to conducting a DIVA bottleneck analysis at the district level. It could easily be utilized at other levels of the supply chain.	http://ccmcentral.com/wp-content/uploads/2014/04/DIVA-Manual-Bottleneck-analysis_UNICEF_2014.pdf	Generalizable		English
Situation Analysis	Guideline	Guide to Conducting Supply Chain Assessments Using the LSAT and LIAT	USAID | DELIVER PROJECT, Task Order 1. 2011. Guide to Conducting Supply Chain Assessments Using the LSAT and LIAT. USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	This document is a guide to support countries in conducting supply chain assessments with the Logistics System Assessment Tool (LSAT) and the Logistics Indicators Assessment Tool (LIAT). It supports local implementation of and capacity building for the assessment methodologies, based on the previous experiences of evaluators.	http://deliver.jsi.com/dhome/whatwedo/monitoreval/meavailability/meliatlsatresources	General		English
Situation Analysis	Guideline	Health Supply Chain Competency Framework for Managers & Leaders	People that Deliver. 2015. Health Supply Chain Competency Framework for Managers & Leaders. The Australian Institute for Sustainable Communities, University of Canberra, Bruce, Australia.	This report provides a competency framework for leaders and managers of health supply chains in the development context. The framework covers two general management domains (Professional and Personal, Resource Management) and six technical domains (Selection and Quantification, Procurement, Storage and Distribution, and Use).	http://www.peoplethatdeliver.org/news/people-deliver-publishes-supply-chain-competency-framework-managers-leaders	Specific	Important gap	English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Situation Analysis	Guideline	MDS-3, Chapter 36: Pharmaceutical Supply Systems Assessment	Management Sciences for Health. 2011. Chapter 36: Pharmaceutical Supply Systems Assessment. In: MDS-3: Managing Access to Medicines and Other Health Technologies. MSH, Arlington, VA, USA.	This chapter of the renowned global health pharmaceutical reference manual, Managing Drug Supply, gives an overview of the need for situation analysis and assessment within global health pharmaceutical programs, provides an overview of different approaches, and a list of key resources.	https://www.msh.org/sites/msh.org/files/mds3-ch36-supplysystems-mar2012.pdf	General		English
Situation Analysis	Guideline	PtD Competency Compendium for Health Supply Chain Management: A reference for health supply chains	People That Deliver. 2014. PtD Competency Compendium for Health Supply Chain Management: A reference for health supply chains. People That Deliver, Copenhagen.	The competency compendium provides comprehensive catalogue of competency areas with associated behavioural competencies relevant for managing and operating public health supply chains. Applying the competency compendium will help a country or program outline the supply chain domains and competencies required for the workforce at different levels of the supply chain.	http://www.peoplethatdeliver.org/sites/peoplethatdeliver.org/files/Feb%2014th%20FINAL%20PtD%20Public%20Health%20SCM%20Competency%20Compendium%20with%20ISBN%20and%20CC%20and%20publisher.pdf	Specific	Important gap	English
Situation Analysis	Guideline	Supply Chain Risk Management Best Practices Guide	Supply Chain Risk Leadership Council. 2011. Supply Chain Risk Management Best Practices Guide. Supply Chain Risk Leadership Council.	This document is a practitioner's guide to supply chain risk management and associated processes. This document provides guidelines and possible approaches an organization may wish to consider, including examples of tools other organizations have used. The concepts and processes included in this document should be adapted to fit the unique characteristics of each organization.	http://www.scrlc.com/articles/Supply_Chain_Risk_Management_A_Compilation_of_Best_Practices_final[1].pdf	Non-Health		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Situation Analysis	Guideline	The SPARHCS Process Guide: A Planning Resource to Improve Reproductive Health Commodity Security	Raja, R; Olson, N; Bornbusch, A (ed.); Pilz, K (ed.). 2008. The SPARHCS Process Guide: A Planning Resource to Improve Reproductive Health Commodity Security. Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA.	The SPARHCS Process Guide synthesizes the extensive field experience with the SPARHCS Tool to provide guidance to programs to customize reproductive health commodity security (RHCS) assessments and planning. Program managers, technical assistance providers, and donors are encouraged to use the Guide as a companion to the SPARHCS Tool to develop a comprehensive policy and programmatic response to the RHCS challenge.	http://www.rhsupplies.org/resources-tools/sparhcs.html	Specific	High Priority	English +2
Situation Analysis	Guideline	Value Stream Mapping in Non-Manufacturing Settings	Karin Martin Associates. 2010. Value Stream Mapping in Non-Manufacturing Settings. Online Resource.	The value stream includes all of the activities required to deliver a product or service to a customer. Value stream mapping focuses at the strategic level and allows the user to visualize the whole system and eliminate waste through reengineering. This extensive presentation walks the reader through the process of value stream mapping, providing detailed recommendations and instructions at each step.	http://www.slideshare.net/AMEConnect/value-stream-mapping-for-non-manufacturingmartinreplacement	Non-Health		English
Situation Analysis	Model Policies and Procedures	A model quality assurance system for procurement agencies	World Health Organization. 2007. A model quality assurance system for procurement agencies. WHO, Geneva.	Provides UN-agency approved recommendations for quality assurance systems focusing on prequalification of products and manufacturers, purchasing, storage and distribution of pharmaceutical products in the format of a model policy.	http://apps.who.int/medicinedocs/documents/s14866e/s14866e.pdf	General		English +1
Situation Analysis	Model Policies and Procedures	Good Distribution Practices for Pharmaceutical Products	World Health Organization. 2010. Good Distribution Practices for Pharmaceutical Products. WHO Technical Report Series, No. 957, Annex 5. WHO, Geneva.	This document describes WHO-approved guidelines for the distribution of pharmaceutical products, in the format of a model policy.	http://www.who.int/medicines/areas/quality_safety/quality_assurance/GoodDistribution-PracticesTRS957Annex5.pdf	General		English

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Situation Analysis	Model Policies and Procedures	Guide to good storage practices for Pharmaceuticals	World Health Organization. 2003. Guide to good storage practices for Pharmaceuticals. WHO Technical Report Series, No. 908. WHO, Geneva.	This guide describes WHO-approved recommendations for special measures considered appropriate for the storage and transportation of pharmaceuticals, in the format of a model policy.	http://apps.who.int/medicinedocs/documents/s18675en/s18675en.pdf	General		English
Situation Analysis	Tool	Assessment Tool for Laboratory Services and Supply Chains (ATLAS).	USAID | DELIVER PROJECT, Task Order 1. 2010. Assessment Tool for Laboratory Services and Supply Chains (ATLAS). USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	The ATLAS is a diagnostic and monitoring tool that can be used as a baseline survey to complete an annual assessment or as an integral part of the work planning process. The ATLAS is both a quantitative and qualitative tool. The information collected by using the ATLAS is analysed to identify issues and opportunities and to outline further assessment and/or appropriate interventions.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/AsseToolLab_ATLAS.pdf	Specific	High Priority	English
Situation Analysis	Tool	Effective Vaccine Management Initiative	World Health Organization; United Nationals Children's Fund. 2014. Effective Vaccine Management Initiative. Online Resource.	The EVM initiative provides materials and tools needed to monitor and assess vaccine supply chains and help countries to improve their supply chain performance. The EVM assessment tool is designed to help countries to build a vaccine supply chain based on the well-established principles of quality management used throughout the industrialized world.	http://www.who.int/immunization/programmes_systems/supply_chain/evm/en/	Specific	High Priority	English +2
Situation Analysis	Tool	Human Resource Capacity Development in Public Health Supply Chain Management: Assessment Guide and Tool.	USAID | DELIVER PROJECT, Task Order 4. 2013. Human Resource Capacity Development in Public Health Supply Chain Management: Assessment Guide and Tool. USAID | DELIVER PROJECT, Task Order 4, Arlington, VA, USA.	This tool is designed to help public health supply chain managers in developing countries assess and improve the management of their human resources. It provides a structured, rating-based methodology designed to collect data needed for a rapid, comprehensive assessment of the capacity of the human resource support system for a country's supply chain.	http://deliver.jsi.com/dhome/whatwedo/capbuilding/cbhrscm	Specific	Important gap	English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Situation Analysis	Tool	Logistics Indicators Assessment Tool (LIAT)	USAID | DELIVER PROJECT, Task Order 1. 2008. Logistics Indicators Assessment Tool (LIAT). USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	The LIAT is a quantitative data collection instrument used to conduct a facility-based survey to assess health commodity logistics system performance and commodity availability at health facilities. The LIAT can be used to monitor the performance of certain processes involved in the logistics management of health commodities over time, to evaluate certain outcomes of logistics interventions, to provide ongoing supervision and performance monitoring, and to monitor commodity availability.	http://deliver.jsi.com/dhome/whatwedo/monitoreval/meavailability/meliatlsatresources	General		English +2
Situation Analysis	Tool	Logistics System Assessment Tool (LSAT)	USAID | DELIVER PROJECT, Task Order 1. 2009. Logistics System Assessment Tool (LSAT). USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	LSAT is designed to facilitate a comprehensive quality assessment of the separate components that make up a logistics system and the system's environment. The information collected using the LSAT is analysed to identify issues and opportunities and, from those, used to outline further assessment and/or appropriate interventions.	http://deliver.jsi.com/dhome/whatwedo/monitoreval/meavailability/meliatlsatresources	General		English +1
Situation Analysis	Tool	SPARHCS: Strategic Pathway to Reproductive Health Commodity Security. A Tool for Assessment, Planning, and Implementation.	Hare, L; Hart, C; Scribner, S; Shepherd, C; Pandit, T (ed.); Bornbusch, A (ed.). 2004. SPARHCS: Strategic Pathway to Reproductive Health Commodity Security. A Tool for Assessment, Planning, and Implementation. Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA.	The SPARHCS Tool is designed to help countries develop and implement strategies to secure essential supplies for family planning and reproductive health programmes. It provides a framework for bringing together a wide range of stakeholders to achieve reproductive health commodity security (RHCS) at sub-national, national or regional level. SPARHCS has been used in 50 countries, all reflecting different stages of RHCS experience, donor support and health sector reform.	http://www.rhsupplies.org/resources-tools/sparhcs.html	Specific	High Priority	English +2

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Situation Analysis	Tool	Supply Chain & Logistics Internal Controls Evaluation	Leadership in Public Financial Management Project. 2013. Supply Chain & Logistics Internal Controls Evaluation User's Manual. USAID, Washington, DC.	The Supply Chain & Logistics Internal Controls Evaluation (SLICE) identifies strengths and vulnerabilities in the supply chain, quantifies levels of inventory mismanagement, and proposes recommendations to strengthen supply chain controls. SLICE rapidly identifies and documents internal control weaknesses at each level of the supply chain from the point of entry into the country to the end-user (Port-to-Patient).	http://www.pmi.gov/docs/default-source/default-document-library/tools-curricula/usaid_slice_user_manual.pdf?sfvrsn=4	Specific	Important gap	English
Situation Analysis	Tool	Supply Chain Compass	USAID | DELIVER PROJECT. Supply Chain Compass. Online Resource.	Supply Chain Compass provides a quick, high-level diagnosis of how mature your public health supply chain is across key managerial and functional areas, and provides a customized report with ratings that describe the level of maturity for each supply chain area, as well as intervention recommendations. The tool does not provide an in-depth assessment or evaluation of your supply chain.	https://scc.deliver.jsi.com/	General		English
Situation Analysis	Tool	Supply Chain Costing Tool and Manual	USAID | DELIVER PROJECT, Task Order 1. 2012. Supply Chain Costing Tool. USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	The Supply Chain Costing Tool (SCCT) is designed to support the implementation of public health supply chain costing exercises. Based in Excel, the software tool greatly facilitates data collection, analysis, and report generation of a supply chain costing exercise. The User's Manual will help the user gain an understanding of the structure and organization of the tool and will help the user plan and prepare better for a costing exercise. The manual includes detailed instructions on every aspect of conducting a costing study using the SCCT.	http://deliver.jsi.com/dhome/whatwedo/commsecurity/csfinancing/cssupplychaincosting	General		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Situation Analysis	Tool	The Guidebook: Strengthening district management capacity for planning, implementation and monitoring for results with equity	United Nationals Children's Fund; Management Sciences for Health. 2012. The Guidebook: Strengthening district management capacity for planning, implementation and monitoring for results with equity. UNICEF, New York.	This guidebook describes UNICEF's approach to strengthening district health systems, designed to involve all levels of the health system. It explains how UNICEF's approach, D-I-V-A, aims to achieve better maternal and child health outcomes at the district level through an analytical process that improves district level management skills for human resources, finances, information, supply, and service organization. A supply chain module for the DIVA tool is in development.	http://ccmcentral.com/wp-content/uploads/2014/04/DIVA-Guidebook-Strengthening-district-mgmt-for-results-with-equity-_UNICEF-MSH_2012.pdf	Generalizable		English
Situation Analysis	Tool	The National Supply Chain Assessment	Supply Chain Management System. 2013. The National Supply Chain Assessment. SCMS, Arlington, VA, USA.	NSCA is a comprehensive toolkit that assesses the capability and performance at all levels of a health supply chain. The results of the assessment help develop strategic and operational plans and monitor whether activities are achieving expected outcomes. This assessment tool is being used by the Interagency Supply Group as a basis for coordinated supply chain strengthening efforts across donor and partner organizations.	http://scms.pfscm.org/scms/docs/papers/National_Supply_Chain_Assessment_Brief_Final_1.pdf	General		English
Situation Analysis	Tool	Understanding Supply Chain Risk: A Self-Assessment Workbook	Cranfield University. 2003. Understanding Supply Chain Risk: A Self-Assessment Workbook. Cranfield University, Cranfield.	This Workbook provides a simple approach to enable managers to assess supply chain risk. It is a self-assessment process that enables teams to identify the vulnerabilities they have in their various supply chains and to support the planning of both mitigating and contingency actions.	http://www.som.cranfield.ac.uk/som/dinamic-content/research/lscm/downloads/60599WOR.PDF	Non-Health		English
Strategic Planning	Guideline	A Framework For National Health Policies, Strategies And Plans	World Health Organization. 2010. A Framework For National Health Policies, Strategies And Plans. WHO, Geneva.	This paper reviews current practice in and the potential for enhanced support to countries as they develop more robust, effective and credible national health policies, strategies and plans, and cites many best practices that are equally relevant to supply chain strategic planning.	http://www.who.int/nationalpolicies/FrameworkNHPSP_final_en.pdf	General		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Strategic Planning	Guideline	Country Guide: Applying for Public Health Supply Chain Management Development Funds	People That Deliver. 2014. Country Guide: Applying for Public Health Supply Chain Management Development Funds. People That Deliver, Copenhagen.	This guide is created to aid health supply chain managers in their application for funds for development. The guide provides key points to consider when applying for funding and then discusses the primary global supply chain donor agencies, including their priorities, funding mechanisms, and entry points.	http://www.peoplethatdeliver.org/sites/peoplethatdeliver.org/files/Country%20Guide%20Final%2030th%20May%202014%20with%20AISC%20CC%20ISBN.pdf	General		English
Strategic Planning	Guideline	Creating Resilient Supply Chains: A Practical Guide	Cranfield University. 2003. Creating Resilient Supply Chains: A Practical Guide. Cranfield University, Cranfield, UK.	This report aims to clarify the complex issues inherent in the identification and management of supply chain vulnerability. Based on private sector experience and best practice, it provides insight and practical tools which will assist managers in improving the resilience of their organisation's supply chain networks.	http://www.som.cranfield.ac.uk/som/dinamic-content/research/lscm/downloads/60599WOR.PDF	Non-Health		English
Strategic Planning	Guideline	Emerging Trends in Supply Chain Management: Outsourcing Public Health Logistics in Developing Countries	USAID | DELIVER PROJECT, Task Order 1. 2010. Emerging Trends in Supply Chain Management: Outsourcing Public Health Logistics in Developing Countries. USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	This paper examines the potential opportunity for public sector health systems to engage third party service providers to support the logistics functions—with an emphasis on distribution, warehousing, and inventory management. It describes how outsourcing could be used, when to consider outsourcing, the decision-making process for a particular context, and how to begin the outsourcing process.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/EmerTrenSCM_Outs.pdf	General		English
Strategic Planning	Guideline	Integration of Vaccine Supply Chains with Other Health Commodity Supply Chains: A framework for decision-making.	World Health Organization; PATH. 2013. Integration of Vaccine Supply Chains with Other Health Commodity Supply Chains: A framework for decision-making. WHO, PATH, Seattle, WA, USA.	This technical report provides guidance on the benefits and potential risks of integrating vaccine supply chains with other health commodity supply chains. The report can support decision-making on what activities, if any, can yield benefits if integrated and can guide the alignment and coordination of various international initiatives around supply chain integration.	http://www.who.int/immunization/programmes_systems/supply_chain/optimize/vaccine_supply_chains_integration_report.pdf	Specific	High Priority	English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Strategic Planning	Guideline	MDS-3, Chapter 38: Planning for Pharmaceutical Management	Management Sciences for Health. 2011. Chapter 38: Planning for Pharmaceutical Management. In: MDS-3: Managing Access to Medicines and Other Health Technologies. MSH, Arlington, VA, USA.	This chapter of the renowned global health pharmaceutical reference manual, Managing Drug Supply, gives an overview of strategic planning, program planning and work planning within global health pharmaceutical programs, provides an overview of best practices, and a list of key resources.	https://www.msh.org/sites/msh.org/files/mds3-ch38-planningmgmt-mar2012.pdf	General		English
Strategic Planning	Guideline	Planning and Implementing a Logistics System Design Activity	USAID | DELIVER PROJECT, Task Order 1. 2009. Planning and Implementing a Logistics System Design Activity. USAID | DELIVER PROJECT, Task Order 1, Arlington, VA, USA.	This document serves as a guide to advisors and in-country partners to understand the process of designing an efficient, secure logistics system to improve product availability to clients and to move toward health commodity security. Based on experience designing logistics systems in many countries for many programs, the process centres on the use of a system design workshop involving local participants.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/PlannImplLogiSyst.pdf	General		English
Strategic Planning	Guideline	Supply Chain Evolution: Introduction to a Framework for Supply Chain Strengthening of Developing Country Public Health Programs.	McCord, J; Olson, N. 2011. Supply Chain Evolution: Introduction to a Framework for Supply Chain Strengthening of Developing Country Public Health Programs. USAID | DELIVER PROJECT, Task Order 4, Arlington, VA, USA.	This paper articulates a "road map" for supply chain strengthening of developing country public health systems, taking them from a state of low logistics capacity and minimal organizational structure for logistics management to a fully integrated supply chain, characterized by high performance and effective coordination among internal partners and external stakeholders.	http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/SuppChaiEvol.pdf	General		English

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Strategic Planning	Recommended Practices	A Summary of Best Practice Approaches in Strategic Planning Processes	Center for Applied Research; Tru Group Inc. 2005. A Summary of Best Practice Approaches in Strategic Planning Processes. CFAR, Cambridge, MA, USA.	Provides best practices for strategic planning based on multiple private sector practices and examples.	http://trugroup.com/whitepapers/tru-strategic-planning-best-practice.pdf	Non-Health		English
Strategic Planning	Recommended Practices	Best Practices: Is your strategic plan up to snuff?	Abaris Consulting Inc. 2012. Best Practices: Is your strategic plan up to snuff? Abaris Consulting Inc., London, Canada.	Provides brief tips on what to do and what not to do in Strategic Planning based on five different review studies conducted by The American Productivity and Quality Center and the Hong Kong Productivity Council.	http://www.supportingadvancement.com/more_with_less/planning/abaris_consulting_strategic_plan.pdf	Non-Health		English
Strategic Planning	Tool	HERMES: Highly Extensible Resource for Modeling Event-Driven Supply Chains.	Johns Hopkins School of Public Health; University of Pittsburgh School of Engineering; Pittsburgh Supercomputing Center. HERMES: Highly Extensible Resource for Modeling Event-Driven Supply Chains. Online Resource.	HERMES is a software platform that allows users to generate a simulation model of any vaccine supply chain. This simulation model serves as a "virtual laboratory" for decision makers to model a variety of scenarios and ask various questions regarding the operations and outcomes of the vaccine supply chain, with the objective of optimizing the system's design.	http://hermes.psc.edu/home.html	Specific	High Priority	English
Strategic Planning	Tool	Joint Assessment of National Health Strategies and Plans	ihp+. 2013. Joint Assessment of National Health Strategies and Plans. Combined Joint Assessment Tool and Guidelines. ihp+, Geneva.	Joint Assessment of National Health Strategies, or JANS, is a shared approach to assessing the strengths and weaknesses of a national health strategy or plan. While the tool would probably not be applied in the context of supply chain strategy development, the guideline provides excellent recommendations on components of a strong strategy and implementation plan.	http://www.internationalhealthpartnership.net/en/tools/jans-tool-and-guidelines/	General		English +1

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Strategic Planning	Tool	OneHealth Tool	United Nations; Avenir Health. OneHealth Tool. Software Package. Avenir Health.	The OneHealth Tool is a model to be used for supporting the costing, budgeting, financing and national strategy development of the health sector in developing countries with a focus on integrated planning and strengthening health systems. This model seeks to leverage the most useful components of the different tools that currently exist and is designed in a modular fashion allowing for program specific costing as well as health system component costing.	http://www.avenirhealth.org/software-onehealth	General		English + >2
Various	Guideline	Capacity Development for The Core Commitments for Children in Humanitarian Action; Technical Note	United Nations Children's Fund. 2011. Capacity Development for The Core Commitments for Children in Humanitarian Action; Technical Note. UNICEF, New York.	While this technical note is oriented towards capacity development in a distinct field (Core Commitments for Children), it provides informative background on UNICEF's role in Capacity Development as well as useful explanations/tools for Capacity Assessment, Risk Analysis, Stakeholder Analysis, Prioritization and Root Cause Analysis.	http://www.unicefinemergencies.com/downloads/eresource/docs/Capacity%20Development/CD%20for%20CCCs%20Technical%20Note%2025%20July%202011.pdf	General		English
Various	Guideline	Capacity development: Critical success factors emerging from FAO case studies.	Food and Agriculture Organisation of the United Nations. 2008. Capacity development: Critical success factors emerging from FAO case studies. FAO, Rome.	The Capacity Development Good Practices Case Studies Series is the result of a collaborative Interdepartmental effort to document FAO good practices in capacity development in FAO's areas of expertise. This publication briefly describes each of the success factors, providing country examples.	http://www.fao.org/fileadmin/templates/capacitybuilding/pdf/case_studies_en.pdf	Non-Health		English + >2

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Various	Guideline	Supporting Capacity Development: The UNDP Approach	The United Nationals Development Programme. 2009. Supporting Capacity Development: The UNDP Approach. UNDP, New York.	This resource articulates a series of UNDP policy statements and services in support of capacity development efforts at global, regional and country levels. The statements of policy and the provision of these services are supported by research and analysis of capacity development theory, data sources, methodologies and applications across the various capacity development response strategies.	http://www.undp.org/content/undp/en/home/librarypage/capacity-building/support-capacity-development-the-undp-approach.html	Non-Health		English + >2
Various	Guideline	UNDP Practice Note: Capacity Development	United Nations Development Program. 2008. UNDP Practice Note: Capacity Development. UNDP, New York.	This Practice Note provides UNDP staff and other development practitioners with a basic understanding of core capacity issues, why such capacities are important, and how external partners can support countries' efforts to further deepen and effectively utilise such capacities to achieve their development goals.	http://www.undp.org/content/undp/en/home/librarypage/capacity-building/capacity-development-practice-note.html	Non-Health		English + >2
Various	Tool	Managers Who Lead Toolkit—Resources to Support Managers Who Lead	Management Sciences for Health. 2005. Managers Who Lead Toolkit—Resources to Support Managers Who Lead. MSH, Cambridge, MA, USA.	This toolkit provides managers and facilitators with exercises, tools, and guidelines, with step-by-step instructions, to improve managers' skills in leading and managing teams and strengthening individual and team performance to produce results. Relevant tools include creating a shared vision, prioritization, root cause analysis, mobilizing stakeholders, and others.	https://www.msh.org/sites/msh.org/files/resources-to-support-managers-who-lead.pdf	General		English + >2

Relevant Phase	Resource Type	Resource Name	Full Citation	Description	Link	General, Generalizable, Specific, Non-Health	If Specific, High Priority or Gap area?	Languages (English only or also others?)
Various	Tool	Risk Management for Public Health Supply Chains: Toolkit for Identifying, Analyzing, and Responding to Supply Chain Risk in Developing Countries.	Watson, N; Serumaga, B; McCord, J; Inglis, A. 2013. Risk Management for Public Health Supply Chains: Toolkit for Identifying, Analyzing, and Responding to Supply Chain Risk in Developing Countries. USAID | DELIVER PROJECT, Task Order 4, Arlington, VA, USA.	This tool is designed to support programs to structure supply chain operations around a risk management approach. It can provide public health supply chain managers in developing countries with a simple process for identifying and analysing the sources of risk within the supply chain and for developing a robust response to manage risk.	http://deliver.jsi.com/dhome/whatwedo/riskmanagement	General		English
Various	Toolkit	Building Capacity for Improvement	USAID ASSIST Project. Building Capacity for Improvement. Online Resource.	This online toolkit provides general descriptions of a variety of common management tools useful for the situation analysis, including cause and effect analysis, prioritization, and benchmarking.	https://www.usaidassist.org/content/building-capacity-improvement	General		English
Various	Toolkit	Managing for Quality	Management Sciences for Health; United Nations Children's Fund. Managing for Quality. Online Resource.	This online toolkit provides general descriptions of a variety of common management tools useful for the situation analysis, including SWOT analysis, prioritization matrix, and cause-and-effect diagram.	http://erc.msh.org/quality/	General		English

Appendix 3 – Supply chain technical resource clearing houses

This toolkit focuses on the process for supply chain strengthening and capacity development, and does not provide extensive resources for technical decision-making and implementation. This appendix provides links to online clearinghouses that do provide access to extensive technical resources and tools.

General global health supply chain resources

- PSM Toolbox – >
- USAID | DELIVER Project – <http://deliver.jsi.com/dhome/resources>
- USAID Development Experience Clearinghouse – <https://dec.usaid.gov>

Maternal and child health–specific supply chain resources

- UN Commission on Life-Saving Commodities – >
- UNICEF Supply Chains for Children – <http://supplychainsforchildren.org/en/resources>

Immunization-specific supply chain resources

- Technet-21 – >
- WHO – >

HIV-specific supply chain resources

- WHO – >
- Supply Chain Management Systems – >
- USAID | DELIVER Project – <http://deliver.jsi.com/dhome/health/hiv/hivmore/hivaidsmanagesupplychain>

Malaria-specific supply chain resources

- Roll Back Malaria Toolbox – >

Reproductive health–specific supply chain resources

- Reproductive Health Supplies Coalition – >
- K4H Family Planning Logistics Toolkit – <https://www.k4health.org/toolkits/fp-logistics>

Tuberculosis-specific supply chain resources

- Stop TB Partnership – >

Laboratory-specific supply chain resources

- USAID | DELIVER Project – <http://deliver.jsi.com/dhome/health/lab/labmore/labsupplychainresmanage>

Human resources–specific supply chain resources

- People that Deliver – >
- LAPTOP: Learning and Professional Training Opportunities for Public Sector Health Commodity Managers – >

Global health supply chain communities of practice

- International Association of Public Health Logisticians (IAPHL) – <http://iaphl.org>
- TechNet-21 Forum – >
- RESOLOG (French) – >

Appendix 4 – Sample capacity development indicators

A list of capacity development indicators is provided, with reference to the relevant capacity development level and indicator type. Only general indicator names are given; indicators would require definition, refinement and adaptation to country context.

Indicator name	Capacity development level	Indicator type
Number (or percentage) of staff trained in supply chain management practices	Individual	Output
Number (or percentage) of supply chain staff with formal degrees in supply chain management or logistics	Individual	Output
Number (or percentage) of supply chain staff participating in mentoring relationships, professional networks or South-to-South exchanges	Individual	Output
Number (or percentage) of local staff able to carry out specific supply chain functions without external assistance*	Individual	Outcome
Total warehouse capacity of government facilities at different supply chain levels (including government-outsourced capacity)	Organizational	Input
Total transport capacity at government facilities at different supply chain levels (including government-outsourced capacity)	Organizational	Input
Degree of compliance with financial management regulations within the supply chain	Organizational	Outcome
Number of supply chain functions that are collaborative (involving government and partners) and led by government staff	Organizational	Outcome
Percentage of facilities with at least one active health worker trained in supply chain management*	Organizational	Output
Health system levels at which training in supply chain management is deployed*	Organizational	Output
Percentage of facilities that received supervision visits including supply chain management according to schedule*	Organizational	Output
Existence of documented supply chain management standard operating procedures for supply chain management tasks at each level of the in-country supply chain*	Organizational	Output
Existence of a pre-service supply chain management curriculum developed and/or implemented in relevant schools and total number of students who have completed the pre-service coursework*	Organizational	Output
Percentage of local staff with clearly defined and accurate job descriptions	Organizational	Output
Supply chain coordination group actively monitors and guides supply chain decisions*	Organizational	Output
Government share of total spending on procurement of life-saving commodities*	Enabling Environment	Input
Government share of total spending on supply chain operations	Enabling Environment	Input
Number of new policies that support supply chain human resources (development, recruitment, retention or performance improvement)	Enabling Environment	Outcome
Number of laws reformed to better accommodate health supply chain management and access to essential medicines	Enabling Environment	Outcome

*Indicators with asterisks were taken directly or adapted from the key resource: JSI Research & Training Institute, Inc., Recommended Indicators to Address In-Country Supply Chain Barriers, JSI, Arlington, Va., 2014, <http://jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=14834&lid=3>.

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