USAID | DELIVER PROJECT

PLANNING AND IMPLEMENTING A LOGISTICS SYSTEM DESIGN ACTIVITY

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Abstract
Public health program managers in resource-limited settings often recognize the importance of a well-designed logistics system after experiencing symptoms of poor logistics system performance, such as stockouts, overstocks, and expiries. Based on experience designing logistics systems in many countries for many programs, the USAID | DELIVER PROJECT recommends the use of a system design workshop involving local participants. This method has proven to be highly efficient, with a likelihood of yielding an appropriate system design that is country specific. 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.

Cover photo: A truck delivering commodities.

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ACRONYMS

AIDS	acquired immunodeficiency syndrome
ARV	antiretroviral (drug)
ATLAS	Assessment Tool for Laboratory Services
EOP	emergency order point
GFATM	Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria
HIV	human immunodeficiency virus
ICS	inventory control system
LIAT	Logistics Indicators Assessment Tool
LMIS	logistics management information system
LSAT	Logistics System Assessment Tool
MAX	maximum stock level
MIN	minimum stock level
MOH	Ministry of Health
NGO	nongovernmental organization
OI	opportunistic infection
OJT	on-the-job training
PEPFAR	President's Emergency Plan for AIDS Relief
SDP	service delivery point
SOP	standard operating procedures
TOT	training of trainers
USAID	U.S. Agency for International Development

ACKNOWLEDGMENTS

This publication, which is featured on the CD *Resources for Managing the HIV & AIDS and Laboratory Supply Chains*, is dedicated to people around the world living with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) and to the many individuals from communities, nongovernmental organizations (NGOs), faith-based organizations, Ministries of Health, and other organizations who have consistently fought for access to antiretroviral drugs and other commodities required to provide HIV and AIDS services. The publication is also dedicated to friends and counterparts who have worked with the USAID | DELIVER PROJECT, the Family Planning Logistics Management project, and John Snow, Inc., since 1986 and to the thousands of committed professionals in Ministries of Health and NGOs who work daily to supply their customers and programs with essential public health commodities. Although the resources on the CD provide a focus on specific HIV and AIDS and laboratory commodities, we recognize that comprehensive HIV and AIDS and laboratory programs require the supply chain to manage and deliver a broad range of several hundred public health commodities.

U.S. Agency for International Development (USAID) contracts funded the technical assistance, in-country projects, and research that produced the experience and lessons contained in the *Resources*. We are deeply grateful to the team of professionals in the Commodity Security and Logistics Division in the Office of Population and Reproductive Health of the USAID Global Health Bureau's Center for Population, Health, and Nutrition for their encouragement and advice and their commitment to improving HIV and AIDS laboratory and public health programs through logistics.

Numerous people helped write the documents that constitute the *Resources*. Sincere thanks go to the core team of dedicated technical staff who developed and wrote the components both in the field offices and in Washington, DC. The lessons drawn from the USAID | DELIVER PROJECT's experience in managing HIV and AIDS and laboratory supply chains would not have been possible without these valuable contributions.

EXECUTIVE SUMMARY

Public health systems and programs in resource-limited settings struggle to consistently make important health commodities available to those who need them. A well-designed logistics system is fundamental in providing a continuous supply of good-quality health commodities throughout the health system. In designing a logistics system, the environmental and political context of the country in which the system is to be implemented must be considered, including future plans for computerization or integration of health services and supply chains. This document is written to provide technical advisors with guidance on the process of designing a logistics system for health commodities that is sustainable, country specific, and flexible to program needs and product characteristics.

A logistics system includes

- a logistics management information system capable of collecting and reporting timely logistics data to inform quantification, procurement, storage, and distribution
- an inventory control system that ensures proper management of stock levels
- storage and warehousing that is capable of storing commodities so that integrity and quality are maintained
- a distribution system for efficient movement of commodities from manufacturers through to facilities
- sufficient personnel trained in logistics at each level of the in-country supply chain with adequate supervision and support from higher levels

Several approaches can be taken in the process of designing a logistics system. The USAID | DELIVER PROJECT recommends designing a logistics system through the facilitation of a design workshop. In this approach, key stakeholders and health workers who manage the commodities will participate in the design of the logistics system. Involving participants from both program management and service delivery points enables realistic decisions to be made that consider both policy and environmental factors. The participants also play a key role as positive endorsers and champions of the new system when the system is implemented.

Designing a logistics system using the design workshop methodology falls into three steps: pre-design assessment, design workshop, and implementation activities. The pre-design step involves document review, key informant interviews, stakeholder meetings, and site visits that provide the advisor and other system design team members with an overview of the reality on the ground so that they can advise appropriately throughout the design process.

The second step is facilitating a logistics system design workshop. The workshop involves a brief teaching component in which the advisor teaches general logistics principles and specific design principles that are critical to the process. The participants are then guided through the process of

reviewing the current situation and designing a new logistics system that fulfills all the components mentioned above.

The recommended system is then documented and presented to key stakeholders and decisionmakers for endorsement. This is critical and the time required to achieve support and acceptance from all stakeholders should not be underestimated. The design of the system is only the first step, and a well-designed implementation plan is critical to ensuring success of the new logistics system. Implementation requires both financial and political support from the Ministry of Health officials and program managers. It is labor-intensive and requires commitment and dedication from staff throughout the system.

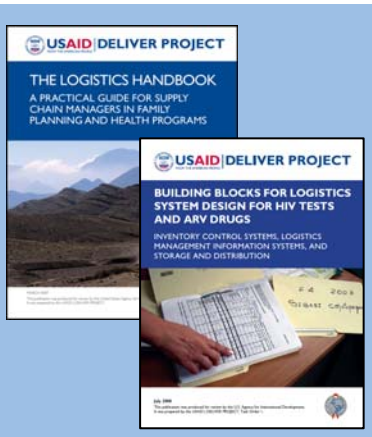
This guide provides a step-by-step methodology to designing a system and implementing the system; it does not, however, detail the considerations for making design decisions. It is recommended that this document be used in conjunction with other references, listed in appendix A, that focus on supply chain considerations for the particular product category in question.

PURPOSE

Directors and managers of public health systems and programs in resource-limited settings often recognize the value of having a deliberate and strategically designed logistics system after experiencing symptoms of poor logistics system performance, such as stockouts, overstocks, and expiries. Therefore, the purpose of this guide is to present a systematic approach to designing a logistics system for health commodities, outlining practical steps that can be followed to manage the process. This guide was written for the technical advisor employed to facilitate the logistics system design process through the use of a design workshop. Although the guide by no means suggests that one approach fits all, the general principles are applicable across a variety of settings and can be customized for each unique situation.

In addition to providing a step-by-step methodology to designing the system, this document outlines the components that must be in place before a system design can be undertaken, the technical preparation needed prior to the design, and key follow-up activities that must be undertaken after the system design to ensure successful implementation. This guide does not, however, detail the considerations for making design decisions.

It is recommended that this document be used in conjunction with other references, listed below, that outline supply chain considerations for the particular product category in question. The documents referenced specifically focus on the critical components of the supply chain and make recommendations to guide design decisions that are based on experience and lessons learned in other countries.



The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs

Building Blocks for Logistics System Design for HIV Tests and ARV Drugs: Inventory Control Systems, Logistics Management Information Systems, and Storage and Distribution

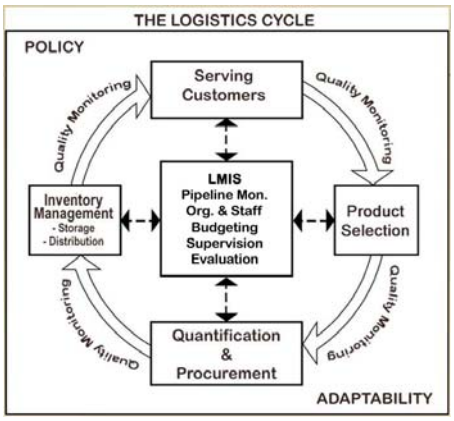
Laboratory Logistics Handbook: Guidelines for Designing and Managing Logistics Systems

DESIGNING A LOGISTICS SYSTEM

WHAT IS A LOGISTICS SYSTEM?

The purpose of a logistics system is to obtain and move commodities in a timely fashion to the places where they are needed at a reasonable cost. A logistics system includes all the components described in the logistics cycle shown in figure 1. This document, however, focuses on designing the in-country components of the logistics system—in particular, how commodities and information move through the different levels of the health system. Therefore the emphasis is on designing the logistics management information system and inventory management activities, rather than central-level activities such as quantification and procurement. However, as the logistics cycle demonstrates, all these functions are interrelated and so when the in-country logistics system is designed, these other activities must be considered, such as ensuring that the data required for quantification are collected and that quality monitoring is incorporated into the system.

Figure 1. The Logistics Cycle



In this context, the logistics system to be designed includes the following:

- A **logistics management information system (LMIS)** capable of collecting and reporting timely logistics data to inform quantification, procurement, storage, and distribution
- An **inventory control system (ICS)** that ensures proper management of stock levels
- **Storage and warehousing** that are capable of storing commodities so that integrity and quality are maintained
- A **distribution system** for efficient movement of commodities from manufacturers through to facilities
- **Trained personnel** in logistics at facilities at all levels of the system and with adequate **supervision** and support from higher levels

DIFFERENT APPROACHES TO DESIGNING A LOGISTICS SYSTEM

Historically, several approaches have been taken in the process of designing logistics systems. From these emerge two main approaches: the design workshop and a consultant design.

Box 1. Two Approaches to System Design

- **Design workshop.** Key stakeholders and health care providers who use the system participate in a facilitated workshop to design the logistics system.
- **Consultant design.** A consultant designs the logistics system after technical review and a series of interviews with key stakeholders and health care providers within the system.

Having undertaken logistics system designs in numerous programs and countries, the USAID | DELIVER PROJECT recommends designing a logistics system through a design workshop. Experience has proven this approach to be an efficient process with a high likelihood of yielding an appropriate system design with the political and organizational support necessary for its successful implementation. There are four primary benefits to taking this approach:

- **Building local capacity.** During the workshop, participants learn the fundamental logistics principles critical to system design prior to embarking on the design process. The workshop participants then apply the principles they have learned in designing their logistics system.
- **Complete information for decision making.** Participants representing all levels of the health system are involved in the design workshop. Advisors and participants share information, answer questions, and use the data to design a logistics system that is appropriate to the country context. For example, participants from program management will be able to answer questions about policy, while participants from the service delivery points will be able to confirm current practices in the field and provide a realistic perspective on what can be successfully implemented at the lowest levels.
- **Ownership by the users of the logistics system.** Those who will use the logistics system in practice, to order, monitor, and manage health commodities, take part in its design and as a result feel a sense of ownership of the final design. During implementation and beyond, participants in the design workshop serve as endorsers and champions of the new system and play a critical role in promoting the changes that the newly designed system requires.
- **Synergy building and time savings.** Logistics system design is a dynamic and iterative process that involves the constant integration of new information. The design workshop promotes a synergistic approach that saves time as well as financial and human resources. Workshop participants work together to identify contradictory data, resolve inconsistencies, and achieve consensus without having to go through numerous rounds of time-intensive meetings and interviews.

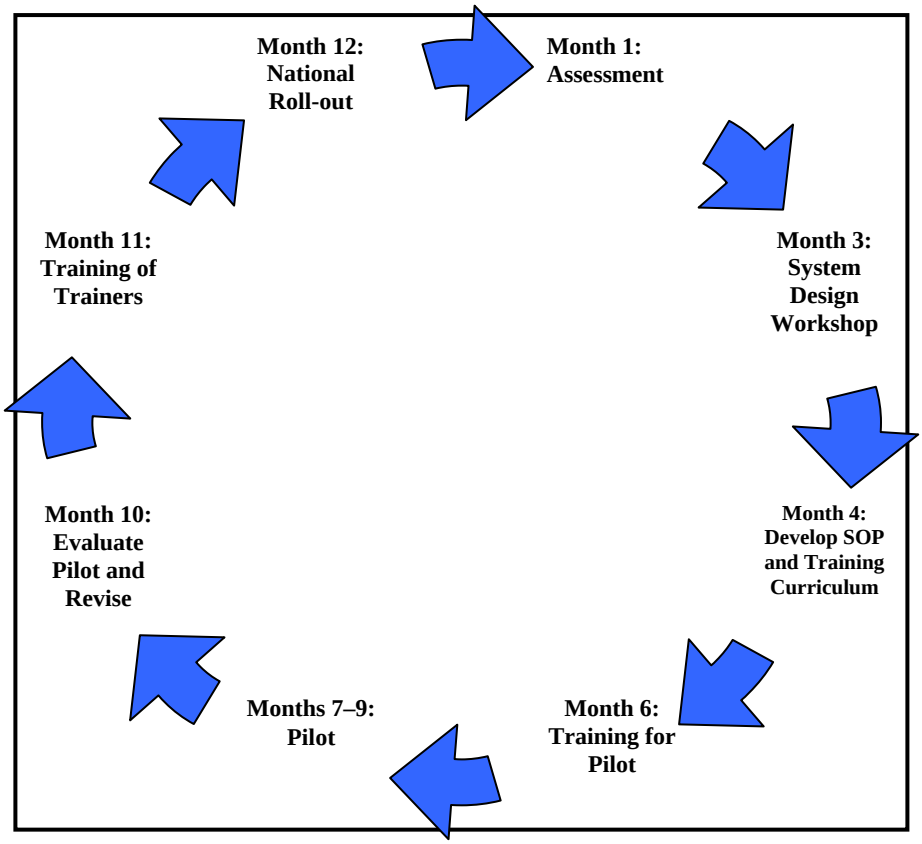
Each of these benefits has a positive impact on both the efficiency of the design process and the ultimate success of the system designed. Designing a logistics system through a design workshop will result in a system that has a higher success rate than other design approaches. This guide will outline the design workshop approach to designing a logistics system.

DESIGNING AND IMPLEMENTING THE SYSTEM

Designing a logistics system is only the beginning of a range of activities. Implementing a logistics system is a dynamic process that requires ongoing training, monitoring, evaluation, and adjustments to ensure the system is effective and efficient. The following diagram is an example of the steps involved in designing, implementing, and maintaining a logistics system. Maintaining a logistics

system is an ongoing activity that involves a continual process of assessing, designing/redesigning, and implementing.

Figure 2. An Illustrative Example of Designing and Implementing a Logistics System Including a Pilot



The timeline and steps may vary between countries. Implementing a logistics system generally takes between six and 24 months but can take even longer depending on the situation. More details on implementation are included in the section *Implementing the System*.

THE ROLE OF THE ADVISOR/FACILITATOR

The advisor or facilitator of the process may be someone working permanently within the country or may be an outside technical advisor. However, it is more effective if the person is not personally involved in the system, so that he or she can provide a fresh perspective of the current situation. The key to this role is to be the facilitator of the process and a technical advisor on the merits of the proposed design, not the designer of the system.

The advisor provides the participants with the necessary tools to design the system and guides them in making a realistic system by ensuring that all logistics implications of design decisions are fully understood. While the advisor must allow the participants to design and own the system, it is the advisor's role to ensure that the system will be technically sound and feasible.

CONSIDERATIONS PRIOR TO THE DESIGN

Conducting a system design is not always the best intervention for healing an ailing logistics system and it is important to ensure that certain components are in place before agreeing to conduct a system design. Successfully implementing a newly designed system takes a high level of commitment and human and financial resources; without these, a system design will be a waste of money, time, and resources. Securing political and stakeholder commitment to providing the resources necessary to successfully design and implement the system is essential from the outset.

DEFINING THE SCOPE

There are a number of reasons why a program or ministry will decide to embark on a system design. Sometimes it is a reaction to problems in the current system such as stockouts, expiries, and a lack of logistics data available for making decisions. Other times it may be due to changes in the current structure of the program such as the introduction of a new category of product or the desire to integrate commodity categories into the same supply chain. In some situations there is no system at all in place, while in other situations there is a system in place but it is neither effective nor efficient. Whatever the reason for embarking on a system design, the basic approach is the same and a high level of commitment is required, but the resources, timeframe, or activities required prior to the design may differ.

The scope of the activity must be defined before committing to designing a logistics system, as this will influence the level and amount of resources, time, and commitment that are required to make the activity successful. Once the scope has been defined, the advisor can determine what is required to make this successful; if the right level of financial and political commitment is not secured, it may be in the advisor's best interest to advise against embarking on a system design.

Some factors to consider when defining the scope include the following:

- **Types of products.** The variety of products that are to be included in the system will affect the time and resources required and will indicate if additional activities are required before beginning the design process. In the case of laboratory systems, for instance, it may be necessary to have a standardization workshop prior to the system design to reduce the number of commodities being managed. If a health system is moving to integrating the management of all health commodities within the same system, it may be necessary to segment the products first. (The concept of segmentation is discussed at the end of this section.)
- **Number of programs.** The categories of products included in the system design will influence the number of programs involved and therefore the number of stakeholders that must be included in the process. It is important that stakeholders, including funding partners and decision makers from all programs, be involved and committed to the process both financially and politically.
- **Public and/or private.** If the supply chain is supplying public, private, or NGO-supported health facilities then stakeholders from all these sectors must be involved with the design

process. Also, private health facilities often have their own policies separate from those of the public health system and these must be considered during the design process.

POLITICAL AND STAKEHOLDER COMMITMENT

It is essential to have the commitment of decision makers and key stakeholders in the health system. While an appropriate and efficient logistics system can be designed without this commitment, the endorsement and ongoing support of those high up in the system are necessary for a successful implementation. The level of complexity involved in health systems cannot be overcome unless all of the separate entities within the system are aligned and working together. The methodology for assessing the current system that is described in the next section can be used as a tool to argue for change.

RESOURCES REQUIRED

The process of successfully designing, implementing, and maintaining a logistics system that is useful requires extensive human and financial resources. Political and stakeholder commitment should extend to committing funding, time, and human resources to the entire process of designing and implementing a new system. Prior to the commencement of a system design, the resources required should be outlined and program managers and decision makers should commit to providing the support. When the resources required are being determined, it is important to include not only the cost of the workshop itself, but also the costs of implementing the new system and the ongoing costs of maintaining and monitoring the supply chain.

The greater the number of categories of products or the supply chains to be integrated, the more time and resources are required for successful completion of the design. The example below in table 1 demonstrates the costs and time associated with designing and rolling out a logistics system that includes a pilot. A pilot of the new system is not always required; refer to the section on *Implementing the System* to read more about when to include a pilot.

Table 1. Example Estimation of Resources Required for System Design and Implementation

Activity	Level of Effort	Related Costs	Illustrative Calendar
Assessment	Two people for three weeks	Transportation and any per diem associated with data collection	January
Design workshop	Two people for three weeks	Printing training materials Design workshop for 15–20 people for one week* Debriefing for stakeholders	March
Finalization and approval of design and implementation plan	One person 40 hours over one month		April
SOP manual documentation based on system design	One person for three weeks		May
Training materials development	One person for three weeks		June
Training for pilot	One person for one week	Printing of training	July

		materials and LMIS forms Workshop for 10 participants from pilot sites for three days*	
Evaluation of pilot and revision of system	Two people for two weeks	Transportation to pilot sites	November
TOT curriculum development	One person for two weeks		December
Training of trainers	Two people for two weeks	Five-day training workshop for 20–25 participants* Printing manuals and LMIS forms	January
Roll-out	Trainers trained in TOT commit two months to training all health facility staff throughout the system	Two months of three- to five-day trainings for all staff throughout the system Printing of LMIS forms and SOP manuals for the roll-out	February – April

*Costs for the training should include participant per diem and travel costs, materials, facility rental, and so on.

Box 2. Segmentation

Segmentation is the process of dividing products into groups for the purpose of supply chain management. This means that products are categorized by characteristics that affect how and where they are managed in the supply chain.

Examples of product segmentation categories for logistics system design include

- Emergency response vs. predictable demand
- Products whose demand differs geographically
- Slow moving or fast moving. This refers to how often the stock is resupplied; for example, a slow-moving product may not need to be ordered at every resupply interval.
- Short or long shelf life. A product with a short shelf life is one that is likely to expire if it proceeds down the normal pipeline.
- Full supply vs. non-full supply. This refers to prioritizing which products will always be kept in full supply to prioritize limited resources and ensure a minimal set of services.

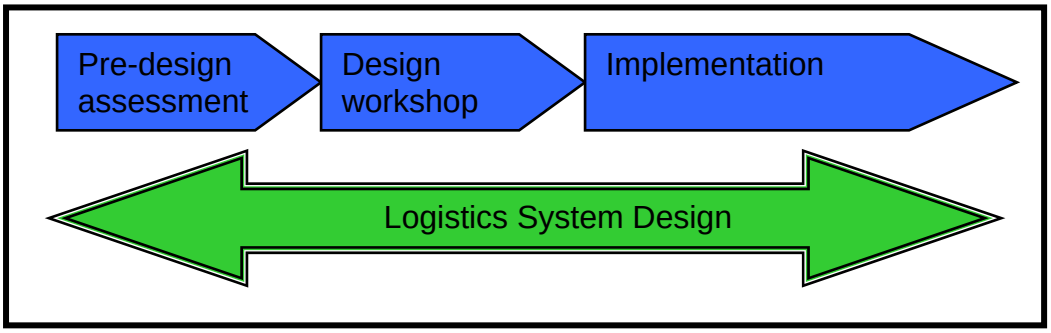
It is important not to have too many segments, and so often a combination of the categories mentioned above are put into the same segment because their characteristics allow them to be managed in similar ways; for example, one segment could include products that have a long shelf life, are fast moving, and have predictable demand. Each segment of products is managed differently to accommodate their characteristics, including different maximum and minimum stock levels, different pipeline, and alternative LMIS forms.

Segmentation is an approach that supports integration across commodity categories and programs. Segmentation principles may also be used when designing systems for laboratory products or essential medicines (which often also include surgical and medical equipment), where there are different sets of products with very different characteristics.

LOGISTICS SYSTEM DESIGN

There are three steps to designing a logistics system: the pre-design assessment, the design, and the implementation. Each step is crucial and leads into the next phase.

Figure 3. The Three Steps to Logistics System Design



PRE-DESIGN ASSESSMENT

The advisor needs to have a complete understanding of the environment within which the logistics system will be implemented. Therefore, a comprehensive assessment should be the first step in designing a system. This assessment allows the design team to identify existing challenges in commodity management, enabling them to avoid similar elements in the new system design. The assessment also becomes an important baseline to evaluating the new system once it has been implemented. Examples of assessment tools appropriate for a comprehensive pre-design assessment include

- *Logistics Indicators Assessment Tool (LIAT)*
- *Logistics Indicators Assessment Tool (LIAT): Antiretroviral Drugs*
- *Logistics Indicators Assessment Tool (LIAT): HIV Test Kits*
- *Logistics System Assessment Tool (LSAT)*
- *Assessment Tool for Laboratory Services (ATLAS) 2006*

In addition to the assessment, the advisor will also want to do some preparations immediately prior to the design workshop. The advisor needs to ensure he or she has the most up-to-date information. Therefore key meetings with stakeholders and review of any recent policy documents must be done in the days leading up to the design workshop.

The amount of time needed for the final preparations prior to the workshop will depend on whether or not the advisor(s) conducting the design workshop were also involved with the comprehensive assessment. If the advisor was not involved in the assessment, then it would be helpful for the advisor to conduct a small assessment by visiting a small sample of sites to gain a personal

understanding of how the current system operates; this will be beneficial when guiding the discussions for the design of the new system. Below is an outline of how a small assessment might be carried out.

DOCUMENT REVIEW

Country policies, guidelines, and protocols influence design decisions and parameters and how the system will roll out. Understanding how a system is currently functioning and the future plans of the program will better inform the design and ensure it is sustainable. See appendix B for a list of types of documents that should be sourced and reviewed in preparation for the system design.

KEY INFORMANT INTERVIEWS

There are two purposes for conducting key informant interviews: to inform stakeholders of the upcoming workshop and to gather information that will inform the design of the new logistics system. Deciding who to visit is based on whose support is required to make the system successful and who has the information required to lead the design of the system.

Key informant interviews are an opportunity to secure support from all stakeholders and sensitize the stakeholders to the level of effort and resources that will be required to implement the new logistics system. Before each interview, consider the type of information that can be obtained from the person being interviewed (refer to appendix C for the checklist for system design). For example, program managers can provide information about priorities and future plans for the program, such as computerization and integration (refer to box 3 below).

If there are too many stakeholders to conduct individual interviews with all of them, another option is to conduct a stakeholder meeting. This meeting is designed to gather many stakeholders in one room to inform them of the upcoming system design, to raise awareness of the resources required for implementing the system, and to emphasize the need for their support to ensure a successful logistics system.

SITE VISITS

If site visits are required, be sure to include at least one facility from each level of the system. It is important to see firsthand if the information and products between the levels of the system actually flow as they are intended to. This will enable the advisors to identify potential barriers to successful implementation of the new design.

Advisors should use the site visits to get an understanding of when and how information moves through the system and who is responsible for managing logistics activities at each level of the health system. If possible, the advisor should also get copies of all relevant documents, such as records and reports that are used and any standard operating procedures that are in place. Appendix D has an example of a questionnaire that can be used for these site visits.

Box 3. Considering the Future: Integration and Computerization

In the past decade, global attention has focused on combating HIV, malaria, and other priority diseases, pouring large amounts of resources into providing treatment and care. In response to this increase in attention and resources, high-profile programs began to manage their commodities vertically to ensure that they could track and account for their products. As these programs have gotten stronger, however, the rest of the health system has not. As a result, the focus is now shifting to strengthening the entire health system, mainstreaming services, and integrating the management of commodities. With this increase in complexity in the supply chain, there is also a move toward computerizing the management of information systems. When designing a logistics system, it is important to be aware of the current trends and to design a system that can be adaptable to change.

If computerization is to be part of the system design, the following reference will be useful in identifying the factors that must be considered.

Turning the Digital Corner: Essential Questions for Planning for a Computerized Logistics Management Information System

DESIGN WORKSHOP METHODOLOGY

The design process must use a systematic and iterative approach that links the different components of the logistics system to ensure the system flows. Throughout the design process, the advisor must constantly refer the participants back to earlier design decisions to ensure that each logistics activity is linked and produces a coherent and feasible system.

The workshop is designed to get maximum participation and creativity from all the designers by using small groups and facilitation methods that encourage participation by all members of the group, ensuring that even quieter participants express their opinions.

PREPARING FOR THE WORKSHOP

Reviewing the Current Situation

In preparation for the workshop, the information collected during the pre-design assessment should be reviewed to identify strengths and weaknesses in the current system, key attributes and characteristics, and potential challenges that may arise during the design. The advisor should consider how certain issues and challenges can be overcome and preempt some of the issues that may arise in the workshop.

The advisor should also begin to map out how the new system should be designed; the advisor must not, however, lessen the ownership of the design by the participants by pushing fixed or preconceived ideas. The role of the advisor is to ensure that the participants have all the right information to make wise decisions. In preparing for the workshop the advisor should

- Draw an outline of the current pipeline and consider how to make it more efficient
- Determine the current lead times and maximum and minimum stock levels based on information from site visits and calculate the potential length of the pipeline

- Review the forms and reports currently used and note which of the essential data items currently are not collected
- Identify issues regarding storage and distribution
- Understand the current practices regarding supervision and whether it is already an institutional habit to provide formative supervision
- Prepare a country-specific list of consequences or ramifications of the potential design decisions that can be used to demonstrate to participants in practical terms what their theoretical decisions imply and what will be required for implementation

The following documents outline the different types of ICSs and LMISs that can be used and the advantages and disadvantages of using each one.

- *The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs*
- *Building Blocks for Logistics System Design for HIV Tests and ARV Drugs: Inventory Control Systems, Logistics Management Information Systems, and Storage and Distribution*
- *Laboratory Logistics Handbook: Guidelines for Designing and Managing Logistics Systems*

Planning the Workshop

Perhaps most critical to the success of the design is the identification of the appropriate people to participate in the design process. If users from all levels of the system—particularly those who will be implementing the system on a day-to-day basis—are not represented and actively participating in the design process, the final design is at risk of being flawed owing to lack of information and buy-in.

Box 4. Types of Participants

- Program-level staff: logistics officers, data managers, monitoring and evaluation staff, clinical staff
- Central-level staff: procurement officers, pharmacy or laboratory division of the Ministry of Health
- Warehouse or storekeepers: from central-, medium-, and lowest level stores
- Health providers: from all facilities that keep the commodities, such as hospitals, health centers, and dispensaries

The number of participants chosen to participate in the workshop must allow active discussion and participation by all those involved. If too many people are present, it is likely that not all participants will have input into the design and therefore the best design will not be achieved. Typically a system design requires about 15 to 20 participants, representing all levels of the system, participating in a workshop that is held for five days. The venue chosen for the workshop must allow for small-group activities. See calendar in appendix E for an example of a timetable for a design workshop.

DESIGN WORKSHOP

The workshop is divided into four sections: teaching logistics concepts, creating a vision, designing, and consensus building.

Teaching Logistics Concepts

The first section of the workshop is designed to give the participants the technical knowledge about logistics that they need to design the system. The participants are not chosen to participate in the workshop based on their logistics skills but based on their knowledge of the realities of the health system. The first two days of the workshop are designed to introduce logistics concepts to those who have not had any training in logistics and as a reminder to those who have had previous exposure to these ideas.

Box 5. Suggested Technical Topics

- Introduction to Logistics and the Logistics Cycle
- Logistics Management Information Systems
- Assessing Stock Status
- Inventory Control Systems
- Computerization and Feedback Reports (if relevant)

The curriculum should cover all topics that the participants require to design the system. Depending on the participants' past experience with logistics, the facilitator should assess the level of understanding and adjust workshop activities accordingly. On completion of these sessions the participants are not logisticians but they have the basic knowledge required to design a system.

After the capacity building sessions, participants should be given time to reflect on the current system and apply their new knowledge to describe their own system. This session can be conducted in a number of ways depending on the situation. A participant who was part of the assessment activity could be asked in advance to present the findings here. An alternative is to have a facilitated discussion with the large group where the participants are asked to describe their current system and the facilitator draws it on a flipchart. Or the participants can be divided into smaller groups to discuss the current systems, and then reconvened to compare descriptions; this can create some interesting discussion if groups have different views. This activity gives the participants a chance to consider how information and products currently flow through their health system, what LMIS forms are in use and to begin identifying how the system can be improved.

Creating a Vision

As an introduction to the design process, a visioning exercise should be conducted. This can be done with the entire group or with smaller groups. The groups write down what characteristics they would like for their system. The small groups are then reconvened and each group shares its ideas to create a unified vision of the system. This vision provides a framework for the design and becomes the basis for developing indicators that will monitor the success of the new system.

Box 6. Example of a Vision for a Logistics System

- No stockouts
- Regular reporting from all facilities
- Easy to use
- Reduces the reporting burden for service providers
- Computerization of data management at the central level

Group Design Activity

Designing the system is an iterative and systematic process that is constantly linking each section to ensure that the system flows between the different supply chain functions. For this section of the

workshop, the participants are divided into groups and given different components of the system to design. Dividing into small groups encourages maximum participation from all participants and allows creative and innovative ideas to develop. These ideas can then be questioned and tested by the larger group to ensure they are feasible.

Divide by:	**Examples of subject groups:**		
Supply chain function	– ICS – LMIS – Storage and distribution – Roles and responsibilities	– ICS – LMIS – records – LMIS – reports – Storage and distribution	– LMIS – LMIS – ICS – ICS
Product categories	– HIV test kits – ARV drugs – OI drugs – Laboratory supplies	– Fast-moving consumables/reagents – Slow-moving consumables/reagents – Durables	– Emergency response commodities – Predictable demand commodities – Special storage commodities

There are multiple ways to divide the participants into small groups, such as is shown in table 2.

Table 2. Examples of Subject Groups for Design Activity

No matter how the groups are divided, all components of the system and all product categories must be addressed and the discussions cross-checked from time to time to ensure consistency and a final workable system. Each group should be composed of a range of people from all levels of the system representing those involved with policy, dispensing, and warehouse management.

Once in these groups, the participants are given a list of questions to facilitate their initial discussion. The questions outline what to consider when designing an LMIS and an ICS, an outline of the proposed logistics system's pipeline, how to designate the roles and responsibilities among parties involved in the management of the logistics system, and how the system will be monitored. (See appendix F for a sample list of discussion questions.)

During this process, the advisors should give the participants the freedom to express their ideas within the group without interrupting them but also be available to offer advice or present varying perspectives to ensure that the participants have considered all factors when making design decisions. The advisor does not sit with the groups, but walks between the groups offering direction and guidance as required. Box 7 outlines some of the critical design decisions which, if made correctly, will allow the rest of the system to fall into place.

Box 7. Sample Critical Design Decisions

- **Lead time.** Is the lead time correct? If underestimated, the system is at risk of stockout; if overestimated, it is at risk of wastage.
- **Buffer stock.** Is the buffer stock enough? If the system is highly unpredictable, then the buffer stock should be increased to more than the rule of thumb of half a review period.
- **Pipeline length.** Is the pipeline too long for the average shelf life of the products?
- **Review period.** Will the storage and transportation systems be able to cope with the requirements of, for example, a monthly or quarterly review/reorder period?
- **Push vs. pull.** Do the health workers at each level have the skills (and time) required to implement the chosen system?
- **Maximum.** Is the maximum stock level greater than the available storage space at the facilities?
- **Three essential data items.** Are the three essential data items captured on the LMIS report?

The participants should be given at least eight hours of design time over a period of two days. At the four-hour mark, it can be useful to schedule a large-group review in which each group presents its design so far and allows feedback from the other participants. This allows participants to ensure that the component they are designing will complement the other parts of the system.

Processing/Consensus Building

Reaching a **consensus** within the whole group can take a lot of discussion and debate so allow plenty of time for each component of the system.

In the last step of the design process, the groups come together and present to the workshop of participants the respective sections of the system that they have designed. In bringing the participants together again, the facilitators create the final forum for discussion of the system design. In this setting, all the participants discuss and agree upon one final recommendation for a new logistics system. At this stage participants review and challenge each suggestion, linking it back to other components of the system and continually refining the recommendations. For example, the group concerned with storage must verify that there is enough storage space to accommodate the maximum stock level defined by the ICS group.

By the end of the processing, the following decisions should have been made (refer to checklist in appendix C):

- **An LMIS**, including a draft of all records and reports that are to be included in the new system
- **An ICS**, including maximum and minimum stock levels, an emergency order point, and review periods at each level of the health system
- Clearly defined **roles and responsibilities** of participants within the health system
- Recommendations for **storage and distribution** policies and practices to conform with the suggested LMIS and ICS
- A **pipeline diagram** of the new system for the whole program or country
- Outlined method for **monitoring and supervising** the new system including performance indicators and feedback reports

The overall outcome, the sum of all of the elements noted above, will be the complete technical design of the logistics system including all processes needed to run the system, upon which the standard operating procedures (SOP) manual will be based.

During this process, participants must also identify and record any outstanding issues, such as a policy change, that are outside of the scope of the design workshop and its participants but require resolution for the system to be successful. Typically, a number of such issues will come up during the course of the workshop. Facilitators should note these issues throughout the workshop.

If indicators for the system have not already been established, time should be allocated to discuss this before closing the workshop. This is also the time to have a facilitated discussion about the next steps so that a preliminary implementation plan can be presented to stakeholders.

STAKEHOLDER PRESENTATION

Stakeholders and decision makers should be invited to attend a presentation of the new recommended system either on the last day of the workshop or in the few days after the workshop. The presentation of the recommended system should be done by representatives from among the participants, not the system design facilitator nor the implementing partners. This reinforces the participants' ownership of the system. The participants will also answer questions from the stakeholders to explain the rationale behind the design decisions made.

This forum is also an opportunity to raise any pending issues that could not be resolved during the workshop but could be resolved during this presentation as decision makers are present in the room.

This presentation also provides an opportunity to secure a public commitment from stakeholders to provide resources for the different stages of implementation. Initial plans for implementation should be discussed and persons responsible for each activity should be identified so that implementation of the system is not delayed. The next section will describe in detail the activities involved with implementation.

FINALIZE AND APPROVE SYSTEM DESIGN

If there are still outstanding issues not resolved during the stakeholder presentation, these must be followed up on. A team of participants, such as a taskforce or working group, may be identified at the end of the workshop for this task and supported by the advisor. The issues will need to be taken to the appropriate stakeholders and decision makers for resolution prior to implementation of the newly designed logistics system. This represents a critical role that the core in-country team will play; delays in finalizing and approving the system can undermine the confidence and buy-in of users and stakeholders into the new system.

IMPLEMENTING THE SYSTEM

The success of a system design is defined by how effective and efficient the system is in practice. No matter how well it is designed, the system will fail without a well-planned, properly resourced implementation plan. To maintain the momentum created in the workshop, the implementation phase should begin immediately upon completion of the system design. In addition, continual quality monitoring and evaluation of the system must be in place from the outset of implementation so that any problems or barriers that arise can be resolved quickly without disrupting the system.

DEVELOPING THE IMPLEMENTATION PLAN

Developing a thorough implementation plan, including key activities, timeline, and roles and responsibilities, can help to identify potential roadblocks and ensure that implementation is smooth and timely. Key issues to resolve in the implementation plan include a training plan, including the model for training (e.g., on-the-job training [OJT] or classroom training), number of sites to be trained, and the training schedule. Another key issue to resolve in the implementation plan is whether to use a pilot approach or directly roll out the system nationally. This issue is discussed below.

The decision on how to implement is based on the complexity of the new system, the resources available, the number of sites involved, the extent of the changes to the system, and the geographical size of the area where the system will be implemented. Below are two example implementation plans without and with a pilot. An example of an implementation training plan is in appendix G.

Table 3. Example Implementation Plan without a Pilot

Activity	Illustrative Calendar
Finalization and approval of design	April
SOP documentation	May
TOT curriculum development	June
Training of trainers	July
Roll-out	August – September

Table 4. Example Implementation Plan with a Pilot

Activity	Illustrative Calendar
Finalization and approval of design	April
SOP documentation	May
Training materials development	June
Training for pilot	July
Evaluation of pilot and revision of system	November
TOT curriculum development	December
Training of trainers	January
Roll-out	February – April

ROLL-OUT ACTIVITIES

There are a number of steps to rolling out the system:

1. **Documentation of the standard operating procedures (SOP).** Immediately after the system has been designed, the SOP must be documented. Once SOP are documented, they are reviewed by stakeholders, changes are made, and final approval is sought. This approval process involves convening stakeholder meetings to ensure approval is gained from all stakeholders; this document should be owned and endorsed by the Ministry of Health.

2. **Development of training materials.** These materials are designed to teach the health facility staff, using adult learning theories, how to use the SOP manual and corresponding forms to order, monitor, and manage their health commodities.
3. **Piloting the system.** In some situations, the system is first piloted but it is not always necessary. The text box below describes some of the considerations for whether or not a pilot is necessary for implementation.
4. **Training of trainers (TOT).** The training of trainers teaches the participants how to apply adult learning theory to training health facility staff in how to order, monitor, and manage health commodities according to the SOP manual. Printing of materials and forms must be done prior to this stage, as the trainings must be done with the official forms. The result of the TOT is a group of trainers who will then be responsible for training the rest of the health facility staff.
5. **Roll-out trainings.** Once the TOT has been conducted, the trainers should develop a training schedule to train all health facility staff over a number of months.
6. **"Mop-up" trainings.** Once the system has been rolled out, be prepared to continue training staff. There are always new staff being employed who need to be trained and other staff who require refresher trainings. Such training may include an annual workshop or ongoing OJT to ensure that the system continues to function.

Box 8. To Pilot or Not to Pilot?

There are advantages and disadvantages to piloting a system. A pilot delays the implementation and increases the immediate costs involved with rolling out the system. However, in complicated systems, implementing without piloting will mean huge expense if the system fails, as many staff will need to be retrained and users will lose confidence in the system.

Potential reasons for conducting a pilot:

- The new system includes a large number of sites or a large number of commodities, especially if there are a variety of commodities, such as in a laboratory logistics system.
- The concept of a logistics system is completely new for the staff working with these commodities; for example, often in a laboratory system there is no history of a structured, uniform logistics system.
- Requested by stakeholders who are not convinced about some aspects of the recommended design. The pilot is an opportunity for them to see the system in practice.

For simple systems that involve only a few health facilities or a small number of products (such as HIV test kits), it is not necessary to conduct a pilot. In this situation, the system should be rolled out nationally and then reassessed six to 12 months after implementation and adjustments made as necessary.

TRAINING

There are also a number of ways to train health facility staff in the use of the system.

Training of Trainers/Training Workshops

One way to roll out the system is to train a group of trainers to conduct training workshops throughout the country. The trainers are people from within the system who have the time to conduct the trainings over a number of months. The trainers are taught effective training methods

and are provided with a curriculum for training other staff. This method is particularly effective when a large number of people need to be trained quickly.

On-the-Job Training

Another training method used is OJT. This method involves health facility staff being trained at their own facility using one-on-one training rather than a workshop environment. The trainer may also be the supervisor who provides, during a supervisory visit, OJT on how to order, store, and manage the health commodities. This method is more time consuming as a large number of staff are not trained at one time. However, OJT is effective after roll-out training workshops have occurred as part of mop-up trainings and supportive supervision.

Box 9. Selection Criteria for Trainers

- Good mathematical skills
- Strong knowledge of the logistics system
- High level of dedication
- Good communication skills/experienced in facilitating training workshops
- Can be absent from their ordinary duties to conduct trainings

QUALITY MONITORING

A logistics system is dynamic and needs to be flexible to accommodate changes that occur within the program or system. Continual quality monitoring, reevaluation, and improvement of the system must be inherent in the system. Earlier identification of issues or changes is essential so that the system can be adapted to accommodate changes with minimal disruptions to the supply chain. As previously mentioned, quality monitoring should be implemented with the roll-out of the system.

Monitoring Implementation

It is important during the implementation and soon after implementation that the system is assessed so that problems or barriers to a successful program can be resolved quickly and easily without a system breakdown. If the system does not function well at the beginning, the users in the system will quickly stop using it and revert to previous procedures.

If the system is piloted, then an assessment must be conducted at the conclusion of the pilot. Depending on the findings of the assessment, either a redesign workshop or a stakeholder meeting should be held to revise the system. A redesign workshop should be held if the findings of the assessment indicate that major changes must be made to the system and cannot be resolved with a stakeholder meeting. The redesign workshop involves bringing the original designers back together to discuss the weaknesses found in the system and to redesign the system's troublesome sections.

If the system was rolled out nationally, then the system should be assessed within 12 months of implementation. Again, following the assessment, either a redesign workshop or a stakeholder meeting may be held to discuss the findings and make changes.

The USAID | DELIVER PROJECT has a number of tools that can be adapted to evaluate a logistics system.

- *Logistics Indicators Assessment Tool (LIAT): Antiretroviral Drugs*
- *Logistics Indicators Assessment Tool (LIAT): HIV Test Kits*
- *Logistics System Assessment Tool (LSAT)*
- *Assessment Tool for Laboratory Services (ATLAS) 2006*

Ongoing Performance Indicators

A logistics system should have performance indicators for ongoing system monitoring. These should have been established during the system design and implemented by a central unit. These indicators should be collected and collated periodically and shared with stakeholders for appropriate action to be taken.

There are several reasons why logistics activities should be monitored and personnel supervised on a regular basis:

- To ensure that clients are getting the health supplies they need when they need them
- To ensure that all records are correctly maintained and reports are submitted in a timely manner
- To ensure that planned logistics activities are being carried out according to schedule
- To ensure that established standard operating procedures are being followed
- To ensure that personnel have the knowledge and skills they need to effectively manage the logistics system and provide training as needed

Box 10. Examples of the Types of Indicators to Use

- **Timeliness of reports.** Did the report arrive within the designated time period?
- **Accuracy of the reports.** Do the ending balances from one report equal the beginning balances of the following report? Do the numbers reported make sense?
- **Completeness of reports.** Is all information required to fulfill the orders included?
- **Completeness of reporting.** Have all the facilities that are supposed to report sent in their reports?
- **Stockouts.** Do the reports indicate any stockouts of any supplies?
- **Stocked according to maximum and EOP levels.** Are the stock levels within the designated maximum and EOP stock levels for that facility?
- **Losses.** What quantities of stock were lost because of theft, damage, or expiry?

Feedback Reports

Some of the indicators should also be fed back to the facilities in the form of feedback reports. Feedback reports inform personnel about how the system is working at their level, motivate them to improve performance, and indicate if any reports have not been completed correctly or if certain products are currently in short supply nationally.

Supervision

In addition to performance monitoring, supervision and support must be provided to personnel who perform logistics activities. Supervision is the process of ensuring that personnel have the

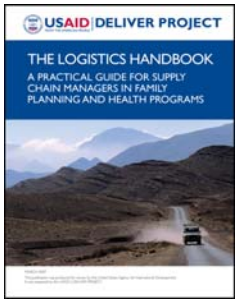
knowledge and skills required to carry out their responsibilities effectively, and to provide immediate OJT, as needed.

Supervisors should plan to spend time both supervising and providing OJT related to logistics and commodity management during each supervisory visit.

Monitoring and supervision are the backbone of an effective logistics system. Without continuous monitoring of logistics activities and supervision of the personnel who carry out these responsibilities, the overall quality of the logistics system may weaken, which in turn may jeopardize the availability of supplies and the quality of service provided to clients.

APPENDICES

A. RECOMMENDED USAID | DELIVER PROJECT DOCUMENTS FOR REVIEW



All the following documents can be found at www.deliver.jsi.com/dhome/resources/publications/guidelines.

GENERAL TOOLS

The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs

Building Blocks for Logistics System Design for HIV Tests and ARV Drugs: Inventory Control Systems, Logistics Management Information Systems, and Storage and Distribution

Guidelines for the Storage of Essential Medicines and Other Health Commodities

Turning the Digital Corner: Essential Questions: Planning for a Computerized Logistics Management Information System

Logistics Indicators Assessment Tool (LIAT)

Logistics System Assessment Tool (LSAT)

FOR HIV TEST KIT DESIGNS

Logistics Indicators Assessment Tool (LIAT): HIV Test Kits

Logistics Fact Sheets: HIV Test Kits

HIV Test Kit Selection: Operational Considerations for VCT and PMTCT Services

FOR ARV DESIGNS

Logistics Indicators Assessment Tool (LIAT): Antiretroviral Drugs

Logistics Fact Sheets: ARV Drugs

FOR LABORATORY DESIGNS

Assessment Tool for Laboratory Services (ATLAS) 2006

Laboratory Logistics Handbook: Guidelines for Designing and Managing Logistics Systems

B. TYPES OF DOCUMENTS TO REVIEW BEFORE SYSTEM DESIGN

Document	Relevance to the design process
Documents providing background information	
Health system assessment	Provides a picture of the current health system and assesses its readiness for the logistics system design process.
Reports on previous technical assistance given to program or country	Assist in understanding the background as well as the progress of the program or country. Highlight the unique characteristics and challenges faced in the particular program or country.
Reports on previous technical assistance given to programs with like supply chains and products	Assist in understanding the unique characteristics and challenges of the specific supply chains and products relevant to the system design as well as solutions that have been previously designed and tested.
Proposals for donor funding (e.g., PEPFAR, GFATM)	Provide a comprehensive background on relevant programs and the future priorities of the program.
Documents Related to the Current Health System	
Forms and reports used in the current health system	Assist in creating a picture of what is currently being used on the ground, what types of data are being recorded, and how the data are being reported and used throughout the health system. Provide insight into specific word choices that are contextually important to stakeholders and users currently operating within the system. Examples include stockcards, ledgers/registers, and order/report forms.
Standard operating procedures	Assist in defining the processes and procedures that are being used in the current health system.
Standard treatment guidelines	Assist in determining what products are being used and how they are being used in the current health system.
Testing protocols/algorithms	Assist in determining what tests are being used and how they are being used in the current health system.
Technical policy documents	Assist in determining health system priorities such as full supply vs. non-full supply, preventative vs. curative, and private vs. public sector.
Supervision structures/guidelines	Define the supervision structure and activities in the current health system.
Procurement plan	Outlines the procurement plan and schedule for the commodities being managed in the current health system.
Distribution schedule	Outlines the distribution schedule and the methods by which commodities move through the current health system.
Documents related to other programs in the health system	Assist in understanding the landscape in which the program or country operates. (Can prove critical to the success of the design by ensuring that efforts are not being duplicated or that the system can be equally implemented by all partners.)
Documents Providing Technical Guidance	
Logistics guides guidelines/manuals for managing commodities	Assist in refreshing advisors on logistics principles and the concepts that will be particularly relevant to logistics system design. *See Appendix A for a list of USAID | DELIVER PROJECT recommended technical documents relevant to supply chains.*

C. EXAMPLE CHECKLIST FOR SYSTEM DESIGN

This checklist is not exhaustive; components of the supply chain should be added throughout the design process.

	Current System	Recommended System	Outstanding Issues
Pipeline			
How many levels are there in the system?			
How long is the pipeline? Consider the shelf life of the products.			
ICS			
What type of ICS: forced ordering, standard, or continuous review?			
Push or pull at each level of the system?			
Parameters for ICS (fill in table below)			
LMIS			
Stock-keeping record			
Transaction record			
Consumption record			
LMIS report			
Feedback reports			
Report to return products			
Other forms			
Storage and Distribution			
How do order forms move?			
How do reports move?			
How do commodities move?			

How do feedback reports move?			
Is there adequate storage, considering the maximum stock level?			
Are there special storage requirements for any products?			
Roles and Responsibilities			
Who completes each form?			
Who approves order quantities?			
Who manages the logistics system?			
Who supervises logistics activities throughout the system?			
Who aggregates data?			
Who analyzes data?			
Who makes decisions based on the data collected?			
Are staff trained in logistics at any level of the system?			

Proposed system

Levels	Review Period (RP)	Lead Time (LT)	Buffer Stock (BS)	Min (LT + BS)	Max (Min + RP)	EOP

D. EXAMPLE PRE-ASSESSMENT QUESTIONNAIRE

Introduce all team members and ask facility representatives to introduce themselves (document below). Explain the objectives of the assessment and the purpose of the visit to the facility today; in particular, explain that this is not a supervisory visit but that you are gathering information so that the system can be improved and their work made easier. Encourage them to be open about how the system currently functions, and all the strengths and weaknesses that they encounter.

Questionnaire

Date _____ Interviewer(s) _____

Start of Interview _____ End of Interview _____

Central _____ District _____ Health Center _____

Type of structure:

a. Place where service is done (SDP)
b. Regional/district warehouse
c. Central warehouse

Name of the structure: _____

Names of people met:

	Name	Title	Number of Years
a.	_____	_____	_____
	_____ years/months		
b.	_____	_____	_____
	_____ years/months		
c.	_____	_____	_____
	_____ years/months		
d.	_____	_____	_____
	_____ years/months		
e.	_____	_____	_____
	_____ years/months		
f.	_____	_____	_____
	_____ years/months		

Section 1: Key Informant Interview

The first section is conducted as an interview with key personnel at the health facility.

No.	Question (and instructions)	Response
Staff Capacity		
1.	Note the category and number of staff by category. *(Use numbers only, no names)*	Category # of staff 1. _____ _____ 2. _____ _____ 3. _____ _____ 4. _____ _____ 5. _____ _____
2.	Have you ever been trained in logistics** (which product), and when? ***Logistics tasks include ordering, reception, stocks management, and supervision.*	Category Date of last training 1. _____ 2. _____ 3. _____ 4. _____ 5. _____
3.	What were the parts of the training? *(e.g., LMIS, transportation, storage, how to fill out the forms and reports, storage conditions)*	1. _____ 2. _____ 3. _____ 4. _____
Records and Reports		
4.	Which records and reporting forms do you use for logistics? (Collect copies of the forms if possible.)	
Ordering and Reporting (Please circle)		**Comments**
5.	How do you use the information filled out on the forms? a. Calculation of consumption b. Evaluation of needs c. Report to higher level d. Order from higher level e. Other; please explain	
6.	At what frequency do you send reports to the higher level? a. Monthly b. Quarterly c. Biquarterly d. Annually e. Other; please specify	
7.	At what frequency should you send them?	

	a. Monthly b. Quarterly c. Biquarterly d. Annually e. Other; please specify	
8.	Who determines the quantity to reorder for this institution? a. Is it the institution itself (requisition)? b. Is it the institution at the higher level (allocation)? c. Other; please explain	
9.	How is the quantity to reorder calculated? a. A formula b. By the higher level **(Go to Q14)** c. Other **(Go to Q12)**	
10.	What is the formula? **(If formula used, go to Q12)**	
11.	If no formula is used, briefly describe what is done. If anything can be done.	
12.	Which data are used to calculate the quantity to reorder? • Stock at the start of period • Stock at the end of period • Received quantity • Distributed quantity • Losses and adjustments • Other; please specify	
13.	How does your order reach you? a. The institution goes to look for it b. The higher level brings it c. Other; please specify	
Supervision		
14.	When did you receive or organize your last supervision visit? a. During the preceding month b. During the past three months c. During the past six months d. Other (explain) e. Never	
15.	Who was the supervisor?	
16.	What did you do during the supervision visit? Mark everything that applies: a. Review the level of stocks b. Compare stock levels to physical inventory c. Separate expired products from the others d. Review reports e. Informal training f. Other; please explain	

Section 2: Assessing the Storeroom

Next, ask to be taken to the storeroom. This section is based on observations.

To check yes, all products and boxes should be in the described conditions.

No	Description	Yes	No	Comments
1.	Products are stocked in a way to help make sure that first-expired is first-out for the deduction and distribution.			
2.	Damaged or expired products are separated from other products and no longer appear on the inventory.			
3.	Products are not exposed to direct sunlight at any time during the day or during any season.			
4.	Boxes and products are protected against water and humidity.			
5.	Storage area is free from insects and all small worms.			
6.	Storage area is locked but is accessible during work hours, and access is limited to authorized personnel.			
7.	Dangerous trash (e.g., syringes) is correctly managed and is not accessible to nonmedical personnel.			
8.	The roof is in good shape and can protect the warehouse from light and water at all times.			
9.	The warehouse is well maintained (clean, nothing on the ground, strong shelves, boxes in order, etc.).			
10.	Available space is large enough for existing products and may receive new products programmed in the near future.			
11.	Cold storage or deep freezer storage is available for products that require special storage.			

Section 3: Final Questions for Key Informant

These open-ended questions are asked at the end and give the informant a chance to raise any concerns.

Apart from "more staff" and "better salary," what kind of help do you need for better logistics management?

Do you have any questions for me?

E. DESIGN WORKSHOP SCHEDULE AND OBJECTIVES

Example of a Design Workshop Schedule

Day 1	Day 2	Day 3	Day 4	Day 5
8:30–10:00	**8:30–10:00**	**8:30–10:00**	**8:30–10:00**	**8:45–10:00**
Introduction: icebreaker, expectations, goal, objectives, schedule, norms	Inventory control system	Design Session: groups, expectations, process, and outcomes	Larger group activity	Finalization of recommendations; implementation of plan strategies
10:00–10:15	**10:00–10:15**	**10:00–10:15**	**10:00–10:15**	**10:00–10:15**
Break	**Break**	**Break**	**Break**	**Break**
10:15–12:00	**10:15–12:00**	**10:15–12:00**	**10:15–12:00**	**10:15–12:00**
Introduction to logistics	Inventory control system	Group activity	Smaller groups activity	Final presentation to key representatives
12:00–13:00	**12:00–13:00**	**12:00–13:00**	**12:00–13:00**	**12:00–13:00**
Lunch	**Lunch**	**Lunch**	**Lunch**	**Lunch with Key Representatives**
13:00–14:45	**13:00–14:45**	**13:00–14:45**	**13:00–14:45**	
Introduction to LMIS (three essential data items)	Inventory control system (assessing stock status)	Smaller groups activity	Consensus-building group activity	
14:45–15:00	**14:45–15:00**	**14:45–15:00**	**14:45–15:00**	
Break	**Break**	**Break**	**Break**	
15:00–16:45	**15:00–16:45**	**15:00–16:45**	**15:00–17:00**	
LMIS (three types of records)	Participants present their system, and trainers present findings	Smaller groups activity	Consensus-building group activity	
16:45–17:00	**16:45–17:00**	**16:45–17:00**		
Feedback	Daily evaluation	Take group pulse		

Example of Goals and Objectives for a Laboratory System Design Workshop

LOGISTICS SYSTEM DESIGN WORKSHOP

GOAL:

To design a logistics system for the management of laboratory commodities for all Ministry of Health-supported sites.

OBJECTIVES:

After completing all the sessions, the workshop participants will be able to

1. Understand and use basic logistics concepts needed for designing an inventory control system and an LMIS.
2. Map the current logistics system(s) and the flow of commodities from the sources to the clients. Show on the map(s) how the commodities flow through the current system(s) as well as how information flows.
3. Identify and record strengths and weaknesses in the current flow of the commodities as well as in the flow of information.
4. Determine collection, aggregation, ordering, reporting, and approval procedures, including frequency and information flows, to ensure that accurate and timely commodity information is produced, reported, and used for ordering and regular commodity management for laboratory commodities. This information will also allow managers to monitor system performance.
5. Develop an inventory control system to manage commodities (the levels of the system to be involved, the frequency of ordering, the ideal max-min months of stock at each level, the overall length of the pipeline, how order quantities should be determined).
6. Clearly define roles and responsibilities in managing the supply chain of commodities.
7. Develop a realistic training implementation plan to train the new system.

F. PROPOSED QUESTIONS FOR SMALL GROUPS DURING WORKSHOP

This list is not exhaustive. Questions unique to the system can be added.

Groups can be divided in many different ways; these questions can be organized in different ways. For example, a section on roles and responsibilities could be added to the ICS and LMIS groups, or there could be a separate group for roles and responsibilities.

STEPS FOR DESIGNING AN INVENTORY CONTROL SYSTEM

Step 1: Set ICS Parameters

1. Determine what type of inventory control system might be appropriate (forced ordering, continuous review, or standard system).
2. How many levels do you think your system should have (pipeline)? What are those levels?
3. Based on the defined levels, what level should be responsible for determining resupply quantities throughout the pipeline (push or pull)?
4. Set the parameters of the inventory control system at each level.
5. Determine the lead time: What is the longest lead time for resupplying the level with commodities?
6. What safety stock should be kept on hand at the facility level?
7. Set the review period: How often should the service delivery points order or receive commodities? Take into account key factors such as shelf life of products, capacity for storage, cost of distribution, demand fluctuations, level of training/burden on personnel, budget, pipeline (levels in the system), reliability of distribution, and so on.
8. Based on the above, set the minimum.
9. Set the maximum.
10. Set the emergency order point.

Step 2: Review Proposed ICS

11. Check the length of the pipeline as a result of the max-min levels determined. Is it too long? Can it be shortened, such as by eliminating intermediate storage facilities or reducing the review period?
12. Map out the flow of commodities throughout your pipeline, including max and min parameters (lead time, review period, safety stock, and min and max stock levels).

STEPS FOR DESIGNING THE LOGISTICS MANAGEMENT INFORMATION SYSTEM

Step 1: Review current LMIS

1. What data are needed for managing commodities?
2. What records are required to record essential data items?
3. What reports are required to get essential data up to the central medical stores and program managers?
4. Do they already exist? Review the existing forms and note if any data are missing or if changes are needed.

Step 2: Update or design LMIS forms

5. Make recommendations by updating current forms or designing new forms.
6. Does a combined report and order form make sense? If so, include that in the design of the LMIS report.
7. Are approvals for resupply quantities required? Should the approval be maintained?
8. What transaction records are required?

Step 3: Flow of information

9. How are the reports and requests transported to the higher level (fax, courier)?
10. On what date should the report be sent to the next higher level?
11. How should data flow up the system? Map out the flow of information, indicating LMIS forms used at each level of your pipeline.
12. What type of feedback would be useful for lower-level facilities to receive from higher-level facilities? What format would you recommend for a feedback report? How should the feedback flow back down the system?

ROLES AND RESPONSIBILITIES

ICS:

1. Who should be responsible for issuing and receiving stock and updating the stockkeeping records?
2. Who should conduct physical inventory and monitor stock levels?
3. Who should be responsible for deciding when to place an emergency order?

LMIS:

4. Define the role of each person involved in writing the report.
5. Who should approve the resupply quantities in the request?
6. Who should complete each record at each level of the system?
7. Who is responsible for collecting and analyzing logistics data at each level of the system?

STORAGE AND DISTRIBUTION

Step 1: Describe the current storage and distribution system

1. How are the orders transported to the facilities?
2. What are the current storage procedures/requirements/parameters?
3. How are orders accounted for during transport and receipt?

Step 2: Describe storage requirements that are not met in the current system

4. Where will commodities be stored at each level in the system (e.g., central, regional, facility)?
5. What storage requirements need to be considered (e.g., cool chain)? What is the storage capacity at each level/facility?

Step 3: Describe transportation requirements that are not met in the current system

6. Is the current method of collection or distribution (transport) reliable?
7. What is the cost of collection or distribution (transport)? Is there money allocated in the budget for this activity?

Step 4: Describe the recommended storage and distribution system

8. Map out the storage and distribution system.
9. What changes can you recommend to the current system to improve the reliability to the end user?

QUALITY MONITORING AND SUPERVISION

Step 1: Performance Indicators

1. What should be the performance indicators?

Step 2: Feedback Reports

2. What will be included in feedback reports?
3. How often will they be sent?
4. Design a feedback form.
5. Who will be responsible for completing the feedback report?

Step 3: Supervision

6. Who supervises whom?
7. How often will they supervise?
8. What activities will they conduct when supervising?
9. Design tools to guide supervision.

G. EXAMPLE IMPLEMENTATION PLAN

IMPLEMENTATION PLAN

Follow-up Actions Needed:

Action	Person(s) Responsible	Estimated Completion Date	Location of Work
SOP documentation	USAID | DELIVER PROJECT	February	Washington
Developing a TOT curriculum and training manuals	USAID | DELIVER PROJECT	March	Washington
Print out materials (SOP, forms, training manuals)	In-country program	March	In-country
TOT	USAID | DELIVER PROJECT	April	In-country
Roll out training	In-country program	May-June	In-country

Training of Trainers:

Goal: 124 sites and 248 people to train

Seventeen trainers will be trained. Not all participants in the TOT will prove to be competent trainers. Therefore, the goal is to have 13 trainers who can conduct about four sessions each over the two-month roll-out period. Each training session will involve two trainers.

Name of Districts	# of Trainers to Be Trained
Western Region	3
Northern Region	5
Southern Region	5
Eastern Region	4

Roll Out Training: Schedule and Training Sites

Name of Districts	Total # of Health Facilities to Be Trained	# of Participants from Each Health Facility	Total # of Participants to Train
Western Region	15	2	30
Northern Region	37	2	74
Southern Region	40	2	80
Eastern Region	32	2	64

Training Dates	Training Sites	# of Sessions	Remarks
May 1 to June 30	Western Region	4	Trainers are able to set their own timetable within this timeframe.
May 1 to June 30	Northern Region	8	
May 1 to June 30	Southern Region	8	
May 1 to June 30	Eastern Region	6	

For more information, please visit deliver.jsi.com.

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