



Zimbabwe Assisted Pull System

Design of Ordering and Resupply Procedures



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USAID | DELIVER PROJECT, Task Order 4

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Abstract

In October 2013, the Ministry of Health and Child Care (MOHCC), with technical assistance from the USAID | DELIVER PROJECT, Task Order 4, conducted a workshop to design the ordering and resupply procedures for the Zimbabwe Assisted Pull System. During the workshop, participants designed the logistics management information system, inventory control system, general steps in the system, and roles and responsibilities. This report, presented to the MOHCC, describes the results of the workshop, including descriptions of the monitoring and evaluation plan, the implementation plan, and the resources required to implement the system.

Cover photo: Health workers unload a truck delivering health commodities in Zimbabwe. USAID | DELIVER PROJECT.

USAID | DELIVER PROJECT

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Acronyms

ADC	Area Distribution Coordinator
ART	antiretroviral therapy
CBD	community-based distributors
DHE	District Health Executive
DPM	District Pharmacy Manager
DPS	Directorate of Pharmacy Services
DTTU	Delivery Team Topping Up
EID	early infant diagnosis
GOZ	Government of Zimbabwe
HR	human resources
LMIS	logistics management information system
M&E	monitoring and evaluation
MOHCC	Ministry of Health and Child Care
NatPharm	National Pharmaceutical Company
POC	point of care
PHCP	primary health care packages
PHE	Provincial Health Executive
PMTCT	prevention of mother-to-child transmission
RIV	Requisition and Issue Voucher
RTK	rapid test kit
SDP	service delivery point
SOP	standard operating procedure
TB	tuberculosis
TOT	training-of-trainers
TWG	technical working group
USAID	U.S. Agency for International Development
VMMC	voluntary medical male circumcision
ZADS	Zimbabwe ARV Distribution System
ZAPS	Zimbabwe Assisted Pull System
ZIP	Zimbabwe Informed Push (system)
ZiLaCoDS	Zimbabwe Laboratory Commodities Distribution System
ZNFPC	Zimbabwe National Family Planning Council

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Executive Summary

During the past 10 years, the Ministry of Health and Child Care (MOHCC), to ensure availability of health commodities at the facility level, developed and implemented a number of supply chains. These include—

- Delivery Team Topping Up system, which manages condoms and contraceptives, HIV and syphilis rapid test kits, prevention of mother-to-child transmission antiretrovirals, early infant diagnosis and point of care reagents
- Zimbabwe Informed Push/Primary Health Care Package (ZIP/PHCP) system, which manages malaria, tuberculosis, and selected essential medicines for the primary care-level
- Zimbabwe ARV Distribution System
- general essential medicines pull system for all medicines and medical supplies not distributed by any of the systems named above.

The MOHCC's stated goal is to reduce the number of systems to one or two, and to implement more effective and efficient supply chain operations that are sustainable in the medium- to long-term. The MOHCC plans to effect these changes while ensuring that the needed data is collected, that resupply takes place on a defined schedule, and that coverage/order rates and stockout rates remain at, or are better than, those achieved under the current multiple systems.

The MOHCC requested technical assistance from the USAID | DELIVER PROJECT to facilitate a design workshop for this new *assisted ordering* system. A system design workshop was held in Nyanga on October 14–18.

As part of the workshop, participants completed the following tasks:

- described the characteristics of the system or vision for the system
- reviewed the list of products to be included in the system
- designed steps in the system, inventory control system, logistics management information systems (LMIS), roles and responsibilities
- developed indicators to inform monitoring and evaluation (M&E) plan
- identified resources required for the pilot
- developed activities to be included in the implementation plan
- highlighted a number of questions to be resolved before the start of the pilot.

The components listed above are described in further detail in this report.

The proposed system, the Zimbabwe Assisted Pull System (ZAPS), builds off the strengths and weaknesses of the existing distribution systems in Zimbabwe. In ZAPS, an ordering team, comprising a district pharmacy manager and a driver, visit all facilities in their district once a quarter.

At the facility, they assist facility staff in collecting essential logistics data—stock on hand, losses and adjustments, and days out of stock—enter these data into a laptop, and calculate the quantity to order.

The ordering team returns to the local National Pharmaceutical Company (NatPharm) branch and hands over the laptop with the orders. The NatPharm staff upload the orders, then pick and pack orders for each facility. NatPharm delivers orders to the facilities in the district.

The objective of the pilot is to determine whether or not a more efficient and cost-effective system can be implemented while achieving the same reporting rates, availability of data, and level of product availability as are now achieved by the existing systems that ZAPS will be subsuming. The MOHCC intends to apply a rigorous M&E plan to measure the performance of ZAPS. The MOHCC intends to implement the pilot in Manicaland, which has the largest number of health facilities of all the provinces.

The MOHCC plans to start the pilot in February/March 2014, and run for three ordering and delivery rounds (nine months total). The proposed plan is to evaluate the performance of ZAPS at the end of 2014. Workshop participants agreed that, prior to the pilot, a pre-test should be conducted to validate some of the assumptions made during the design workshop; such as the number of days for ordering, picking and packing, and delivery. The findings from the pre-test will be used to finalize the standard operating procedures (SOPs) manual, prior to rolling out the pilot to the rest of the province.

Background

The Ministry of Health and Child Care (MOHCC) in Zimbabwe developed a national health strategy 2009–2013; one goal was to begin improving the overall availability of medicines, medical supplies, and other consumables by 75 percent. Subsequently, the Directorate of Pharmacy Services (DPS) developed a strategic plan for 2012–2015.

The key result areas in the strategic plan include—

- availability of essential medicines
- training development and retention of personnel
- normative environment
- rational medicines use
- research, monitoring, and evaluation
- advocacy, communication, and social mobilization.

The availability of medicines is one of the key performance indicators for the Ministry.

Overview of Existing Distribution Systems

During the past 10 years, the MOHCC, to ensure availability of health commodities at the facility level, has developed and implemented a number of supply chains.

Delivery Team Topping Up:

A *rolling warehouse* that distributes—

- condoms, contraceptives
- HIV and syphilis rapid test kits (RTKs)
- prevention of mother-to-child transmission (PMTCT) antiretrovirals (ARVs)
- early infant diagnosis (EID)
- point of care (POC) reagents through *informed push* to 1,400-plus fixed sites and 350 community-based distributors (CBDs).

These commodities are stored at the National Pharmaceutical Company (NatPharm), Harare Regional Store, and the Zimbabwe National Family Planning Council (ZNFPC) warehouses in Harare and Masvingo.

Zimbabwe Informed Push/Primary Health Care Package:

A *rolling warehouse* that distributes malaria products and tuberculosis (TB) medicines, and 26 other essential medicines and medical supplies to 1,400 plus sites using *informed push*. The 26 essential medicines and medical supplies are delivered to primary care—facilities as a package; the number of packages delivered depends on the average number of outpatients seen during the review period. Storage and distribution of the Zimbabwe Informed Push/Primary Health Care Package (ZIP/PHCP) commodities come from all six NatPharm warehouses.

While both DTTU and ZIP/PHCP achieve very high reporting and resupply rates (98 percent plus), they are resource intensive. Both systems rely on team leaders who collect data on laptops, determine resupply quantities, and resupply stocks while at the facility. While the involvement of the team leaders contributes to a higher level of data integrity, resupplying from the *rolling warehouses* is a time-consuming process. Both systems are at their limit, in terms of the number of products that can be managed; increasing the volume of products will require more delivery runs to serve the same number of facilities. Finally, both systems use the same vehicles, so any delay in one delivery run will impact the other. While local staff manage the systems; currently, they are heavily donor-funded.

Zimbabwe Antiretroviral Distribution System:

Currently, this forced ordering *pull* system distributes antiretroviral (ARVs) for ART sites and fluconazole to 350-plus sites, with plans to scale up to 900-plus sites in the future. Storage and distribution is currently from the Harare and Bulawayo regional warehouses only. The plan is to assess whether the commodities can be decentralized to all NatPharm branches.

The system achieves a high reporting rate, although it is less for on-time reporting; getting the reports on time requires a considerable effort from the central level. Central-level resources are also required to ensure data quality and order integrity; all orders are reviewed before being approved. As with DTTU and ZIP/PHCP, local staff currently manage the system; again, this system is currently donor-funded.

General Essential Medicines Pull System:

All sites use this traditional standard ordering/requisition system for all other essential medicines and medical products not distributed by the systems listed above. The system suffers from low reporting rates, irregular ordering, and non-full-supply of essential products. The system does not provide DPS with essential logistics data for decisionmaking.

Zimbabwe Laboratory Commodity Distribution System:

This system is used for ordering/managing laboratory products—pull for some products, push for others. It was designed in November 2012, and is currently being piloted. The pilot is scheduled to end June 2014.

Voluntary Medical Male Circumcision logistics system:

This system is for ordering/managing products used for voluntary medical male circumcision (VMMC) and related services, including consumables and equipment. This system was redesigned in April 2013; it will be rolled out beginning in January 2014.

Moving toward Harmonization

In the context of the various systems described above, and looking toward the future when the MOHCC will be responsible for funding public health supply chain management systems, the MOHCC DPS and ZNFPC are determining if it is possible to harmonize the management of health commodities. The management of all health commodities would be under a single unified system for

all commodities going to primary care facilities; and TB, malaria, and DTTU commodities to all levels.

The MOHCC's stated goal is to reduce the number of systems to one or two, and to implement more effective and efficient supply chain operations, which would be sustainable in the medium- to long-term. The MOHCC plans to effect these changes while ensuring that the needed data is collected, that resupply takes place according to a defined schedule, and that coverage/order rates and stock out rates remain at or are better than those achieved under the current multiple systems. The system should also be rigorously monitored and evaluated.

During the past few years, DPS began laying the groundwork for the design and implementation of the harmonized supply chain(s). In April 2010, DPS carried out a strategic review of the distribution systems. It was agreed that some of the existing distribution systems were created to address identified problems and were from the onset "interim" in nature. It was also agreed that the Government of Zimbabwe (GOZ), without donor support, does not have sufficient resources to operate all the systems. Participants agreed that harmonization of some systems should be considered. The ZIP and PHCP systems have been harmonized.

In November 2012, DPS organized an input-gathering meeting for more than 50 local staff from all levels of the supply chain, and for central-level partners. During this meeting, participants reviewed the current situation and explored options for moving forward. The results of that meeting included general agreement on the principle of moving forward with the integration of health commodity management and forming a smaller technical working group (TWG) that would make specific recommendations on how the integration could be achieved.

In February 2013, the TWG met and through a series of small- and large-group discussions, participants agreed on an outline to integrate the management of several sets of health commodities currently being managed using different systems—into a single *assisted ordering* system. The TWG proposed piloting the system in one province—Manicaland—and, if the pilot is successful, rolling the system out nationwide.

This new system should build on the technology and lessons learned from the DTTU and ZIP/PHCP distribution systems and computerized systems for data collection. At the same time, the system should not be limited to product numbers, as it currently is with DTTU and ZIP.

The MOHCC requested technical assistance from the USAID | DELIVER PROJECT to facilitate a design workshop for the *assisted ordering* system, which will be used to manage the several categories of products that are currently managed by multiple logistics systems at the primary care-level, as well as at secondary- and upper-levels for selected products.

Methodology

On October 14–18, a system design workshop was held in Nyanga. To review the workshop schedule and goals and objectives, see appendices 1 and 2, respectively. Twenty-nine participants attended the workshop, representing many of the key players in the existing distribution systems, including representatives from the MOHCC (central, provincial, and district levels), ZNFPC, Crown Agents, UNICEF, and John Snow, Inc. See appendix 3 for the participant list.

ZAPS

During the workshop, the system was named — Zimbabwe Assisted Pull System (ZAPS).

As part of the workshop, participants completed the following tasks:

- Described the characteristics of the system.
- Reviewed the list of products to be included in the system.
- Designed steps in the system, the inventory control system, the logistics management information system (LMIS), and roles and responsibilities.
- Developed indicators to inform a monitoring and evaluation (M&E) plan.
- Identified resources required for the pilot.
- Developed activities that would be part of an implementation plan.
- Highlighted a number of questions to be resolved before start of the pilot.

The sessions were participatory, and consisted primarily of small group work and large group discussions.

NatPharm is a key player in the distribution of health commodities in Zimbabwe. Unfortunately, critical NatPharm staff, such as the Mutare branch manager, were unable to attend the workshop, because it conflicted with the NatPharm’s strategic planning workshop. Therefore, a number of important issues could not be resolved during the workshop. For example, assumptions needed to be made on what human resources were required to pick, pack, and deliver commodities for the district.

Following the workshop, representatives from DPS presented to NatPharm management, as well as the director of DPS, the proposed design for the Zimbabwe Assisted Pull System (ZAPS); they reviewed key decisions made at the workshop, as well as some outstanding issues to be resolved.

On October 24, a stakeholder’s meeting was held at the Bronte Hotel to obtain stakeholder buy-in for the proposed system.

Design

This chapter presents the main design decisions made during the workshop.

Overview of the System

The proposed system builds off the strengths and weaknesses of the existing distribution systems in Zimbabwe. In ZAPS, an ordering team, comprising a district pharmacy manager and a driver, visit all the facilities in their district, once a quarter. At the facility, they assist facility staff in collecting essential logistics data—stock on hand, losses and adjustments, and days out of stock—enter these data into software on a laptop, and calculate the quantity to order.

The ordering team then returns to the local NatPharm branch, and hands over the laptop with the orders. The NatPharm staff upload the orders, generate the pick list, and pick and pack orders for each facility. NatPharm delivers the orders to facilities in the district.

Vision of the System

At the start of the workshop, participants described their vision for the system—what characteristics or elements they thought the system should demonstrate or espouse.

The following characteristics describe the participants' vision for the system:

- *Product availability:* The system should facilitate product availability. Under the existing distribution systems, stockout rates have been less than 5 percent for products in full supply; the new system must adhere to the same standards of service.
- *Cost-effectiveness:* The system should be cost effective; the level of service should be maintained while realizing cost savings. The perception is that the existing distribution systems are too resource intensive; by harmonizing them, it is anticipated that cost savings can be made.
- *Sustainability:* Local resources should support the system. The existing distribution systems rely heavily on donor and partner contributions.
- *Integrated:* The system should demonstrate both product integration—combining different product streams like malaria and family planning products—as well as supply chain integration—better linking demand with supply.
- *User-friendly tools:* All tools that are part of the system should be user-friendly, and as easy to use as possible.
- *Adaptability/flexibility:* The system should be able to respond to fluctuations in supply/demand or other interruptions.
- *Visibility of data:* The system should ensure that data are visible up and down the chain and that different actors are able to *see* where products and demand are, at all times.

- *Clarity of roles and responsibilities:* Actors in the system should understand their roles and the roles of others.
- *Alignment of objectives:* The vision, goals, and objectives of the system are aligned across organizations—partners, clients, stakeholders—to ensure they all work toward a common goal.
- *Ensuring human resources:* The system should ensure that the right people—quantity and skill sets—have the right responsibilities and are available.
- *Streamlined processes:* The system should not have bureaucratic hurdles and actions/processes that do not add value, or that separate supply and demand.
- *Trust and collaboration:* The system should operate in a collaborative environment, and supply chain actors should be coordinated and trust one another.
- *Focused on M&E:* To measure quantitatively the performance of this system and to help inform decisions around the future direction of supply chain management in Zimbabwe, the system should be rigorously monitored and evaluated.

Products Included

Public-sector facilities have been segmented into two groups: primary healthcare facilities and hospitals. Different products will be given to the two groups. See table 1 for a list of categories products included in ZAPS, by types of health facility. For a full list of products by facility type, see appendix 4.

Table 1. Products Included in ZAPS

	Primary Healthcare Facilities	Hospitals
DTTU products	Condoms and contraceptives (6)	Condoms and contraceptives (6)
	HIV & syphilis rapid test kits (5)	HIV & syphilis rapid test kits (5)
	Early infant diagnosis and point-of-care reagents (5)	Early infant diagnosis and point-of-care reagents (5)
		PMTCT ARVs (5)
ZIP products	Malaria (9)	Malaria (10)
	Tuberculosis (6)	Tuberculosis (13)
	Nutrition (1)	Nutrition (5)
Essential medicines	Variety of essential medicines, from former PHCPs and other medicines (64)	
ZADS products	ARVs (for PMTCT and ART) (8)	
TOTAL products in ZAPS	104	49

The medicines formerly included in the PHCPs will now be delivered as individual items. Essential medicines will be stored in bulk at NatPharm, and facilities will be supplied with the quantity of each individual item they require. Facilities will no longer receive PHCPs.

Hospitals will continue to receive ARVs for ART through the Zimbabwe ARV Distribution System (ZADS). For any other products, they will place orders through the traditional essential medicines pull system by generating a Requisition and Issue Voucher (RIV) to NatPharm, as they have been doing.

The products list needs to be finalized; it is based on several outstanding issues, including the following:

- Will all facilities in Manicaland implement option B+ for PMTCT—where all HIV-positive pregnant women are started on ART, regardless of their clinical stage or CD4 count? This could impact the types of ARVs that are included on ZAPS.
- Will abacavir and didanosine be included in ZAPS?
- Will NatPharm have the capacity to break down the POC cartridges kits and fingerstick collection kits into individual items? This would increase the number of products in ZAPS.

Steps in ZAPS

See table 2 for the steps in the ZAPS system, which have four major sections:

1. preparation
2. ordering
3. order processing
4. delivery.

Table 2. Steps in ZAPS

Step	By?	Activity
Part 1. Preparation		
1.	Ordering team (DPM +Driver)	Prepares visiting schedule (4 large districts divided into smaller groups), according to NatPharm routing, and in consultation with NatPharm.
2.	Ordering team	Informs DMO of ordering team visit schedule at least two weeks in advance.
3.	Ordering team	Organizes transport (completes transport request form), and submits funding request for approval.
4.	Ordering team	Informs facilities of ordering team visit schedule at least one week in advance.
5.	Facility staff	The day before the ordering team arrives, organize stock, conduct physical inventories, and complete the Facility Order Form with physical counts, days out of stock, and losses and adjustment.
6.	NatPharm Systems Administrator	Downloads updated data to laptops in time for scheduled order team visits.
Part 2. Ordering		
7.	Ordering team	Retrieves laptops from NatPharm with updated data, LMIS forms,

Step	By?	Activity
		and any other stationary.
8.	Ordering team	From NatPharm, obtains branch a list of products available at this time.
9.	Ordering team	Identifies available C list products that are not on the ZAP system.
10.	Ordering team	From the district, picks up selected excess stock from previous round.
11.	Ordering team	Ordering team arrives at facility.
12.	Ordering team	Reviews signed copy of NatPharm tax invoice from most recent delivery round, and notes any discrepancies, and records as an adjustment in the Facility Order Form.
13.	Ordering team	Receives the completed Facility Order Form from facility staff.
14.	Ordering team and Facility staff	Completes a physical count of 10% of the products, to verify the accuracy of the data on the Facility Order Form. If more than 10% of commodities do not match, then recount all the commodities.
15.	Ordering team	Enters data in AutoOrder, and calculates order quantity (or quantity to withdraw), in consultation with facility staff.
16.	Ordering team	Supplies products using excess stock, if available. If supplying excess stock, ordering team needs to enter an adjustment into AutoOrder and recalculate quantities required from NatPharm.
17.	Facility staff	Completes the Quantity to Order column on the Facility Order Form.
18.	Facility staff	Sign the Facility Order Form, and give a copy to the ordering team.
19.	Ordering team	Uses AutoOrder to complete orders for C products (not currently on AO) available at this time, in consultation with facility staff. Any orders are noted by facility staff on the Facility Order Form.
20.	Ordering team	Retrieves excess and expired products and products that will expire before they will be used. Facility staff complete an Issue and Receipt Voucher for these products.
21.	Ordering team	Departs the facility and continues to the next facility. (All orders for a district should be taken within 10 days.)
22.	Ordering team	After visiting all facilities in the district, returns to the district to drop off expired and excess products.
23.	Ordering team	Returns to NatPharm and turns over the laptops to the NatPharm systems administrator.
24.	Ordering team	Produces qualitative report on how the ordering round went, and submits to the provincial pharmacist.
25.	MIS Officer	Processes migrated data to produce Summary Ordering Report showing stock on hand, etc.; and distributes to DHE, PHE, DPS, and any other stakeholders.
Part 3. Order Processing		
26.	NatPharm Systems Administrator	Uploads the data (synchronized with Top Up in Navision). Generates sales quote.

Step	By?	Activity
27.	NatPharm Stock Controller	Generates pick list.
28.	NatPharm	Processes orders (picks and packs). (All orders for the district should be picked and packed within 5 days of receiving orders.)
29.	NatPharm	Produces the NatPharm Tax Invoice with details of quantities of each specific commodity.
Part 4. Delivery		
30.	NatPharm	Loads orders, tax invoices, and any other paperwork onto vehicle.
31.	NatPharm delivery team (dispatch assistant + driver)	Delivers to facilities, as per routing schedule. (All deliveries for a district should be made within 5 days.)
32.	NatPharm delivery team	Receives signed tax invoices on number of cartons delivered, and leaves signed copy with facility.
33.	Facility staff	Unpacks cartons received and notes any discrepancies on the NatPharm tax invoice and updates stock cards.
34.	NatPharm delivery team	Returns to NatPharm with signed tax invoices.
35.	NatPharm Branch Manager	Produces Post Delivery Report with information on the delivery round.
36.	NatPharm Operations Manager	Disseminates Post Delivery Report to DHE, PHE, DPS, and any other stakeholders.

During the design workshop, some participants expressed concern at having facility staff conduct the physical inventories and complete the Facility Order Form. Instead, they felt that the ordering team should complete those tasks. If the ordering team conducts the physical counts for all products, they would likely only complete one facility in one day, which would significantly extend the lead time (see the inventory control system section for more details). Participants decided to do a pre-test to determine who—either the service delivery point (SDP) staff or the ordering team—should conduct physical counts and complete the Facility Order Form. Both versions will be tested to help inform the final decision for the pilot.

Inventory Control System

During the workshop, participants made assumptions and designed the maximum-minimum (max-min) inventory control system.

They designed the following inventory control system:

1. ZAPS is a forced ordering max-min inventory control system. Orders from facilities will be collected every three months (once a quarter) and will be resupplied to the maximum stock level.
2. The ZAPS distribution system has two tiers—NatPharm—both central and branch—and the SDP level. SDPs include MOHCC health centers; district council clinics; nongovernmental organizations (NGOs); CBDs; and hospitals of all types—central, provincial, district, rural, and mission.

Inventory control parameters include—

Table 3. Inventory Control Parameters

Term	Description	Parameter
Lead time	Time interval between ordering stock and the time that the decision to send stock is made, and the time that received stock are ready for use.	1 month
Review period	Routine interval of time between assessment of stock levels to determine if additional stock is needed.	3 months
Safety stock (buffer stock)	Additional buffer cushion, or reserve stock kept on hand to protect against stockouts caused by delayed deliverables, increased demand, or other unexpected events.	2 months
Minimum stock at facility level	Level of stock when actions to replenish inventory should occur, under normal conditions. It is expressed in months of stock.	3 months
Maximum stock at facility level	Level of stock above which inventory level should not exceed/rise, under normal conditions; is always expressed in months and is fixed.	6 months
Emergency order point	Level of stock that triggers an emergency order, it can be reached at any point during the review period and should be lower than the min.	1 month

Each facility should have approximately three months of stock (minimum stock) of each product remaining when the ordering team arrives. The emergency order point (EOP) is a one-month supply, which allows enough time for SDP staff to place an emergency order to NatPharm through the District Pharmacy Manager (DPM), and to receive commodities before they stock out.

A one-month lead time was assumed for the SDP level. This comprises the following components:

- *Ordering*: 10 days for each district/sub-district, assuming the ordering team can visit three facilities per day
- *Picking and packing*: five days for each district/sub-district
- *Delivery*: five days for each district/sub-district.

Ordering Team

Manicaland has seven districts. Four districts are very large, and can be divided into sub-districts for ordering and distribution purposes. In other words, there will be 11 ordering units. If the ordering team can assist three facilities per day to order; and each district/sub-district has approximately 30 facilities; then approximately 10 days are needed to complete the orders for each district or sub-district.

NatPharm Delivery Team

NatPharm delivery teams deliver commodities to every SDP in their respective districts or sub-districts, once a quarter. Each delivery team has one dispatch assistant and one truck driver. At least three teams operate at the same time in the province; deliveries take approximately five days per district or sub-district.

During the delivery, each facility should receive commodities to bring their stock levels of all commodities to maximum, which is six months of stock. The ordering team will retrieve any excess stock, if any, during the ordering period.

ZAPS Pipeline: Flow of Information and Commodities

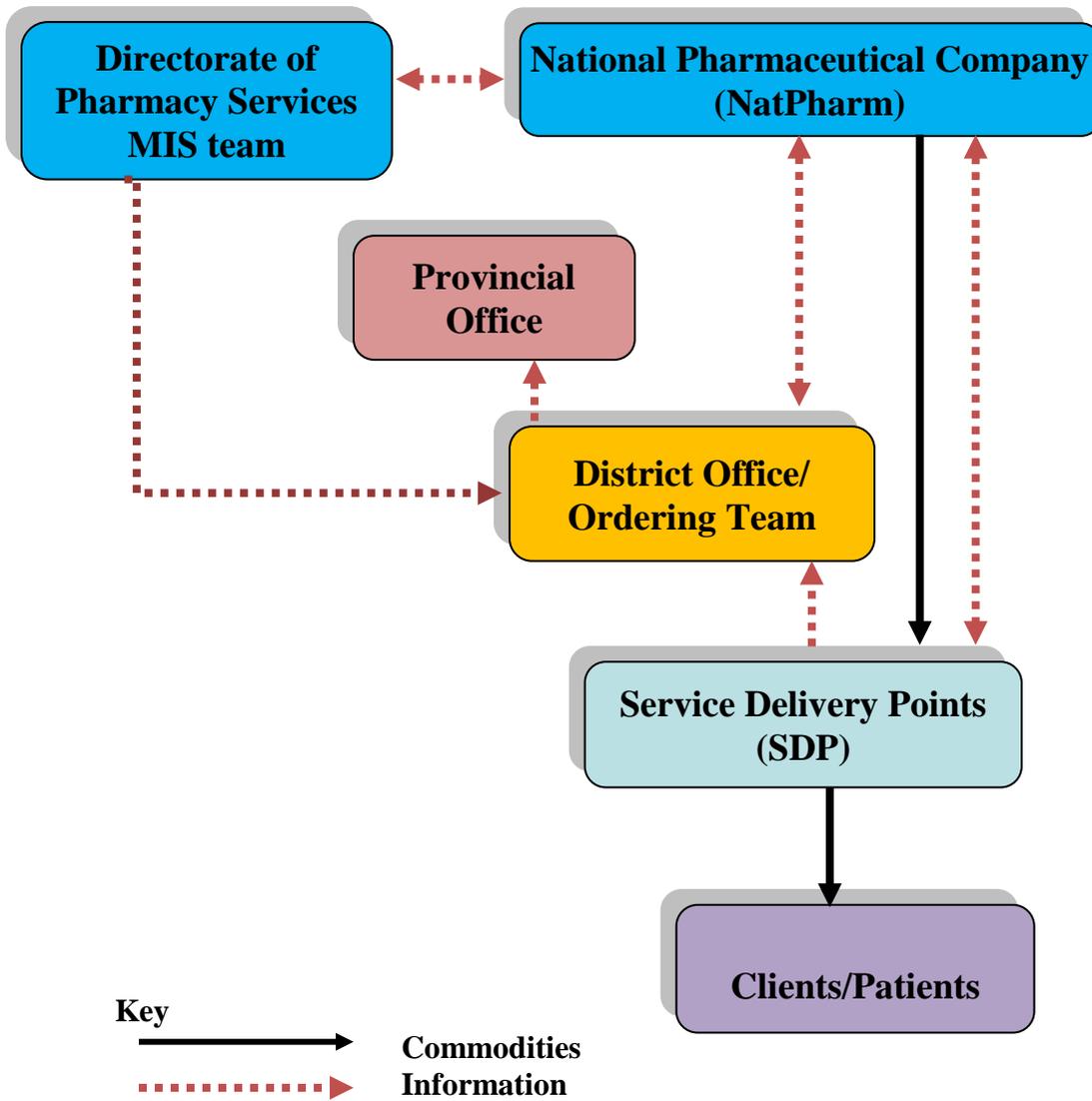
Figure 1 illustrates the flow of information and commodities and reports in ZAPS. Commodities flow down from NatPharm to health facilities. Commodities are dispensed to patients or used at these SDPs.

The ordering team collects logistics data on the AutoOrder; they send it to NatPharm for order processing. Summary reports include—

- The post ordering report, compiled by the district order team is sent to the provincial pharmacist and DPS, upon request.
- The summary ordering report, compiled by the LMIS team, contains quantitative data on the performance of the system in the district; it is supplied to the Provincial Health Executive (PHE), District Health Executive (DHE), and DPS.
- The post delivery report is compiled by the NatPharm Branch Manager and summarizes the deliveries for the quarter.

For emergency orders, facilities complete the NatPharm RIV and send it through the district to NatPharm for processing.

Figure 1: ZAPS Pipeline—Flow of Information and Commodities



Logistics Management Information System

Based on the steps in the system they developed, the participants identified the steps that needed documentation. They also identified whether the form was a new form, an adaptation of an existing form, or an existing form. Table 4 lists all the LMIS forms and reports—and the form’s purpose—identified during the workshop. The forms are used to collect, organize and present logistics information to other levels of the system in order to make decisions that govern logistics system and ensure the all six rights are fulfilled for each client.

Table 4. LMIS Forms and Reports

S#	Form Name	Purpose	At What Level?	New form, Existing, or Adapted?
1.	Stock card	To record information—stock on hand, receipts, losses and adjustments, etc.—on commodities in the storeroom	Facility	Existing
2.	Facility Order Form	To record data—losses, adjustments, physical count, quantity to expire in 3 months, and order quantities	Facility	Adapted from the AutoDRV Facility Worksheet used in ZIP/PHCP and DTTU
3.	AutoOrder	To calculate order quantities, which are automatically transferred to Navision to create a facility price quote	Ordering team NatPharm	Adapted from the AutoDRV used in ZIP/PHCP and DTTU
4.	Issue and Receipt Voucher	To record any stock transactions—for example, the collection and receipt of excess stock from the facility by the district	Facility ordering team	Existing
5.	NatPharm RIV	To place emergency orders	Facility NatPharm	Existing
6.	NatPharm tax invoice	<ul style="list-style-type: none"> To inform the facility of the product quantities delivered and the cost To record any discrepancies between the quantities supplied and received 	Facility NatPharm	Existing
7.	Post Ordering Report	To summarize qualitative information on what happened during the ordering round	Ordering team Provincial office	Adapted from the Post Delivery Report used in ZIP/PHCP and DTTU
8.	Summary Ordering Report	To summarize logistics data (quantitative) gathered during the ordering round—generated by Top Up	District office Provincial office DPS	Adapted from the Summary Delivery Report used in ZIP/PHCP and DTTU
9.	Post Delivery Report	To summarize what transpired during the delivery round	District office Provincial office NatPharm	New report

All LMIS forms must still be finalized, but they can only be finalized when the product list has been agreed upon.

One additional LMIS form not discussed at the workshop, but that could be considered is a Facility Feedback Form. The ordering team would complete this form, and they would provide a brief, simple qualitative summary. It could ask, for the 10 percent of products selected, if the physical counts matched what was on the stock card; and, if not, whether a complete physical count of all commodities was done. The Facility Feedback Form could also provide some qualitative feedback from the ordering team to the facility staff about the strengths and areas of improvement to check follow up the next time the ordering team arrives.

Roles and Responsibilities in ZAPS

Clarity of roles and responsibilities is one characteristic of an integrated supply chain. During the workshop, participants defined roles and responsibilities for various supply chain actors, based on the steps in the system and the overall management of the system. Many healthcare staff play key roles in the operation of ZAPS. The roles and responsibilities for personnel and other key partners involved include the MOHCC, NatPharm, and partners are listed in table 5.

Table 5. Roles and Responsibilities

Level	Personnel	Roles and Responsibilities
Ministry of Health and Child Care DPS	Director Pharmacy Services	<ul style="list-style-type: none"> • Mobilizes resources for procurement and distribution of commodities
	Deputy Director Pharmacy, Logistics Research	<ul style="list-style-type: none"> • Receives reports about the system performance and takes appropriate action • Liaises with the relevant procurement units, donors, and other cooperating partners to ensure availability of ZAPS commodities
	Program managers (NMCP, HIV&AIDS, NTP, etc.)	<ul style="list-style-type: none"> • Participates in quantification of ZAPS commodities and works with cooperating partners • Receives reports about the system performance and takes appropriate action
	MIS team	<ul style="list-style-type: none"> • Provides troubleshooting support to NatPharm system administrator on AutoDRV and Top Up, and data migration concerns • Ensures the Top Up database is updated (automatically or manually) with receipts, as per signed tax invoice, post delivery • After delivery rounds, generates the Summary Ordering Report; sends to the district team for review and further dissemination • Maintains product lists, facility lists, and other configurations for AutoDRV and Top Up • Ensures adequate supply of LMIS forms, and appropriate hardware and software to NatPharm branches

Level	Personnel	Roles and Responsibilities
	Logistics officers	<ul style="list-style-type: none"> • Monitors (and evaluates) the distribution system • Follows up issues identified by LMIS team with provincial pharmacy managers • Participates in the quantification of ZAPS commodities
National Pharmaceutical Company (NatPharm)	Branch manager	<ul style="list-style-type: none"> • Schedules and plans delivery routes • Approves laptops, stationary, transport request, and per diems • Coordinates transfer of commodities from other warehouses • Generates and sends the post-delivery report to operations manager for dissemination • Generates tax invoices
	Stock controller	<ul style="list-style-type: none"> • Receives and processes orders (automated) • Generates stock availability list at NatPharm • Supervises loading and dispatch of completed orders • Manages inventory • Verifies orders
	Systems administrator	<ul style="list-style-type: none"> • Downloads data from ordering rounds from AutoOrder into Top Up, migrates data into Navision, and generates price quote • Uploads data into AutoOrder from Top Up after the ordering cycle in Navision • Manages the laptops for the ordering teams
	Stores personnel	<ul style="list-style-type: none"> • Picks and packs orders according to the pick list • Updates stock cards • Verifies orders
	Dispatch assistant	<ul style="list-style-type: none"> • Assists in loading and offloading the trucks • Verifies stock delivered with SDP staff and obtains signed NatPharm tax invoice as proof of delivery • Manages paperwork (tax invoices and delivery notes)
	Accounts/admin clerk	<ul style="list-style-type: none"> • Generates tax invoices
	Truck driver	<ul style="list-style-type: none"> • Drives to SDPs, using the route schedule • Maintains vehicle log sheet • Assists offloading the trucks and verifying commodities delivered

Level	Personnel	Roles and Responsibilities	
District Office	District pharmacy manager (ordering team)	<ul style="list-style-type: none"> • Prepares ordering schedule using NatPharm routing plan • Organizes transport and per diem • Collects laptops and LMIS forms and stationery from NatPharm • Obtains a list of available products from NatPharm • Visits all facilities in their district to get data required to place orders • Recounts 10% sample of commodities; if 10% or more do not match, they recount together with facility staff • Discusses losses and adjustments and days out of stock with facility staff • Enters data into AutoOrder to get the order quantity • Collects all excess stock for redistribution; redistributes excess stock as appropriate—completes the receipt or issue voucher • Reviews the signed tax invoice, notes discrepancies, and mark as adjustments in the Facility Order Form and AutoOrder • Signs Facility Order Form • Compiles Post Ordering Report and submits to the provincial pharmacist • Returns laptops to NatPharm 	
		Health Facilities	<ul style="list-style-type: none"> • Nurse • Pharm tech • Dispensary • Assistant • Pharmacist • Nurse's aide
Receiving Orders	<ul style="list-style-type: none"> • Receives orders, counts all the products, and inspects the integrity of the packaging • Notes any discrepancies on the tax invoice • Signs the tax invoice and retains a copy • Updates stock cards • Places all products on the shelves in order of first-to-expire, first-out 		

Level	Personnel	Roles and Responsibilities
Provincial Office	Provincial pharmacist	<ul style="list-style-type: none"> • Receives and reviews Post Ordering Reports, Summary Ordering Reports, and Post Delivery Reports, and takes appropriate action • Shares reports with others at the provincial level • Supervises the DPMs • Monitors and evaluates the system, as necessary

The primary focus during the workshop was around system operators rather than system managers. Currently, as the roles and responsibilities section is written, no one individual is responsible for closely monitoring the performance of the pilot at the provincial level. It is assumed that this falls under the purview of the Provincial Pharmacist. However, understanding the already tight schedules of many Provincial Pharmacists, they may have limited time to devote to supporting the pilot. The role of the Area Distribution Coordinator was not concluded during the workshop. To support the provincial pharmacist and NatPharm Branch Manager, the Area Distribution Coordinators could continue to fill this role.

They could have tasks/responsibilities that include the following:

- Coordinating the schedules across ordering teams to ensure the availability of vehicles and laptops.
- Coordinating the pool of ordering vehicles, and matching them with drivers and ordering team leaders.
- Monitoring lead times: ordering, picking and packing, and delivering.
- Ensuring that the data transfers between AutoOrder and Top Up happen, as planned.
- Acting as a liaison between NatPharm and DPMs; particularly, the performance of the pilot at the provincial level.
- Supporting the DPMs in their role as ordering team leaders, providing backstopping support and guidance.
- Generating the narratives—cover letter—portion of the Summary Ordering Report and providing additional information about the supply status of ZAPS commodities in the province.

Currently, the Ministry has two LMIS units, one physically located in NatPharm Headquarters, which is managing the database for ZIP/PHCP; the other is located at Harare/Bulawayo regional warehouses, which is managing the databases for ZADS and DTTU. The discussion on which unit will manage the ZAPS database, or merging the units, was not concluded; and a decision may have been made by the time the standard operating procedure (SOPs) are written.

Monitoring and Evaluation

The objective of the pilot is to determine whether a more efficient and cost-effective system can be implemented while achieving the same or better reporting rates, availability of data, and level of product availability as are now achieved by the existing systems that ZAPS will be subsuming. The MOHCC intends to apply a rigorous M&E plan to measure the performance of ZAPS. A full M&E plan has been developed and it is being finalized at the time of the writing of this report. This

chapter includes information about the pilot and the pre-test, draft indicators, and methods for comparing those indicators. Please refer to the M&E plan for a comprehensive description of the approach and indicators.

Approach to the Pilot

At an earlier meeting of the TWG, it was agreed that the pilot will be conducted in Manicaland; all facilities in Manicaland will be included. Manicaland province has the largest number of health facilities of all the provinces in Zimbabwe—280-plus public-sector facilities—and it will, therefore, be a fertile testing ground for ZAPS, likely demonstrating the full range of challenges that will be faced when ZAPS is implemented. If ZAPS proves its efficiency and effectiveness in Manicaland, then the benefits of ZAPS should also apply to the other provinces. The pilot will run for three ordering and delivery rounds (nine months total).

Workshop participants agreed that, prior to the pilot, a pre-test will be needed to test some of the assumptions that were made at the workshop. One of the critical assumptions to assess is the lead time. Three major components make up the lead time; it is important to determine whether these assumptions were accurate:

1. days required for ordering—assume 10 days per district/sub-district
2. days required for picking and packing—assume five days per district/sub-district
3. days required for delivery—assume five days per district/sub-district.

If the lead time assumptions are inaccurate—if the assumed lead times are too short—the stock levels set will not allow the system to perform; i.e., minimum and maximum stock levels would be too low to resupply facilities adequately, considering the actual (longer) lead times. It may also mean that additional human resources—for example, more pickers and packers at NatPharm—may be required to adhere to a month-long lead time.

Another critical test is to determine who should conduct the physical inventories: the SDP staff or the ordering team (DPM). As described in the steps section of this report, there were significant differences of opinion around this issue. It was agreed to test both options, and to measure the impact on ordering time.

The findings of the pre-test will be used to finalize the SOP manual, and related training curriculum, prior to rolling out the pilot to the rest of the province.

The pilot of ZAPS will test the performance of an integrated health product management system. A thorough evaluation of the pilot will help partners determine if ZAPS can achieve the same level of results as the existing systems are currently achieving in Manicaland province. It will also determine whether it is more effective, relative to the costs and level of effort that are needed, to distribute and, otherwise, manage health commodities in that province.

Draft Indicators for Measuring Performance of Pilot

Given the vision of the system, and the objectives of the pilot, during the workshop, participants were asked to develop the questions they want answered about the pilot. They were also asked to think about what indicators should be captured to help answer those questions.

The following questions and indicators were asked during the workshop, rather than the final indicators that will be included in the M&E plan. Refer to the full M&E plan for more detailed information.

- Can we ensure product availability?
 - stockout rates
 - duration of stockouts
 - percentage of facilities between maximum and minimum stock levels
 - months of stock on hand
 - number of emergency orders placed
 - percentage of facilities resupplied, up to the maximum stock level.
- Can we increase coverage?
 - number and percentage of facilities served during each order round and each delivery round
 - number of facilities served per day
 - order fill rate—quantity supplied versus quantity ordered.
- Can we ensure data visibility?
 - ordering rate
 - on-time ordering rate
 - time taken to produce and disseminate reports.
- Can we reduce costs?
 - total operational costs of the system.
- Can we attain sustainability and ownership?
 - percentage of districts using local resources to operate the system
 - percentage of the budget from the GOZ.
- Does the system, in practice, adhere to design assumptions?
 - number of days for an ordering round to be completed
 - number of days for picking and packing
 - number of days for a delivery round to be completed.
- Can we improve product management at all levels?
 - percentage of SDPs that do physical count, and completely and correctly fill out the facility order form

- percentage of SDPs that place emergency orders when they are needed.
- Can we minimize losses?
 - loss rate and losses due to expiry.

The M&E plan includes the list of final indicators that will be measured, descriptions of the indicators, and the data sources for the indicators.

Comparison of Indicators

Participants discussed the various ways that these indicators could be measured—what should be compared to these numbers? Three general options were identified and discussed:

- Compare to existing benchmarks.
- Compare against historical performance of each indicator within Manicaland province—if it was tracked under the old systems—DTTU/ZIP/PHCP/ZADS—assuming all things being equal, e.g., upstream supply of commodities.
- Compare to other provinces using current systems—DTTU/ZIP/PHCP/ZADS—assuming there is no significant differences between provinces, e.g., resources.

It is possible that more than one of these options could be used, depending on the indicator. For the indicators that were discussed during the workshop, historical data are available for some—e.g., stockout rates, coverage rates—while, for others, the data may be there, but the indicators have not been routinely calculated: e.g., on-time delivery, time taken to produce and disseminate reports, number of SDPs covered in one day.

A third category of indicator for which historical data is not available—e.g., total operational costs of the systems. For these indicators, background data must be gathered prior to implementing the pilot.

It will take a significant level of effort and resources to calculate each indicator. The activity managers for the pilot should determine whether it will be worth the level of effort and resources to collect data for each indicator. The risk is that a disproportionate amount of resources will go toward monitoring and evaluation, compared to the operations; it is critical that the operational component be sufficiently resourced, or the system will be unable to perform, as designed.

Resources Required for Piloting the System

Based on the system designed, participants in the workshop discussed and identified human and materials resources required to pilot the systems. Participants worked in four groups: transportation, storage, human resources, and information technology. The storage group were challenged because the volumetric requirements for the commodities for the pilot, as well as the available storage space at NatPharm Mutare, was not known at the time of the workshop.

Following is the list of requirements identified:

1. Transportation and Per Diem

As mentioned in the inventory control section, participants agreed to divide the four largest districts in Manicaland into two districts, for the purposes of ordering and distribution. This creates a total of 11 ordering units—districts/sub-districts. Each ordering team comprises a district pharmacy manager and a driver.

- *Three ordering vehicles.* Assuming that each ordering team can visit three facilities, per day; and, on average, each district/sub-district has 30 facilities, then we assume that each ordering team can cover their district/sub-district in 10 days. If three vehicles are used, all orders can be obtained in eight weeks—the last 10-day ordering period would only use two trucks—as explained below:
 - Weeks 1 and 2: district/subdistricts A, B, and C have orders collected
 - Weeks 3 and 4: district/subdistricts D, E, and F have orders collected
 - Weeks 5 and 6: district/subdistricts G, H, and I have orders collected
 - Weeks 7 and 8: district/subdistricts J and K have orders collected
- *Four delivery trucks—three for deliveries and one for back-up.* Participants said that without knowing the average volume of products that would be required for each facility, it was difficult to determine the final number of delivery trucks that are needed. An extra fourth delivery truck would allow the system to easily respond to any changes in transportation requirements. Participants assumed that each delivery team can deliver to all facilities in a district/sub-district in five days. Because there are 11 districts/sub-districts, if three delivery trucks are used, then all facilities in the province could, theoretically, receive deliveries within 10 weeks after the start of the ordering cycle, as explained below:
 - Week 4: district/subdistricts A, B, and C receive deliveries
 - Week 6: district/subdistricts D, E, and F receive deliveries
 - Week 8: district/subdistricts G, H, and I receive deliveries

- Week 10: district/subdistricts J and K receive deliveries.
- *Per diem* (rates to be established)
 - ordering teams—12 days each (including weekends) for 11 ordering trips
 - delivery teams—five days each for 11 delivery trips.
- *Fuels and vehicle maintenance.*

Table 6 compares the transportation and per diem resources with what is currently available and the resulting gap.

Table 6. Transportation Gaps

Items	Total Needed	Current Available	Gap
Vehicles for ordering rounds	3		
Vehicles for delivery rounds	4		

2. **Resources required for IT.** Participants developed the following list of resources/steps that will be required to support the IT/data management component of ZAPS.
 - Assess and improve connectivity between NatPharm branches (WAN), as appropriate.
 - Upgrade software (Top Up and Navision).
 - Adapt AutoDRV to AutoOrder.
 - Upgrade Top Up and link to Navision for automated order processing—automatic generation of price quote and conversion to pick list.
 - Ensure full functionality of the web component of Top Up for accessing reports.
 - Redesign some reports and align indicators.
 - Train system administrator in AutoOrder and Top Up.
 - Assess hardware requirements for the branch.
 - Enhance Internet connectivity at the district.
 - Qualified system administrator at the branch.
 - Six laptops are needed; JSI will provide maintenance for the laptops.

See the implementation planning chapter for more detail on IT/software requirements.

3. **Human resources (HR) required.** The HR required for the ordering teams and drivers are described above. Table 7 shows the HR specifically required at NatPharm.

Table 7. HR Requirements at NatPharm

Positions	Total Needed	Currently in Position	Gap
Branch manager	1	1	0
Stock controller	2	1	1
Warehouse personnel (for picking and packing)	15	3	12
Systems administrator	1	0	1

4. Resources required for training rollout. As part of the implementation, a few different cadres of staff require training/orientation. Each type of training will require materials to be developed. Expenses related to all the trainings must be covered, including venue rental, per diem, and materials production.

Trainings include—

- SDP staff will need an orientation, because they will be responsible for conducting physical inventories, completing the Facility Order Form, and making emergency orders. At the design workshop, it was discussed that this orientation could be a part of the existing district meetings. Details and procedures still need to be agreed-to. This training will primarily be how to organize the stock, record the stock counts on the Facility Order Form (worksheet), list losses and adjustments, record days stocked out, etc. in preparation for the arrival of the ordering team.
- Ordering teams will need training on how to use AutoOrder for all the general ordering procedures. If ordering teams will be expected to conduct the SDP orientations, they will need some training on how to deliver that orientation, which may require a training-of-trainers (TOT).
- NatPharm teams may need training on picking and packing, and the expectations of the system.
- Provincial level team may need an orientation.

In addition to the trainings mentioned above, a number of smaller trainings may be required; for example, the NatPharm systems administrator will need training on AutoOrder and Top Up.

Implementation Planning

The MOHCC would like to begin the pilot of ZAPS in February/March 2014 and evaluate the performance of the pilot at the end of 2014. Participants developed key steps in the implementation plan. These activities were incorporated into a draft implementation plan that was already developed, which includes both prerequisites for implementing the system, as well as the primary stages in the implementation process. Key categories of activities/tasks that need to be accomplished are listed in table 8.

Table 8. Draft Implementation Plan

Activity	Sub-Activities	Completed by...
Obtain stakeholder buy-in	Obtain stakeholder buy-in—central level	24 October
	Obtain stakeholder buy-in—provincial-level meeting	End of October
Finalize implementation plan		October/November
Develop budget for ordering and delivery rounds (including establishing per diems)		October
Determine who will provide vehicles and per diem		October/November
Finalize product list	Determine if NatPharm can break down the POC cartridges kits and fingerstick collection kits into individual items	November
	Determine if all facilities in Manicaland will implement option B+	
	Determine if abacavir and didanosine will be included	
Develop SOPs		November
Develop curriculum		December
Finalize LMIS tools	Determine if NatPharm needs a copy of the Facility Order Form	November
Conduct trainings	TOT	January?
	Trainings of ordering teams	February?
	Sensitization/orientation of SDPs (will add to existing district-level meetings)	January
Collect baseline data, including cost		
Conduct pre-test (testing of ordering times, order fill times, and delivery times)		November/December
Adapt system after pre-test,		December/ January

incorporating findings		
Resolve storage considerations	Compare volumetric requirements for pilot with available storage space at NatPharm Mutare	October
	Identify additional storage requirements, and explore options for outsourcing storage	November
	Establish procedures for moving products from Harare to Mutare	November
	Move PHCPs from Manicaland to other branches	January
Finalize transport requirements for the pilot, and identify options for resourcing those		November
Send truck to collect excess stock before start of pilot		TBD.
Determine how facilities will be resupplied in cases of non-full supply of products		TBD
Determine the roles of ADCs and National Distribution Coordinator		October
Address outstanding ZNFPC issues	Invoicing procedures	
	Establish procedures for moving stock from ZNFPC to NatPharm Mutare	
	Clarify how CBDs will be resupplied	
Resolve questions around ZADS data management—how will data be aggregated? How will patient data be obtained? What about the use of ARV dispensing registers?		October
Determine how to supply DTTU customers that are not NatPharm customers		October
Upgrade software and IT management	ZAPS enhancements Project Management Plan	8 November
	Gather requirements and draft specifications. For example, automating the transfer of quantity delivered from Navision to Top Up	8 November
	Complete software upgrade and testing	31 December
	Determine where the IT management responsibilities will be for the pilot	31 November
	Reconcile DTTU and ZIP facility lists	31 November
	Train systems administrator in AutoOrder and Top Up	January 2014
	Assess hardware requirements of the branch	15 November

	Ensure availability of laptops (6 total are needed for the pilot)	15 November
Procure packing materials for NatPharm		January
Carefully time the last ZADS, ZIP/PHCP, and DTTU deliveries, in line with the start of the pilot		TBD
Conduct pilot		February/March
Assess pilot		December 2014

The implementation plan is a working document; it will be continuously monitored and updated.

Appendix I: Design Workshop Schedule

System Design Workshop: Assisted/Facilitated Ordering System

Dates: October 14-18, 2013 **Venue:** Montclair Hotel, Nyanga

Monday, October 14 th		
Time	Session	Facilitator(s)
8:30 – 9:00	Registration and Workshop opening	DPS
9:00 – 10:00	Introduction to the workshop (objectives, schedule, group norms, icebreaker)	Consultant
10:00 – 10:45	Introduction to logistics	Consultant
10:45 – 11:00	BREAK	
11:00 – 1:00	Logistics basics review (LMIS, inventory control, etc.)	Consultant
1:00 – 2:00	LUNCH	
2:00 – 3:30	Overview of existing systems and discussion (ZADS, DTTU, ZIP/PHCP, ZiLaCoDS, VMMC, and Essential Meds (ZEDAP) Discussion and synthesis of systems	DPS
3:30 – 3:45	BREAK	
3:45 – 4:45	DPS Vision/Overview of assisted ordering concepts	DPS
4:45 – 5:00	Wrap up	

Tuesday, October 15 th		
Time	Session	Facilitator(s)
8:30 – 8:45	Introduction to the day	Consultant
8:45 – 9:30	Integrated Supply Chains	Consultant
9:30 – 10:00	Introduction to the system design process: groups, outcomes, expectations	Consultant
10:00 – 10:15	BREAK	
10:15 – 11:15	Developing a picture of the system	Consultant
11:15 – 1:00	Commodities to include	Consultant
1:00 – 2:00	LUNCH	
2:00 – 3:30	Design step 1: STEPS	Consultant
3:30 – 3:45	BREAK	
3:45 – 5:00	Debrief on STEPS discussion	Consultant
5:00 – 5:15	Wrap up	Consultant

Wednesday, October 16th		
Time	Session	Facilitator(s)
8:30 – 8:45	Introduction to the day	Consultant
8:45 – 10:45	Design step 2: ICS	Consultant
10:45 – 11:00	BREAK	
11:00 – 1:00	Group brainstorm of LMIS requirements	Consultant
1:00 – 2:00	LUNCH	
2:00 – 3:30	Design step 3: Form design	Consultant
3:30 – 3:45	BREAK	
3:45 – 5:00	Debrief on forms discussion	Consultant
5:00 – 5:15	Wrap up of day	

Thursday, October 17th		
Time	Session	Facilitator(s)
8:30 – 8:45	Introduction to the day	Consultant
8:45 – 10:30	Roles and responsibilities	Consultant
10:30 – 10:45	BREAK	
10:45 – 12:00	Pulling it all together/ summary of system	Consultant
12:00 – 1:00	Monitoring and evaluation	Consultant
1:00 – 2:00	LUNCH	
2:00 – 2:30	Monitoring and evaluation	Consultant
2:30 – 3:30	Implementation planning	Consultant
3:30 – 3:45	BREAK	
3:45 – 5:15	Identification of resources required to make it work	Consultant
5:15 – 5:30	Wrap up of the day	

Friday, October 18th		
Time	Session	Facilitator(s)
8:30 – 8:45	Introduction to the day	Consultant
8:45 – 10:30	Pending issues and next steps	Consultant
10:30 – 10:45	BREAK	
10:45 – 12:00	Pending issues and next steps continued	Consultant
12:00 – 1:00	Closing Remarks	DPS
1:00 – 2:00	LUNCH	

Saturday, October 19th: Departure

Appendix 2: Design Workshop Goals and Objectives

Goal:

By the end of the workshop, participants will have reached consensus on the design of a hybrid assisted ordering system which combines best features of the current informed push systems (DTTU, and ZIP/PHCP) and traditional ordering to achieve high standards of system performance in Zimbabwe.

Objectives:

During the design workshop participants will:

- a. Review and use basic logistics management concepts and terminologies needed to design or re-design an inventory control system and a logistics management information system for assisted ordering system.
- b. Describe the current logistics systems for managing all health commodities including commodities, stock levels, key players, performance indicators, review periods, lead time, LMIS used, etc.
- c. Identify best features and weaknesses of the current informed push and traditional ordering distribution and information systems used for all health commodities.
- d. Discuss and map out the desired harmonized commodity pipeline and the flow of logistics information.
- e. Design the inventory control system for the assisted ordering system including max/min stock levels for each level in the system, the frequency of ordering and distribution, and how to calculate order quantities.
- f. Design/redesign a standardized logistics management information system for assisted ordering system including logistics decisions to be made, paper-based forms to be used or automation to be used, point of data collection and aggregation, authorization, approval, and feedback reporting.
- g. Agree on and finalize a list of commodities to be managed in the assisted ordering system
- h. Determine standard procedures for assisted ordering, distribution, stockkeeping, and storage of health commodities current DTTU, ZIP/PHCP and all other commodities used at primary care level
- i. Identify the human resources needed to implement the designed assisted ordering system at all levels including their roles and responsibilities.

- j. Identify other resources required for implementation of the designed system.
- k. Discuss and plan for the pilot implementation including identification of issues to be resolved before implementation.
- l. Agree on fundamentals of how the AO system will be measured that will form the basis of a robust M&E Plan.

Appendix 3: Design Workshop Participant List

	Name	Designation	Organisation
1.	F Mudzimu	Deputy Director	MOHCC DPS
2.	M Ndlovu	SCM Advisor	MOHCC DPS
3.	A Mhazo	TB Logistics Focal Person	MOHCC DPS
4.	Richard Sabumba	LU Manager	MOHCC DPS
5.	M Chinembiri	Deputy LU Manager	MOHCC DPS
6.	L Mavingire	MIS Officer	MOHCC DPS
7.	Louis Kajawu	National Distribution Coordinator	NatPharm
8.	S Chikomo	Data Analyst	NatPharm
9.	B Samanika	Logistics Manager	ZNFPC
10.	Mrs T Muzadzi	Service Delivery Coordinator	ZNFPC
11.	A Mutambara	Acting PPM	Manicaland
12.	M Sithole	DPM	Manicaland
13.	W Mutsipa	DPM	Manicaland
14.	J Mutetwa	DMO	Chipinge
15.	J Kudzaimaoko	DPM	Makoni
16.	L Nyarota	DPM	Buhera
17.	M Rangayi	DPM	Chimanimani
18.	A Nyanhete	DPM	Mutasa
19.	E Mhlanga	DPM	Mutare
20.	Alex Matonhodze	PPM	Southern Region
21.	Greg Roche	JSI	Manicaland
22.	Tinei Chitiske	JSI	
23.	D Alt	JSI	
24.	Naomi Printz	JSI (Consultant)	
25.	I Chiyaka	JSI (Consultant)	
26.	M Mwonzora	Team Leader – Health	Crown Agents
27.	W Chinzvende	ADC	Manicaland
28.	Beauty Nhari	ADC	Harare
29.	Cynthia Kamtengeni	Essential Drugs Specialist	UNICEF
30.	Chester Marufu	MIS Advisor	JSI

Appendix 4: Draft Product List by Facility Type

Products to Be Included in ZAPS: Clinic Level

Products		Units Used in Recording and Reporting	Unit of Issue
Malaria Commodities			
1.	A/L 20/120mg 1x6	Blister of 6 tablets	Pack of 30 blisters
2.	A/L 20/120mg 2x6	Blister of 12 tablets	Pack of 30 blisters
3.	A/L 20/120mg 3x6	Blister of 18 tablets	Pack of 30 blisters
4.	A/L 20/120mg 4x6	Blister of 24 tablets	Pack of 30 blisters
5.	Quinine 300ml tablets	Tablet	Pack of 100
6.	Quinine 300/2ml	Ampoule	Ampoule
7.	Sulphadoxine/pyrimethamine 500/25mg	Tablets	Bottle of 100 tablets Bottle of 500 tablets Pack of 150 tablets
8.	Rapid diagnostic test (PARACHECK PF)	Test	Kit of 25 tests
9.	Rapid diagnostic test (PAN/COMBO)	Test	Kit of 25 tests
TB Commodities			
10.	RHZE 150/75/400/275MG	Tablets	Pack of 672 tablets
11.	RH 150/75MG	Tablets	Pack of 672 tablets
12.	RH 60/30MG	Tablets	Pack of 90 tablets
13.	RHE 150/75/275MG	Tablets	Pack of 672 tablets
14.	RHZ 60/30/150MG	Tablets	Pack of 90 tablets
15.			
Nutrition Products			
16.	RUTF	Sachets	Carton of 150 sachets
Condoms and Contraceptives			
17.	Male condom	Piece	Box of 100 pieces

Products		Units Used in Recording and Reporting	Unit of Issue
18.	Female condom	Piece	Pack of 20 pieces
19.	Medroxyprogesterone acetate	Vial	Box of 10 vials
20.	Control pill	Cycle	Pack of 6 cycles
21.	Secure	Cycle	Pack of 6 cycles
22.	Levonorgestril acetate	Set	Box of 10 sets
Diagnostics			
23.	Determine HIV test kit	Test	Box of 100 tests
24.	Determine chase buffer	Bottle /portion of a bottle	2.5ml bottle
25.	First Response HIV test kit	Test	Box of 30 tests
26.	Chembio	Test	Test
27.	Syphilis test kit	Test	Box of 30 tests
28.	Pima CD4 POC cartridge	Cartridge	Box of 100 cartridges
29.	Finger stick sample collection kit	Kit	Kit
30.	Pima printer paper	Roll	Pack of 10 rolls
31.	Dry blood spot kit	Kit	Box of 50 kits
32.	HIV DNA PCR lab request form	Register	Register
ARVs			
33.	Zidovudine/lamivudine/nevirapine 300/150/200mg tablets	Bottle of 60 tablets	Bottle of 60 tablets
34.	Zidovudine/lamivudine 300/150mg tablets	Bottle of 60 tablets	Bottle of 60 tablets
35.	Efavirenz 600mg tablets	Bottle of 30 tablets	Bottle of 30 tablets
36.	Tenofovir/lamivudine 300/300mg tablets	Bottle of 30 tablets	Bottle of 30 tablets
37.	Tenofovir/lamivudine/efavirenz 300/300/600mg	Bottle of 30 tablets	Bottle of 30 tablets
38.	Nevirapine 200mg tablets	Bottle of 60 tablets	Bottle of 60 tablets
39.	Atazanavir/ritonavir 300/100mg	Bottle of 30 tablets	Bottle of 30 tablets
Pediatric ARVs			

Products		Units Used in Recording and Reporting	Unit of Issue
40.	Nevirapine solution 50mg/5ml	Bottle or portion of a bottle	20ml, 25ml, 100ml, or 240ml bottle
Essential Medicines (were included in PHCPs)			
41.	Amoxicillin 250mg tabs	Tablet	Pack of 1,000
42.	Benzympenicillin powder for inj. 3g (5MU) vial	Vial	vial
43.	Co-trimoxazole 480mg tabs	Tablet	Pack of 500
44.	Doxycycline 100mg tabs	Tablet	Pack of 1,000
45.	Erythromycin 250mg tabs	Tablet	Pack of 100
46.	Metronidazole 250mg tabs	Tablet	Pack of 1,000
47.	Oral rehydration salts, new formula, 1l sachet	Sachet	Box of 100
48.	Zinc sulfate 20mg tabs	Tablet	Pack of 100
49.	Co-trimoxazole 120mg dispersible tabs	Tablet	Pack of 100
50.	Hydrochlorothiazide 25mg tabs	Tablet	Pack of 100
51.	Paracetamol 500mg tabs	Tablet	Pack of 1,000
52.	Paracetamol elixir 100mg dispensable tablet	Tablet	Pack of 100
53.	Salbutamol inhaler 100mcg	Each	Each
54.	Adrenaline 1mg/ml inj., 1ml amp	Ampoule	Ampoule
55.	Glucose hypertonic 50% inj., 50ml vial	Vial	Vial
56.	Lidocaine inj. 2%, vial	Vial	Vial
57.	Water for injection, 10ml amp	Ampoule	Ampoule
58.	Povidone iodine soln 10%	ml	Bottle of 500ml
59.	Tetracycline eye ointment 1%, 3.5g tube	Tube	Tube
60.	Albendazole 400mg chewable tabs	Tablet	Pack of 1,000
61.	Ferrous + folic 60+0.4mg tab	Tablet	Pack of 1,000
62.	Magn.sulph.inj 500mg/ml 10ml amp	Ampoule	Ampoule
63.	Miconazole nitrate cream 2%	Tube	Tube

Products		Units Used in Recording and Reporting	Unit of Issue
64.	Bandage, gauze, 8cmx4m, roll	Roll	Roll
65.	Cotton wool, 500g, roll, non-ster	Roll	Each
66.	Compress, gauze, 10x10cm, non-ster	Each	Pack of 100
67.	Tape, adhesive, zinc.ox., 2.5cmx5m	Roll	Each
68.	Syringe, disp, 2ml, ster	Each	Each
69.	Syringe, disp, 5ml, ster	Each	Each
70.	Needle, disp, 21G, ster	Each	Box of 100
71.	Needle, disp, 23G, ster	Each	Box of 100
72.	Gloves, exam, latex, medium, disposable	Glove	Pack of 100

Additional medicines included:

Products		VEN Classification	Units Used in Recording and Reporting	Issuing Unit
Instruments				
73.	Scalpel blade (=also stitch cutting), size 12	V		Pack 100
74.	Scalpel blade, size 20	V		Pack 100
Diagnostic Instruments, Syringes, Needles, Etc.				
75.	Razor safety + blade disposable	N		Set
76.	Glove – surgeon, cuffed, sterile, rubber, size 7.5	N		Pair
77.	Syringe, disposable, 2.5ml + needle	V		Each
78.	Burnbin, for sharps disposal	N		Each
79.	Cannula, I.V., Luer Lock, thinwall 18FG	V		Each
80.	Cannula, I.V., Luer Lock, thinwall 22FG	V		Each

Bandages and Dressings				
81.	Bandage, cotton crepe, stretch 100mm wide	N		Roll 4.5 meter
82.	Bandage, triangular, unhemmed 90cm side	E		Each
83.	Dressing-gauze, paraffin impregnated, 100mm #	E		Pack 36 pieces
84.	Linen saver, absorb. tissue, 3-ply/22g plastic-back, non-woven top, 50x60cm	E		Pack 10 pieces
85.	Tape, autoclaving- control, 18mm wide	E		Roll 50 meter
86.	Towel, maternity	E		Pack 10 pieces
87.	Clamp-umbilical cord, sterile, plastic	V		Pack 100 pieces
Sutures				
88.	Nylon, M2 (3/0), P-curved 26mm rev. cut, 75cm blue	E		Pack 12 each
Tablets, Capsules, Suppositories, and Pessaries				
89.	Amitriptyline 25mg tabs	V		Box 1,000
90.	Chlorpromazine HCl 25mg tab	V		Box 1,000
91.	Phenobarbitone, scored 30mg tab	V		Box 1,000
92.	Praziquantel 600mg tab	E		Box 100
Injectables				
93.	Chlorpromazine HCl 25mg/ml	V		Amp 2ml
94.	Kanamycin sulphate powder for preparing inject 1G	V		RCV
95.	Oxytocin 10 units/ml	V		1ml amp
96.	Penicillin benzathine powder for reconstitution 1.44g	V		RCV 2.4MU
97.	Phytomenadione neonate (vitamin K) 2mg/ml	V		0.5ml amp
98.	Ringer lactate solution for inj B.P. BFB 2324	V		Bag 1 liter
99.	Sodium chloride intraven. infus. B.P. BFB 1324	V		Bag 1 liter
Galenicals, External–Ointments, Creams, Etc.				

100.	Miconazole oral gel	V		Tube 40g
101.	Miconazole nitrate vaginal cream or equivalent 2%	V		Tube 15g
Disinfectants, Sterilizing Agents and Sanitation Items				
102.	Sodium hypochlorite solution bleach 5%	V		Contains 5 litres
Chemist Sundries				
103.	Envelope dispens. plastic 100x105mm MOH&CW design	E		Pack 1,000
Laboratory Equipment				
104.	Methyl. spirit minter/col.>99/5917	E		L

Products to Be Included in ZAPS: Hospital Level

	Products	Units Used in Recording and Reporting	Unit of Issue
Malaria Commodities			
1.	A/L 20/120mg 1x6	Blister of 6 tablets	Pack of 30 blisters
2.	A/L 20/120mg 2x6	Blister of 12 tablets	Pack of 30 blisters
3.	A/L 20/120mg 3x6	Blister of 18 tablets	Pack of 30 blisters
4.	A/L 20/120mg 4x6	Blister of 24 tablets	Pack of 30 blisters
5.	Sulphadoxine/pyrimethamine 500/25mg	Tablets	Bottle of 100 tablets Bottle of 500 tablets Pack of 150 tablets
6.	Rapid diagnostic test (PARACHECK PF)	Test	Kit of 25 tests
7.	Rapid diagnostic test (PAN/COMBO)	Test	Kit of 25 tests
8.	Clindamycin 150mg tablets	Tablet	Bottle of 100 tablets
9.	Quinine 300mg tablets	Tablets	Bottle of 100 tablets
10.	Quinine 600mg/2ml injection	Ampoule	Box of 10 ampoules
Tuberculosis Commodities			
11.	RHZE 150/75/400/275mg	Tablets	Pack of 672 tablets
12.	RH 150/75mg	Tablets	Pack of 672 tablets

Products		Units Used in Recording and Reporting	Unit of Issue
13.	RH 60/30mg	Tablets	Pack of 90 tablets
14.	RHE 150/75/275mg	Tablets	Pack of 672 tablets
15.	RHZ 60/30/150mg	Tablets	Pack of 90 tablets
16.	Streptomycin 1g	Vial	Vial
17.	Ethambutol 100mg tablets	Tablets	Pack of 672 tablets
18.	Ethambutol 400mg tablets	Tablets	Pack of 672 tablets
19.	Isoniazid 100mg tablets	Tablets	Bottle of 1,000 tablets
20.	Isoniazid 300mg tablets	Tablets	Box of 1000
21.	Pyrazinamide 500mg tablets	Tablets	Pack of 672 tablets
22.	Rifampicin 150mg capsules	Capsules	Bottle of 1,000 capsules
23.	Rifampicin 100mg/5ml suspension	MLs	Bottle of 100mls
Nutrition Products			
24.	RUTF	Sachets	Carton of 150 sachets
25.	F-75	Sachets	Carton of 120 sachets
26.	F-100	Sachets	Carton of 90 sachets
27.	CMV	Tin	Carton of 6 tins
28.	Resomal	Sachets	Carton of 120 sachets
Condoms and Contraceptives			
29.	Male condom	Piece	Box of 100 pieces
30.	Female condom	Piece	Pack of 20 pieces
31.	Medroxyprogesterone acetate	Vial	Box of 10 vials
32.	Control pill	Cycle	Pack of 6 cycles
33.	Secure	Cycle	Pack of 6 cycles
34.	Levonorgestril acetate	Set	Box of 10 sets
Diagnostics			
35.	Determine HIV test kit	Test	Box of 100 tests

Products		Units Used in Recording and Reporting	Unit of Issue
36.	Determine chase buffer	Bottle /portion of a bottle	2.5ml bottle
37.	First Response HIV test kit	Test	Box of 30 tests
38.	Kembio	Test	Test
39.	Syphilis test kit	Test	Box of 30 tests
40.	Syphilis chase buffer	Bottle/ portion of a bottle	2.5ml bottle
41.	Pima CD4 POC cartridge	Cartridge	Box of 100 cartridges
42.	Finger stick sample collection kit	Kit	Kit
43.	Pima printer paper	Roll	Pack of 10 rolls
44.	DBS kit	kit	Box of 50 kits
45.	HIV DNA PCR lab request form	Register	Register

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

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