Chapter 3

Health Commodity Management and Logistics System Performance

As decentralization unfolds in Uganda, policy-level changes are influencing how health commodities are managed and consequently the structure of the entire logistics system. There is recognition within the Ministry of Health (MoH) that priority must be given to addressing health commodity availability. In response, the MoH is increasing budgets for essential drugs and reproductive health products and reviewing the procurement of drugs and the role of the central medical warehouse. As a part of this shift, the logistics system for health commodities is moving from a "push" system to a "pull" system (see Section 3.6 for details). Overall commodity availability and logistics system performance are described below.

3.1   Commodity availability

The five-year Health Sector Strategic Plan (HSSP) designed by the MoH outlines the following goals for 2000/01–2004/05:

- Improve access of the population to the Uganda National Minimum Health Care Package (UNMHCP), paying special attention to increasing effective access for the poor, the difficult to reach and the otherwise disadvantaged;
- Improve the quality of delivery of the package; and
- Reduce inequalities between various segments of the population in accessing quality services (MoH, 2000).

Without the appropriate health commodities, health facilities and health care providers cannot offer the population a full range of comprehensive services and products to meet these goals. Ensuring health commodity availability to meet the needs of the clients that it serves is the ultimate goal of a logistics system—to make certain that clients receive the right goods, in the right quantities, in the right condition, delivered to the right place, at the right time, for the right cost.

For this survey, a list of 32 indicator health commodities were selected to represent the 67 commodities on the Uganda Essential Drugs and Health Supplies List (draft May 2002) that prioritizes the vital and essential health commodities required to fulfill the Uganda National Minimum Health Care Package. The MoH identified these specific categories and the commodities selected for this survey to represent the range of health commodities required for offering the HIV/AIDS support services described in Section 4.1 of this report. The list of commodities studied in this survey can be found in Appendix D; they are listed by brand name, generic name, and unit of count (e.g., cycle, tablets, vials). For consistency in data collection, substitutes of other units of count or brands of the same commodity were not considered. These indicator commodities were selected from among seven categories: HIV test kits, contraceptives, drugs to treat opportunistic infections (OI), malarial drugs, drugs to treat sexually transmitted infections (STI), anti-retroviral drugs (ARV), and tuberculosis (TB) drugs.

To establish the performance level of the logistics system in Uganda, the survey team interviewed the staff identified at each facility as the person responsible for commodity management and reviewed logistics reports and storage areas. To correspond with the survey of HIV/AIDS support services in Section 4.1, the health facility staff were asked if they are supposed to manage each of the commodities on the list, that is, whether a facility at their level is supposed to offer the services that require each commodity. According to the MoH's document on health services, all HC IIIs, HC IVs, and district hospitals

should have all of the contraceptives, malaria drugs, and STI drugs selected for this survey in stock and available to clients. The DOTS tuberculosis treatment program, which is currently operational in approximately 20 to 30 districts, requires the availability of TB blister packs. HC IIs will not necessarily maintain stock of the entire list of commodities studied. The survey results indicate that some HC IIIs, IVs, and hospitals reported that they do not manage each of the products that they are supposed to manage, often because of extended stockouts of certain commodities. For the analysis presented here, a stockout occurs when a facility has no supply of a particular brand even though there may be other supplies of other brands for the same method of treatment. The actual reported results for each commodity category are described in detail below. However, in order to calculate a few of the indicators presented later in this chapter, all facilities that are, in fact, supposed to manage each commodity according to the MoH were included in the denominator for calculations.

3.1.1 Commodity management

The essential drug list (EDL) has been revised, and drug price lists are now available from the National Drug Authority (NDA), National Medical Stores (NMS), and Joint Medical Stores (JMS). In October 2001, the MoH developed the National Drug Policy (NDP). The policy aims to "contribute to the attainment of a good standard of health by the population of Uganda through ensuring the availability, accessibility and affordability at all times of essential drugs of appropriate quality, safety, and efficacy, and by promoting their rational use" (MOH, 2000). With the new "pull" system, health facilities will be able to select the commodities they require and can afford from NMS after receiving approval from the health sub-district and district officials. The MoH has defined a minimum requirement for commodities that must be available at each level of the system based on the type of care different levels are expected to provide. The selection of commodities will be simplified with the introduction of a pre-printed order form.

In the area of financing for the health commodities, the Government of Uganda (GoU) remains very donor dependent. Even with large donor inputs, the MoH is still finding it difficult to secure the health commodities needed to fulfill the minimum health care package. The cost of the minimum health care package, as defined by the MoH, is US$2.40 per person. In 2002, the available funds (government and donor) came to US$1.10 per person. The extent of donor funding for each type of commodity is further discussed in this section.

3.1.1.1 HIV test kits

There is a major expansion plan in the area of HIV testing through the Global AIDS Fund, UNICEF, and the Model AIDS Program (MAP). Additionally, Uganda has recently received approval for US$51.6 million in the area of HIV/AIDS from the Global Fund for AIDS, TB, and Malaria (GFATM). Approximately 40 percent of this will be devoted to drug purchases. There are still policy questions to be decided regarding what HIV test kits to use, but plans are well under way in the areas of training and designing distribution systems. Official guidelines and protocols for HIV testing were not yet developed at the time of this survey. Section 4.1.2 on laboratory services presents more information on how the test kits studied are currently being used.

The targets set for 2004/05 in the HSSP include the following:

- Attaining a 25 percent reduction in HIV seroprevalence;
- Increasing and sustaining male condom use from 50 percent to 75 percent in rural areas, and sustaining the rate in urban areas at or above the current rate of 80 percent;
- Providing voluntary counseling and testing (VCT) services for HIV at all health units of HC III level and above;

- Reducing mother-to-child HIV transmission from 25–27 percent to 15 percent;
- Providing counseling and psychosocial support to individuals and families affected by HIV (MOH, 2000).

Table 3.1 shows the percentage of the government and non-government facilities visited that reported managing each of the HIV test kits studied.

Table 3.1 Management of HIV test kits							
Percentage of facilities that reported managing various HIV test kits, by ownership, Uganda Health Facilities Survey 2002							
Ownership	Capillus	Bionor	Determine	Serocard	Hema-strip	Multispot	Number of facilities
Government	4.0	3.7	2.9	3.8	0.1	1.1	183
Non-government	21.0	0.9	8.2	14.9	0.4	3.1	55

During this survey, Capillus and Serocard were found to be the most commonly managed HIV test kits in the non-government facilities, while Capillus, Bionor, Determine, and Serocard were the most commonly managed kits at the government facilities.

3.1.1.2 Contraceptives and condoms

The results of the 2000–2001 Uganda Demographic and Health Survey indicate an increase in the contraceptive prevalence rate from 15 percent in 1995 to 23 percent in 2000 (Uganda Bureau of Statistics and ORC Macro, 2001). During this period, there has been a corresponding increase in unmet need for family planning among married women from 29 percent to 35 percent. Donors (USAID, UNFPA and DFID) provided all the contraceptives distributed in Uganda until the late 1990s. In 2001, the MoH made its first purchase of contraceptives (400,000 units of Depo-Provera). Since 2000, some donors have withdrawn direct support of contraceptive products in favor of Sector-Wide Approach (SWAp) funding, which the MoH is expected to use for contraceptive supply purchases. MoH budgets have been submitted for the use of SWAp funds, but final levels are not yet certain. USAID and UNFPA continue to provide modest funding levels for contraceptives.

Social marketing organizations have also played a substantial role in distributing contraceptives. Both Commercial Marketing Strategies (CMS) (with funding from USAID) and Marie Stopes International (with funding from the German development bank Kreditanstalt für Wiederaufbau) have distributed contraceptives in Uganda. Commodities that are supplied directly to commercial marketing programs are included in the calculations for nationwide requirements. In theory, contraceptive needs should be in full supply (i.e., there should be sufficient quantities of contraceptives in country so that no client request will go unmet). However, contraceptive security is dependent not only on donor funding and commodities but also on an operational forecasting and procurement mechanism and effective commodity management.

The HIV/AIDS program of the MoH primarily manages condoms. Following a national stockout of condoms in 1999, there was a large purchase of condoms with World Bank funds in 2000. These condoms arrived in 2001 and distribution to the districts was completed in July 2002. Additional condoms have been ordered by the MoH and the MAP project, funded by the World Bank, and are due to arrive in early 2003. Additional purchases of 30 million condoms per year will be made by the social marketing programs run by the CMS project and by Marie Stopes International. Given the current condom projections, and delays in delivery of donated condoms, there is concern about condom availability after 2003.

In 2000–2001, there was a shortage of contraceptives, especially Depo-Provera. The Annual Health Sector Performance Report 2000–01 (AHSPR) states that management of logistics and supplies improved during the year but also identified a need to streamline logistics management for family planning and reproductive health (MoH, 2001). This program has been identified as a new priority area for year 2 of the HSSP.

Out of the 238 facilities visited during this survey (government and non-government), 66 percent of facilities reported that they manage Microgynon oral pills, 90 percent manage condoms, and 82 percent manage Depo-Provera. These three methods make up the majority of the method mix in Uganda.

While almost all government facilities reported managing these three contraceptive methods, the non-government facilities visited were managing them at much lower rates (Table 3.2). The low rates for Microgynon may be due to the fact that Lo-Femenal, a combined oral contraceptive pill identical to Microgynon, was also found in many facilities, and many service providers use the two brands interchangeably. In addition, some of the non-government facilities visited were faith-based and were therefore less likely to stock contraceptives.

Table 3.2 Management of contraceptives and condoms				
Percentage of facilities that reported managing Microgynon oral pills, condoms, and Depo-Provera, by ownership, Uganda Health Facilities Survey 2002				
Ownership	Microgynon	Condoms	Depo-Provera	Number of facilities
Government	72.7	98.0	87.9	183
Non-government	41.4	61.5	63.4	55

3.1.1.3   Drugs to treat opportunistic infections

Opportunistic infection (OI) drugs encompass a broad range of commodity types and many of the drugs are used to treat multiple types of infections. In practice, OI drugs are given both as treatment and as prophylaxis for people living with HIV/AIDS. There is a large overlap in use between STI and OI drugs. For this survey, fluconazole, co-trimoxazole and acyclovir were identified as indicators for OI drug management.

Of the 238 facilities visited during this survey (government and non-government), 9 percent reported that they manage fluconazole, 95 percent manage co-trimoxazole, and 6 percent manage acyclovir.

Table 3.3 shows the percentage of government and non-government facilities visited that manage each of these commodities. Co-trimoxazole is the most common drug, while fluconazole and acyclovir are managed by a much smaller proportion of the facilities visited.

Table 3.3 Management of drugs to treat opportunistic infections				
Percentage of facilities that reported managing fluconazole, co-trimoxazole, and acyclovir, by ownership, Uganda Health Facilities Survey 2002				
Ownership	Fluconazole	Co-trimoxazole	Acyclovir	Number of facilities
Government	6.9	94.2	1.7	183
Non-government	17.8	96.9	18.8	55

3.1.1.4 Malarial drugs

Malaria drug needs represent 50 percent of health center visits in Uganda (DISH Distribution of Stock and Drug Use Survey, May 2002). Resistance to present chloroquine treatments is increasing and the treatment protocol is changing in Uganda. These changes have made recent quantification exercises difficult. Chloroquine-based treatment drugs are included in the essential drug kits; however, sulfadoxine-pyrimethamine (SP)-based drugs, recommended internationally as the next line of treatment, are not. SP-based drugs will be distributed with the kits in July 2002.

According to the AHSPR, treatment failure was approximately 30 percent for chloroquine and 10 percent for SP. The National Anti-Malaria Drug Policy now suggests that the first line of treatment include a combination of chloroquine and SP. As this new policy is implemented, DFID and Ireland AID will pay for a one-year supply of chloroquine and SP. NMS currently offers SP drugs for sale, but these have not consistently been available in public sector health centers. USAID supports the private sector sale of anti-malaria drugs and is providing a malarial expert to work with the MoH. The GoU has requested US$45.1 million from the GFATM to support their work to fight malaria and TB.

The targets for 2004/05 set in the HSSP for malaria include the following:

- Increasing from 30 percent to 60 percent the proportion of the population that receive effective treatment for malaria within 24 hours of the onset of symptoms;
- Raising to 60 percent the proportion of pregnant women who receive protection against malaria through intermittent presumptive treatment with SP;
- Reducing malaria case fatality at the hospital level from 5 percent to 3 percent (MoH, 2000).

Of the 238 facilities visited during this survey (government and non-government), 98 percent reported that they manage chloroquine, and 94 percent reported that they manage sulfadoxine-pyrimethamine (Table 3.4).

At the time of the survey, almost all of the health facilities visited reported that they manage both of these drugs.

Table 3.4 Management of malarial drugs

Percentage of facilities that reported managing chloroquine and sulfadoxine-pyrimethamine, by ownership, Uganda Health Facilities Survey 2002

Ownership	Chloroquine	Sulfadoxine-pyrimethamine	Number of facilities
Government	98.3	94.9	183
Non-government	96.9	91.1	55

3.1.1.5 Drugs to treat sexually transmitted infections

Previously, sexually transmitted infection (STI) drugs were provided in STI kits using World Bank funding, but these funds were entirely spent by 2000. The last shipment of STI supplies funded through the World Bank STI project was received two years ago. STI drugs are available through the private sector pharmacies and retail outlets, and some health care providers choose to procure them independently in order to have them available to clients. Alternatively, providers send clients to the private sector to procure the drugs after diagnosis.

One of the HSSP's first-year targets was to procure and distribute STI drugs. At the time of the 2000/01 Performance Report, STI drugs had not been procured because the available funds had been reallocated to purchase essential drug kits. The HSSP set a goal for the "effective management of STIs and OIs provided in all health units" by 2004/05.

For this survey, ciprofloxacin, benzathine penicillin, doxycycline, and metronidazole were selected as indicators for STI management. Of the 238 facilities visited during this survey (government and non-

government), 63 percent reported that they manage ciprofloxacin, 86 percent manage benzathine penicillin, 67 percent manage doxycycline, and 95 percent manage metronidazole (see Table 3.5).

Table 3.5 Management of STI drugs

Percentage of facilities that reported managing ciprofloxacin, benzathine penicillin, doxycycline, and metronidazole, by ownership, Uganda Health Facilities Survey 2002

Ownership	Ciprofloxacin	Benzathine penicillin	Doxycycline	Metronidazole	Number of facilities
Government	61.2	84.1	64.5	96.1	183
Non-government	70.0	92.5	73.2	91.5	55

At the time of the survey, almost all facilities visited reported that they managed STI drugs. However, as noted in the Introduction and below in Section 3.1.2, stockouts and stock availability, even though STI drugs are supposed to be managed by the facility, they are not necessarily widely available at the health centers throughout Uganda.

3.1.1.6   Anti-retroviral drugs

The AHSPR indicates that HIV seroprevalence at sentinel sites and STI treatment clinics continue to decline. In addition, the report states that the GoU has negotiated a reduction in the prices for anti-retroviral drugs in order to increase access to these drugs. According to the AHSPR, the community is pressuring the government to ensure that anti-retroviral drugs (ARV) are both available and affordable. In response, the MoH has formed a committee to design a strategy to oversee the expansion of outlets for these drugs. In addition to being costly, launching a program for offering ARV treatment requires significant capacity in laboratory diagnosis of HIV and monitoring adverse reactions, plus counseling services. These issues will need to be addressed before an ARV treatment program can be widely implemented. At the time of the survey, only one of the non-government facilities visited had an ARV in stock (nevirapine). There are facilities in the country known to provide ARVs; by chance none were selected in the sample.

3.1.1.7   Tuberculosis drugs

Tuberculosis (TB) drugs are managed through the MoH TB Program. Drugs to treat TB are donated by the Stop TB Program and German Leprosy Relief. Currently, the TB program operates as a vertical system and delivers drugs directly to their regional coordinators. Regional coordinators distribute the TB drugs to local distributors. This vertical system is effective but inefficient in terms of leveraging MoH resources used for distributing other health commodities. The MoH is looking at ways to integrate deliveries with other medical supplies.

According to the AHSPR, TB case notification has been increasing at 8 percent per year since 1994. The AHSPR also states that the increase in TB could be primarily attributed to the effect of the HIV/AIDS epidemic and to an improvement in the capacity of the health services to detect cases of TB. Half of the new cases are said to be related to HIV infection. Given this linkage, management of these two diseases will need significant coordination.

For adequate control of TB, the treatment drugs should be maintained in full supply to meet all the needs of the population. Currently, TB drugs are packed in bulk bottles and blister packs. The blister packs are used by facilities that provide DOTS treatment for TB. DOTS is currently being implemented in about 20 to 30 districts, only a few of which were sampled for this survey. Management and availability of the blister packs is irregular because they have spread through the health care system, even to districts that have not yet officially launched the program. According to the HSSP, DOTS will be expanded to all

56 districts with a goal of 80 percent case identification by 2004/05. This will be done at a controlled pace given the time needed to train providers and "observers" (MoH, 2000).

Forecasting for TB drugs requirements is based on the number of reported cases. For each new reported case, a six-month supply of drugs is reserved and sent to the district that will manage the treatment. The quantities of needed blister packs will increase with the spread of the DOTS program and in light of the 8 percent annual increase in case notification mentioned above. The current supply is anticipated to last until early 2003. The next cycle of drugs will be paid for by the MAP project, and they are expected to continue to procure TB drugs for the next few years. As mentioned above, the GoU has requested US$45.1 million from the GFATM to support both TB and malaria programs.

Due to inconsistencies in the data collection for TB drugs, the availability of first treatment blister packs was taken as an indicator for TB drug availability and closely mirrors the percentages found of ethambutol, isoniazid and rifampin. Table 3.6 shows the percentage of facilities visited that reported managing the first treatment blister packs. Of the 238 facilities visited during this survey, only 35 percent reported that they manage TB blister packs.

As seen in Table 3.6, on the day of the visit, government facilities were managing first treatment blister packs at a slightly higher rate than non-government facilities.

Table 3.6 Management of TB drugs		
Percentage of facilities that reported managing tuberculosis drugs, by ownership, Uganda Health Facilities Survey 2002		
Ownership	TB blister pack	Number of facilities
Government	39.3	183
Non-government	21.4	55

3.1.1.8 Essential drug kits

Following Uganda's civil war, the Danish aid organization DANIDA began supplying essential drugs in pre-packaged, fixed-quantity kits in 1987. For the last 15 years, most essential drug supplies for lower level government clinics have been supplied through these kits. Originally, these were funded entirely by DANIDA, and are now funded 50 percent from DANIDA and 50 percent from MoH funds. The kits are currently "pushed" to the health centers by way of the district warehouses. The National Medical Stores (NMS), which charges ten percent of the commodity value to cover the handling and distribution costs, distributes the kits. The number of kits a facility receives is based on the population it serves. Each kit was designed to cover 800 cases/patients and each distribution was intended to meet a health facility's commodity needs for three months. In reality, facilities run out of many of the products before receiving resupply. The purchase of additional essential drugs from the NMS is possible. These supplemental orders depend heavily on available funds. Furthermore, because drugs are in short supply, it is suspected that many clients are referred to private pharmacies to purchase their commodities.

As stated above, the estimated cost for the basic health care package is US$2.40 per person. Current drug supplies from the MoH and donors are currently estimated at only US$1.10 per person. As a result, essential drugs are in short supply and will continue to be rationed in the future. The kits are being phased out as the public sector transitions to a pull ordering system for health commodities. The last shipments of essential drug kits were scheduled to go to the health facilities in September/October of 2002. As of January 2003, facilities will place orders with NMS based on funds allocated to each facility. Each facility will use a pre-printed order form and default orders will be available until training is completed at the local level. The GoU recently increased its current funding available for essential drugs at the HC II and HC III level by 34 percent. This is encouraging, but will not cover all the resources needed for commodity security at the facility level.

Availability of essential drug kits was assessed in a smaller sample of facilities (21). The contents of these kits are listed in Appendix D (Health Commodities Surveyed). Of this small sample, 75 percent

of the facilities visited had received essential drug kits in the last three months (HC IV, III and II). This is relevant to the results of this survey because the survey was carried out in the middle of a nationwide distribution of the kits. This fact may result in slightly inflated drug availability rates because of the number of the facilities visited that had just received a shipment of drugs in the month prior to the survey. This should be taken into consideration when readers review the drug availability and stock status results from this survey and when comparing these results to any future drug availability surveys.

3.1.2   Stockouts and stock availability

Logistics managers strive to ensure a consistent and reliable supply of the products that they require to serve their clients. Health commodity security is achieved when every client is able to chose, obtain and use quality health products whenever she or he needs them. A key indicator to measure whether a logistics system has achieved this goal is stockout rates or, the opposite, stock availability rates. When facilities experience stockouts, they are unable to serve clients with a comprehensive range of health commodities or services. Because stock availability is the ultimate measure of logistics system performance, this indicator also gives an idea of the overall effectiveness and efficiency of the entire system, from forecasting and procurement to distribution, storage, and inventory management.

At each facility visited for this survey, facility staff were interviewed and stock records reviewed to collect information on stock availability on the day of the visit and for the six-month period prior to the survey from December 1, 2001 to May 31, 2002. A six-month period is reviewed in order to capture a more accurate picture of stock availability at each facility and to allow for seasonal trends in consumption (e.g., malarial drug use increases during the rainy season) and availability (e.g., periodic shipments of supplies).

Figure 3.1 shows the results of this review of stock records for a sample of the commodities studied. The graph shows the percentage of facilities that experienced at least one stockout of each commodity during this six-month period for all facilities combined (all levels, all districts), shown separately for government and non-government facilities.

In the last six months, a larger percentage of facilities had a stockout of Microgynon than the other contraceptives studied. Only around 20 percent of all facilities experienced a stockout of condoms or Depo-Provera during this period. Over 50 percent of government facilities experienced a stockout of co-trimoxazole, 29 percent of chloroquine, 46 percent of benzathine penicillin, and 50 percent of the TB blister pack. For Microgynon, condoms, and TB blister packs, the non-government facilities had a higher frequency of stockouts than government facilities. For the essential drugs distributed through the kits (co-trimoxazole, chloroquine, and

Figure 3.1 Stockouts over the six-month period December 1, 2001–May 31, 2002

UHFS 2002
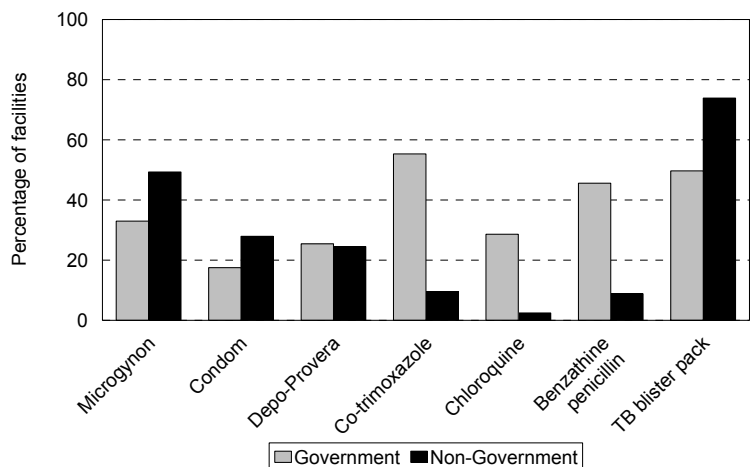
benzathine penicillin), government facilities were much more likely to experience a stockout than non-government facilities. In theory, both the contraceptives and TB drugs are kept in full supply to meet the needs of all clients; all hospitals, HC IVs, and HC IIIs should have co-trimoxazole, chloroquine and ben-

zathine penicillin in stock. As we can see from this graph, this is not happening in practice. Each stockout that takes place represents clients who will not receive the treatment that they were seeking at the health care facility.

In the HSSP, the MoH includes this same indicator—percentage of facilities without any stockouts for essential drugs (for the MoH, these drugs are chloroquine tablets, co-trimoxazole tablets, measles vaccines, and ORS sachets, with SP and Depo-Provera also monitored)—in a given time period. This should be collected through the health unit monthly report and will be monitored monthly and quarterly, with a goal of 90 percent of facilities without a stockout during a given time period by 2005. Figure 3.1 shows that there is much work to be done in reducing the occurrence of stockouts.

For a different look, stock availability on the day of the visit reflects whether the facility could offer a service and the related commodity to the next client (or clients) who visit a health facility. This indicator simply provides a snapshot in time and does not represent continuous availability over time. For example, the facility may have just used its last available injection, tablet, or test kit of a given commodity on the client who was seen before the data collection team arrived at the facility. Alternatively, the facility might ration commodities and offer them to only the most critical clients, in order to avoid a total stockout. Or the facility may have just received a shipment of commodities the week before the survey team's visit and therefore the facility appears to have an adequate supply of commodities. All of these scenarios are possible, and the data on stock availability at the time of the survey visit must be interpreted cautiously. In fact, as previously mentioned, the survey team discovered that a nationwide distribution of essential drug kits was underway at the time of the survey.

To assess this indicator, the survey teams looked at stock records and did a physical inventory to assess stock availability on the day of the visit at each facility. Table 3.7 shows the results of this review for a sample of the commodities studied, broken down by government and non-government.

Table 3.7 Stock availability on day of survey

Percentage of facilities in which each commodity was available on the day of the survey among those managing the commodities, by ownership and facility type, Uganda Health Facilities Survey 2002

Ownership/ facility type	Microgynon	Male condom	Co-trimoxazole	Chloro-quine	Sulfadoxine/ pyrimethamine	Cipro-floxacin	Benzathine penicillin	TB blister pack
Government								
District hospital	80.9	100.0	83.9	100.0	96.1	49.4	68.5	80.7
HC IV	91.1	100.0	72.5	94.1	76.4	24.9	58.0	92.3
HC III	76.4	87.1	70.2	87.7	72.4	41.6	56.2	89.6
HC II	17.1	31.1	54.7	66.0	30.8	5.9	16.5	*
Total	65.9	77.3	64.6	81.6	64.3	33.5	46.5	89.6
Non-government								
HC III	89.0	98.3	96.9	100.0	78.9	84.6	85.8	*
Total	84.6	91.5	90.5	93.3	69.2	77.2	79.4	91.2

Note: Facilities without stock records are excluded. An asterisk indicates that a figure is based on too few cases to present and has been suppressed.

The availability of Microgynon, co-trimoxazole, ciprofloxacin, and benzathine penicillin was substantially lower at the government facilities than at the non-government facilities. Overall, commodity availability rates were found to be better at the non-government facilities on the day of the visit.

3.1.3 Stockout duration, December 1, 2001–May 31, 2002

As mentioned above, the survey looked at stockouts of the commodities studied both on the day of the survey team's visit and during the six-month period prior to the survey. However, this data does not yet give a measure of the severity of the stockout problem during this period or a means for differentiating between commodities stocked out for a short period of time versus those stocked out for long periods of time. An assessment of the average duration of those stockouts that occurred during that period provides us with a more in-depth look at how long the stockouts lasted and the probability that a client who sought health care during this time period would not have received the commodity or commodities needed.

Stockout duration data at non-government facilities was insufficient for reporting results. Facilities without stock records are excluded from the calculation since duration data was not available. Consequently, the results are limited and are not nationally representative, although the average duration of stockouts for all government facilities provides an interesting picture. Microgynon was out of stock for an average of 75 percent of this six-month period, while condoms and Depo-Provera were stocked out for an average of approximately 45 percent of this period. Chloroquine and SP fared much better at an average of 22 percent and 34 percent of the time, respectively, while ciprofloxacin and benzathine penicillin fared much worse at an average of 77 percent and 60 percent of this time period, respectively. Co-trimoxazole was out of stock for an average of 31 percent of this period. It is clear that the stockouts that were recorded in facilities with stock records available were significant in impact because they were stocked out for considerable lengths of time.

3.1.4 Record keeping in relation to stockouts

When assessing the number and duration of stockouts during the survey, the survey teams also recorded whether the stock managers were keeping stock cards for the commodities managed and whether those stock cards were up to date on the day of the visit. This provides an indicator of the quality of record keeping and how well stock managers are actively monitoring and managing their inventory to avoid stockouts and stock imbalances that may result in expirations. In the public sector, the majority of facilities experiencing a stockout of contraceptives between December 1, 2001 and May 31, 2002 did not have an updated stock card on the day of the survey. Although the rates for other products are lower, it is clear from the survey results that many facilities that experience stockouts are not keeping their stock cards up to date. Information management will be discussed further in Section 3.3, Health Management Information System.

3.1.5 Reasons for stockouts

As seen above, widespread stockouts pose a chronic threat to the availability of services and quality of care. In order to better understand the causes of stockouts within the Ugandan public health commodity logistics system, the survey also attempted to qualify the reasons why the stockouts discussed above occurred. The survey instrument offered a choice of seven options to the respondents for the reason why the stockout occurred:

1. Higher level facility did not send enough products
2. Higher level facility did not send products in time
3. Increase in consumption
4. Did not request the correct amount
5. Did not request products at the correct time
6. Insufficient resources (financial, human or transportation, specify)
7. Other reasons

For Bionor HIV test kits, all responding facilities reported that the higher level did not send products in time and that insufficient funds were the main reasons cited for stockouts during this time period. The most commonly cited reason for stockouts for Microgynon and condoms was that the higher level did not send the products in time. For Microgynon, condoms, and Depo-Provera some facilities reported that the reason for stockouts was insufficient resources (financial, human, or transportation). For co-trimoxazole, chloroquine and SP, ciprofloxicin, benzathine penicillin, metronidazole, and doxycycline, again, the main reason given was that the higher level did not send the products in time. Most of these drugs are included in the essential drug kits that are shipped from the higher levels at regular intervals. For TB blister packs, reasons included that the higher level did not send the products in time or did not send enough products. Overall, the most common reason cited was that the higher level facility did not send products in time, most likely because of stockouts or low stock availability at higher-level facilities, as seen in this chapter.

3.2   Inventory management

3.2.1   Stock status

An assessment of the stock status of the commodities studied is an important complement to the stockout and stock availability rates presented above. Stock status offers an estimate of how long the commodities in stock will last to serve clients at the facility. Health facility staff can ration commodities in order to avoid a stockout; however, by rationing, or selectively offering commodities according to certain conditions, all client needs will not be met and the logistics system has not met its goal. Reviewing stock status provides a more profound picture of how commodities are being managed through the logistics system and also reflects upon the efficiency of the forecasting, procurement, distribution, storage, and inventory control processes. All of these components of the logistics system must be functioning effectively and efficiently in order to ensure that stock managers can maintain adequate stock levels. This indicator does not, however, highlight which component of the logistics system is not functioning properly, resulting in stock imbalances.

To ascertain whether stock levels of health commodities are adequate, an indicator on the average number of months of stock on hand is calculated. This indicator provides this data for a particular point in time (i.e., the day of the survey team's visit) and can identify situations where commodities are over-stocked, which could lead to commodity expiration and wastage, and situations where commodities are stocked at low levels which could result in rationing of commodities or stockouts. To calculate this indicator, data collectors carried out a physical inventory of the commodities studied and reviewed the stock ledger or stock cards to gather historical data on the quantities consumed by clients or issued from one level of the system to another during the six-month period prior to the survey. The average monthly consumption or issues rates were calculated and then compared to the physical inventory to establish the number of months of stock available to be dispensed to clients or issued to other facilities on the day of the visit. Record keeping is obviously an important key to inventory management and this will be discussed in the next section.

The draft guidelines for drug management (draft May 2002) indicate that all health commodities will be managed according to the same inventory control procedures. The Health Management Information System (HMIS) has distributed written instructions regarding how to assess the adequacy of current stock levels. For all levels of the system, the minimum amount of stock that managers should keep in stock, and which indicates when to place an order, is two months' consumption. The maximum amount of stock, or the level that facilities' stock on hand should reach when an order is placed but should not exceed, is five months' consumption. These inventory control procedures have not yet been officially implemented.

Figure 3.2 shows the average number of months of stock on hand at each level for government facilities. It is clear that, on the day of the visit, two of the contraceptives studied, Microgynon and condoms, are significantly overstocked, with one year or more worth of stock at all of the service delivery points (SDPs). For condoms, these high stock levels are likely due to the fact that a one-year supply of condoms was distributed to facilities between March and July, so they were just arriving during this survey. For most of the remaining commodities, the stock levels are low at the higher levels of the system and higher at

Figure 3.2 Stock on hand (government facilities)

Note: Facilities without stock records are excluded.

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the lower levels of the system, which is where they need to be to serve clients. Most of these commodities are stocked according to the proposed inventory control levels, with the exception of co-trimoxazole, which is understocked at all levels, and TB blister packs, which are overstocked at the HC III level. It is important to reiterate that a wave of distribution of the essential drug kits began immediately prior to the survey and was ongoing during the survey. This distribution may affect the results in some of the districts visited that had already received their shipments and therefore had adequate stock of these commodities by the time of the survey. On the other hand, those districts that had not yet received their scheduled shipment of the kits were running very low on supplies in anticipation of their shipments.

3.2.2 Expired products

Not only does effective inventory management reduce the chance of experiencing stockouts or stock imbalances, it also helps prevent losses through expiration. Using first-to-expire, first-out (FEFO) inventory management, where the stock that will expire first is placed in the front of the shelf to be used first, commodity managers can better monitor expiration dates to ensure that products are used before they expire. This can also help to ensure that expired products are not distributed to clients but rather are removed from inventory and disposed of properly. Managers may also transfer excess supplies that they recognize will not be used at their facility before expiring to other facilities who may be able to use them faster. Because expired products can no longer be offered to clients, they can contribute to the threat of stockouts or stock imbalances if they are not properly managed, separated from usable stock in a timely manner, and replaced with usable stock. Furthermore, most health care systems in developing countries operate with limited funding; health commodities are precious and rarely in full supply. Therefore, losses of otherwise usable commodities due to expiration should be avoided at all cost. As with other indicators noted above, reviewing the quantities of expired stock provides another measure of overall logistics system performance, though it will not highlight the causes or the components responsible for any deficiencies in performance. Some amount of commodity loss to expiration is expected in any logistics system, but large quantities should be investigated.

Because of a lack of available historical data on expired products, the survey teams counted the total amount of expired commodities that were either on the shelf with usable commodities or anywhere inside the storeroom on the day of the visit. No rates can be calculated from this data, but there were several cases of high amounts of expired commodities worth noting. In many cases, the expired products represented specific cases; for example, there was a total of 1,223,888 expired cycles of Microgynon. The

large majority (1,219,362 cycles) were found at a non-governmental HC IV in Luwero district and a smaller amount in a government HC III in Nebbi district. A total of 82,257 expired condoms were found in different districts, at different levels, mostly in the public sector (63,313). Further, 18,943 expired condoms were found at the HC III level at NGO facilities visited in Rukungiri district, and 805 expired Bionor HIV test kits were found. Government facilities in Lira district accounted for the majority of these expired drugs (663). For STI drugs, a total of 2,450 expired vials of benzathine penicillin were found at government and non-government facilities at various districts and levels of the system.

3.3 Health Management Information System

Valid and timely information can greatly improve stock managers' ability to identify, forecast, and procure sufficient quantities to meet the needs of the facilities in the supply chain and ultimately the needs of the clients at service delivery points. By making decisions based on the current stock status and projected needs based on past consumption trends, stock imbalances can be avoided. The essential data items needed for such decisions include stock on hand, the rate of consumption for each product, and losses and adjustments. This data can be routinely collected through a logistics management information system (LMIS) which is the engine of a logistics system.

In Uganda, this information is collected through the Health Management Information System (HMIS). The HMIS was recently redesigned by the MoH to include forms that will enable all levels of the system to track commodity availability. The new forms include stock cards, records of issuing, requisition and issue vouchers, and a form for revising the average monthly consumption. Information from individual facilities is entered and consolidated at the district level and sent to the MoH office in Kampala. The AHSPR reports an improvement in the timeliness and completeness of HMIS reporting in the last year. It is the intention of the MoH to use the HMIS system to track commodity availability at the health sub-district level and eventually at the facility level. However, the monthly report does not contain information regarding the stock status, only if the facility is stocked out. The system is automated at the central level with plans to automate at the district level.

The instructions for the HMIS forms require that any commodity which is kept for more than one week are to be tracked using a stock card. The stock card includes information on where the commodities were issued to or from, the quantity issued, and the balance on hand. Of the 238 warehouses and service delivery points visited during the survey, 79 percent reported that they have the stock cards and are using them. Figure 3.3 compares the difference in the reported use of stock cards for commodity management between government and non-government facilities.

Figure 3.3 Reported use of stock cards for commodity management
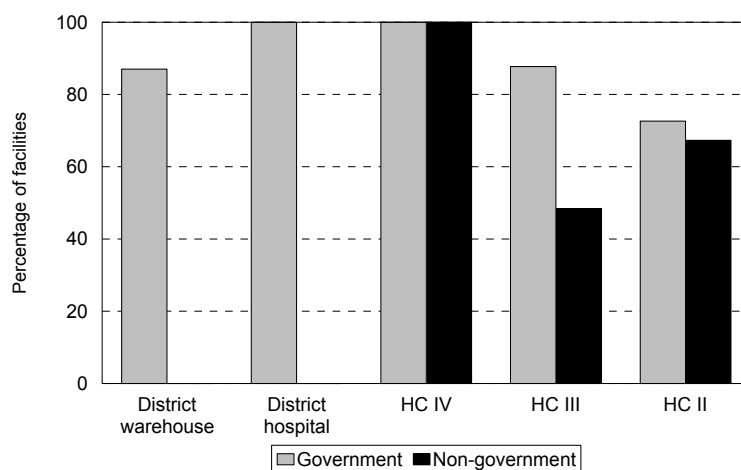
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At the district hospital and HC IV level, all of the facilities visited reported using stock cards to manage their inventory. However, at the HC III and HC II levels, fewer facilities reported using stock cards, and government facilities reported using stock cards more often than the non-government facilities visited.

In reality, among all facilities, 45 percent were found to be using stock cards for at least one of the contraceptives studied; 75 percent were found to be using stock cards for at least one of the essential drugs for treating OIs, malaria, and STIs; and 28 percent were using stock cards for at least one of the TB medications studied. Figure 3.4 shows the difference between government and non-government facilities by commodity category. Government facilities maintain stock cards at a higher rate than non-government facilities, and the results show that stock card use is more common at the higher levels of the system. Facilities are much more likely to maintain stock cards for one of the essential drugs than for contraceptives or TB medications.

Figure 3.4 Actual use of stock cards by commodity category
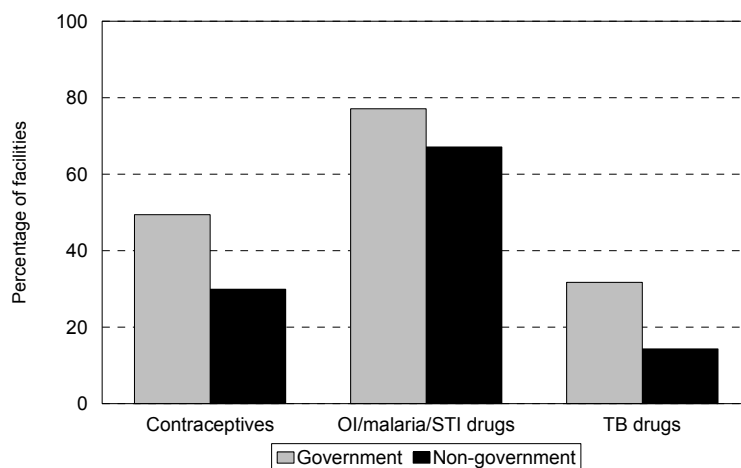
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Accurate data on the current stock status is vital for effective decisionmaking at every level of the system. The survey collected information regarding the accuracy of logistics data at the facility level. For each commodity studied, the quantity of stock on hand was recorded by reviewing the stock cards and by taking a physical stock count. A comparison of the overall average percent discrepancy between the stock card and the physical count for all facilities surveyed revealed that there was a median discrepancy of 84 percent for contraceptives, a 40 percent median discrepancy for OI/malaria/STI drugs, and a 92 percent median discrepancy for TB drugs. There are no consistent patterns in the discrepancies found between the different levels of the system; however, it is clear from the summary data presented in Table 3.8 that the general quality of the data recorded on stock cards in the facilities surveyed is poor, particularly for TB drugs and contraceptives.

Table 3.8 Data quality: median percent discrepancy

Median percent discrepancy between the quantity of stock available for distribution as recorded on the stock records versus the count from a physical inventory of those facilities that manage contraceptives, essential drugs used to treat OIs, malaria, and STIs, and TB drugs studied and that have stock records available, by ownership, Uganda Health Facilities Survey 2002

Ownership	Contra-ceptives	Number of facilities stock-ing contra-ceptives	OI/malaria/ STI drugs	Number of facili-ties stocking OI/malaria/ STI drugs	TB drugs	Number of facilities stocking TB drugs
Government	84.0	81	40.8	129	91.3	35
Non-government	83.0	10	24.9	35	536.0	6

Note: Facilities without stock records are excluded.

3.4   Training in logistics and human resources

Health workers in Uganda begin their training for their assignments in pre-service nursing, pharmacy, medical, and other public health schools. This usually includes a module on management, including record keeping, financial management, facility management, and supplies management. Staff responsible for managing health commodities need to be trained in how to maintain stock cards, how to calculate order quantities and place orders, and how to fill out records and reports. These activities, when done accu-

rately, help to ensure proper stock management and to give an accurate picture of consumption rates and stock on hand at each facility. Without well-trained staff, facilities run the risk of poor record keeping and inaccurate ordering, which in turn can lead to stockouts, overstock, and expired products.

In-service training can be carried out periodically to update staff on new developments, revised procedures, or new technologies. In 1999–2000, the Ugandan MoH carried out a nationwide training on planning and management for 100 heads of health sub-districts. The MoH also trained health workers in 12 districts on the recently revised HMIS in early 2002. This training included how to fill out the HMIS reporting forms and procedures for reporting health information.

When conducting the commodity management portion of the survey, the survey team interviewed either the staff in charge of managing the commodities or, if not available, the person acting as the in-charge on the day of the visit. In order to gather information on whether the staff interviewed about commodity management on the day of the facility visit had received any training in logistics management, the instrument included questions on when and what specific training they received. Respondents were also asked how they learned to complete the logistics forms used at this facility, either during a logistics training, during on-the-job training, self-learned on the job, or other forms of training. However, these indicators do not provide insight into the quality of the training provided nor the trained staff's ability to apply the material taught nor whether performance has improved as a result of the training.

Overall, 32 percent of all facilities had at least one person available on the day of the visit that had received training in logistics management (e.g., ordering, receiving supplies, and inventory management) (see Table 3.9).

Table 3.9 Availability of staff trained in logistics

Percentage of facilities with at least one staff member trained in logistics available on the day of the survey, by facility type and ownership, Uganda Health Facilities Survey 2002

| Facility type	Government	Number of government facilities	Non-government	Number of non-government facilities
District warehouse	79.6	12	NA	NA
District hospital	55.4	8	NA	NA
HC IV	23.5	16	22.2	9
HC III	30.8	86	20.1	31
HC II	26.5	61	50.0	15

NA = Not applicable

There was no clear distinction between the percentage of government versus non-government facilities that had at least one person available on the day of the visit who had received training in logistics for HC IVs. However, for HC IIs, twice as many of the non-government facilities had a trained staff person on the day of the visit. For all types of facilities except the district warehouses and half of the district hospitals, most facilities did not have trained staff in charge of commodity management.

Of all the stock managers inter-viewed, 37 percent reported that they learned how to complete the forms used at the facility during a logistics training, while 46 percent reported learning during on-the-job training, 33 percent reported self-learning on the job, and 12 percent reported that they learned elsewhere. Figures 3.5.1 and 3.5.2 show the differences between government and non-government fa-cilities by facility type.

Of the government facilities, a greater proportion of district hospital and warehouse staff received formal training in logistics. However, HC IV and HC III staff were most likely to have learned through on-the-job train-ing, and HC II staff were more likely to have learned how to complete the logistics forms through on-the-job training or self-learning.

Figure 3.5.2 Training in completing logistics forms (non-government facilities)

Note: Respondents could choose more than one answer.　　　UHFS 2002
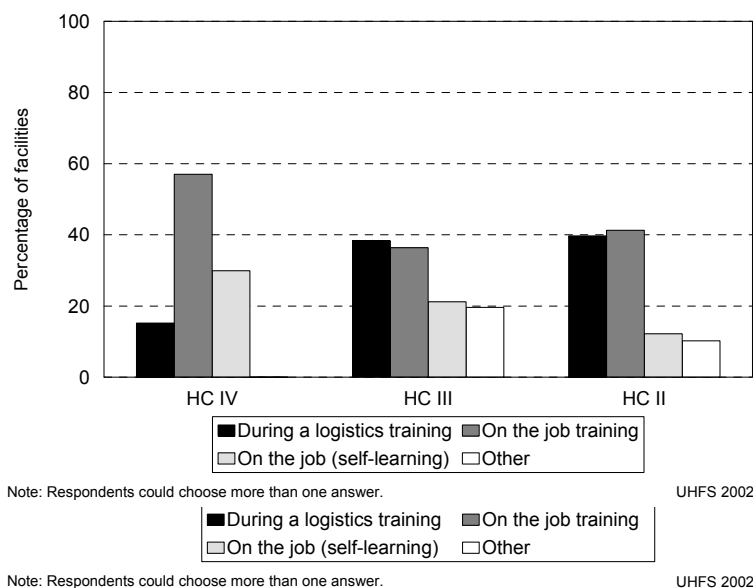
A common concern expressed by some of the facility staff interviewed was that there were limited opportunities for in-service training for maintaining skill levels. Other respondents expressed that some skills were weak because frequent supply shortages meant that they were not often applying the skills learned.

3.5   Supervision in logistics

Supervision of the logistics system and the staff who manage it is necessary to ensure that the system is running properly, to anticipate the need for adjustments to the system, and to improve staff performance and quality of care. Effective supervision can help avoid problems or resolve them quickly. Supervision visits can also be an opportunity for monitoring and evaluating HMIS and on-the-job training of staff.

In Uganda, supervisory systems for the public sector health care system are in place and routine schedules exist. The MoH's "Indicators for Monitoring Health Indices" includes an indicator for the aver-age number of supervision visits conducted during a quarter, which should be reported on the Health Unit Quarterly Report. According to the national guidelines, every health facility should receive a monthly supervisory visit from district and/or health sub-district staff.

The survey results give an estimated measure of the frequency of supervisory visits and the types of logistics issues addressed during supervision. Each respondent for the commodity management section of the survey was asked when he or she received their most recent supervisory visit. They were also asked what was done during the visit, including the following activities: supplies checked, stock cards checked, expired stock removed, HMIS reports checked, on-the-job training/coaching, or other activities.

Overall, 85 percent of the government facilities had had a supervisory visit in the past three months and 58 percent had received a supervisory visit within the past month. Figures 3.6.1 and 3.6.2 show the timing of the most recent supervisory visit for government and non-government facilities by level.

Although supervision is reportedly taking place at the majority of facilities, supervision is less frequent at the higher levels of the system, including the district warehouses, while the majority of HC IIs and HC IIIs in both the government and non-government sectors had received a supervisory visit in the month prior to the survey.

Figure 3.6.2 Most recent supervisory visit (non-government facilities)
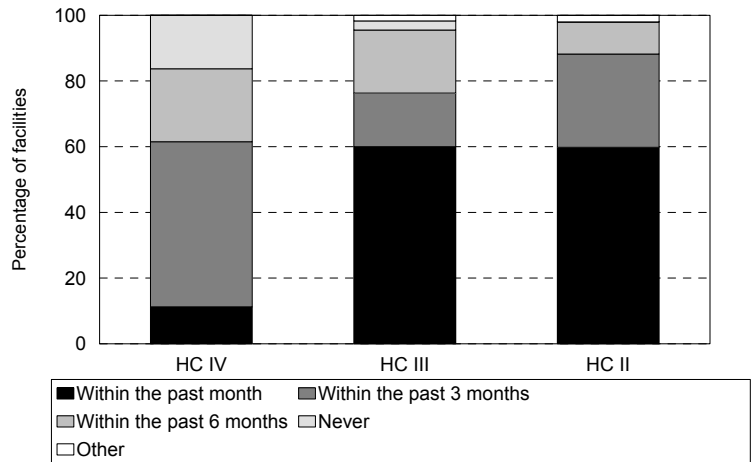
Of the logistics-related activities carried out during supervision, two are highlighted in Figures 3.7.1 and 3.7.2: whether supplies were checked and whether stock records were checked. For both government and non-government facilities, both supplies and stock cards were checked during the majority of recent supervisory visits at government facilities and at non-government HC IVs and HC IIs.

3.6   Forecasting, ordering, and procurement

Forecasting or quantification involves the estimation of the quantities of health commodities a program or a specific facility will dispense to other levels of the logistics system or to clients for a specific period of time in the future. In order to generate a well-informed and accurate forecast, commodity managers need good data on consumption trends by clients or on issues from one level to another. These data can be collected through the logistics or health management information system, but the data must be complete,

Figure 3.7.1 Supervision of logistics practices (government facilities)
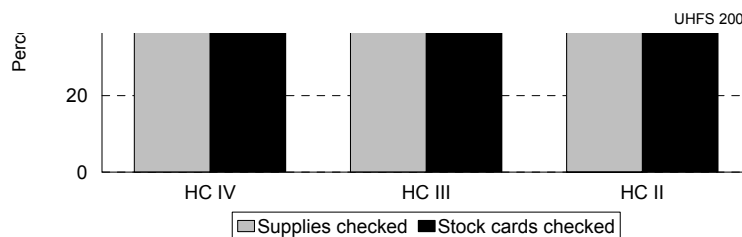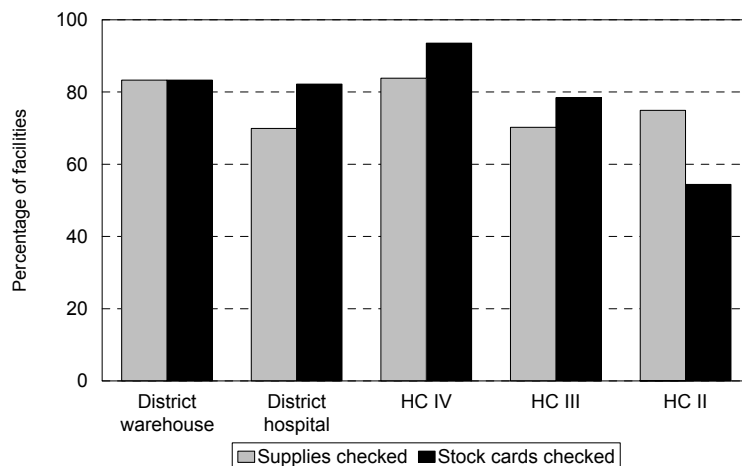
timely and accurate, within an appropriate margin of error, to inform decisions on future use. This is critical to ensure that sufficient quantities will be procured and distributed to storage and service delivery points to meet clients needs. Because forecasting involves an estimation of need, some margin of error is to be expected, particularly when forecasting for long periods of time.

Once a solid forecast or projection of future needs is completed and budget levels established at the level where orders are made, the commodity manager can place an order for the forecasted amount of products and procure those commodities according to established procurement policies. Lower levels of the logistics system are not usually responsible for procuring commodities but rather usually place orders to the higher level. These functions—forecasting, ordering, and procurement—are necessary to determine the resupply quantities each facility will need and to ensure that those quantities arrive at the proper time and at the right cost to ensure continuous availability throughout the system. They are key components of the logistics cycle and critical for ensuring that the logistics system can meet its objective of making commodities available to the service providers who will dispense them to clients.

Under the new decentralized system in Uganda, health facilities will complete their orders every two months and send them to the health sub-district (HSD). The HSD will authorize orders from the facilities in their area. After receiving approval from the district, the HSD will order commodities from the National Medical Stores (NMS). NMS, an autonomous government corporation, was established in 1993 to procure, store, and distribute medicines and other health commodities to the public and private health sectors in Uganda. NMS is responsible for carrying out the international procurements of health commodities for the country and also receives and manages donated commodities (e.g., contraceptives, vaccines, TB medications) at the central level. If commodities are unavailable at NMS, the HSD will receive a letter indicating unavailability, and they are then authorized to purchase the commodities from another source. There is a parallel service offered by the Joint Medical Stores (JMS) that primarily serves NGOs and other private sector health facilities. The public sector does not routinely utilize the JMS as a supplier unless the NMS does not have commodities available. For public sector facilities, the up-front financial requirements and lack of delivery service at the JMS make purchases from JMS problematic. The NMS maintains a credit line or funds available for each facility in the country. This fund is drawn upon as facilities place orders throughout the fiscal year. The credit lines are tracked by the NMS and notification of the remaining balance is sent with each filled order.

The items ordered are packed by NMS according to the district requests and will be distributed to the district every two months. The transition to this new system is still underway, and the efficiency and effectiveness of the design will need to be assessed in the very near future. In the meantime, regional pharmacists will be tracking the flow of commodities monthly and will be conducting quarterly visits. Funding for essential drugs is now being provided directly from the MoH to districts and in some cases to health sub-districts for the purchase of drugs and other supplies, shifting logistics decision-making to this lower level. However, the absence of logistics training in how to make these decisions creates a real risk that commodities will not be properly planned for or purchased in the correct amounts.

In logistics systems, there are two types of ordering systems, "push" and "pull," distinguished by whom and how order quantities are determined. Uganda has been operating as a push system in which the staff who issue the supplies determine the quantities to be issued to each facility, in Uganda's case through a pre-packaged essential drug kit system with commodities in fixed quantities. However, the MoH is currently transitioning to a pull distribution system in which the staff at the district and health sub-district levels who receive the supplies determine the quantities to order. The fixed quantity drug kits will be gradually phased out, and staff will have to determine order quantities for individual commodities for their facilities based on consumption trends and the availability of funds. Beginning in late 2002, the NMS plans to begin delivering commodities to each district every two months, and orders should be placed every two months using the HMIS pre-printed order forms.

Overall, 41 percent of facilities reported that they determine their re-supply quantities at least some of the time. In the current push system, 68 percent reported that the higher level facility determines their resupply quantities. Facilities could choose more than one answer for this question because there is not always a clear distinction of responsibility for calculating resupply quantities. For example, the essential drug kits are most often pushed in fixed quantities to each facility; however, each facility can also order supplemental commodities to complement the kits to fulfill their needs. Figure 3.8 shows that while all of the district hospitals determine their own needs and HC IVs are a mix of push and pull ordering, the lower levels and the district warehouses rely mostly on the higher level to determine their order quantities in the public sector.


Figure 3.8 Push vs. pull ordering practices (government facilities)
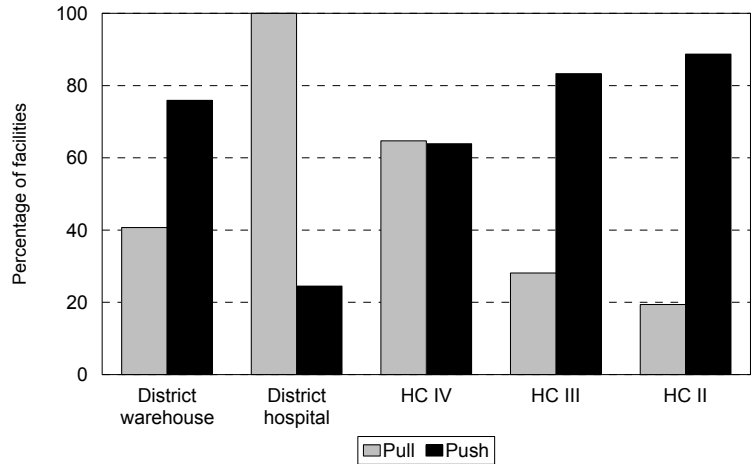
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The survey also looked at how often facilities placed orders in the last year. Twenty-five percent of the government facilities and 26 percent of the non-government facilities placed between 4 and 6 orders in the past year. In other words, a quarter of the facilities already place orders at intervals similar to what the new pull system will require. These facilities, in some capacity, are assessing their commodity needs to place orders. Of the government facilities, Figure 3.9 shows that the majority of district hospitals, warehouses, and HC IVs are placing orders between 1 and 6 times a year. As mentioned above, by the end of 2002, all facilities should begin placing commodity orders to the next highest level of the logistics system every two months. The MoH and NMS are committed to meeting this demand for government facilities.

Figure 3.9 Frequency of orders placed in past year (government facilities)
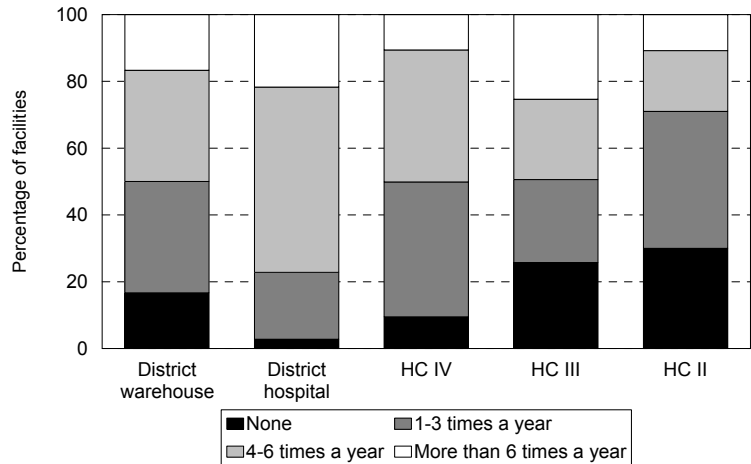
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3.7 Distribution and transportation

Distribution and transportation are very important links in the supply chain for managing health commodities. Timely distribution of the correct quantities of health commodities is critical for ensuring a continuous supply. In resource-constrained environments, efficient use of transportation and/or transportation resources is key to minimizing wasted deliveries or trips to pick up or deliver commodities. Distribution of health commodities in Uganda is also being redesigned to reflect the decentralization of decisionmaking, ordering, and commodity delivery responsibilities.

Currently, the NMS receives orders from and delivers products to each of the 56 districts. The districts are then responsible for delivering the appropriate commodities to the health sub-districts. Each facility then collects their commodities from the health sub-district (HSD). The MoH and NMS are exploring options for distributing commodities directly to the HSD level. In November 2002, a distribution cost study will be carried out to explore the possibilities of having NMS deliver directly to the health sub-districts. This would involve NMS delivering to 214 HSD sites as opposed to the 56 districts to which they currently deliver commodities. From the HSDs (HC IV level), the majority of health centers are within a reasonable distance to pick up their commodities.
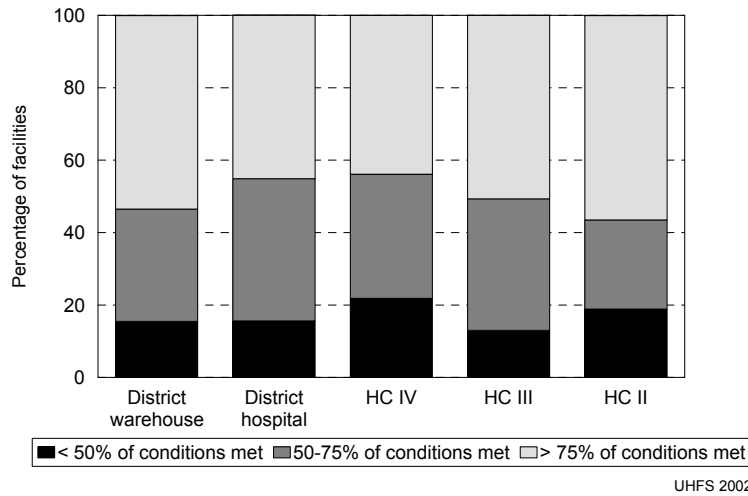
According to the survey results, 71 percent of facilities reported that they collect commodities from a higher level of the logistics system. The other 29 percent have the commodities delivered by other means: the district, health sub-district, supplier, or another mechanism. Table 3.10 presents these results by government and non-government facilities and by level of the system. Respondents could again choose more than one answer, since distribution often involves a mix of mechanisms in Uganda.

Table 3.10 Distribution

Percentage of facilities reporting various means by which they receive commodities, by facility type and ownership, Uganda Health Facilities Survey 2002

Facility type	Facility collects	District-level facility delivers	Sub-district-level facility delivers	Supplier delivers	Other
GOVERNMENT FACILITIES					
District hospital	80.9	17.8	0.0	59.4	20.0
HC IV	71.9	48.6	18.1	0.0	0.0
HC III	71.3	37.6	35.8	0.0	0.8
HC II	60.3	33.3	30.2	0.0	0.4
District warehouse	33.3	0.0	0.0	50.0	33.3
NON-GOVERNMENT FACILITIES					
HC IV	67.3	5.4	0.0	32.9	16.3
HC III	100.0	6.7	3.1	0.0	0.0
HC II	79.1	10.2	0.0	19.6	18.2

For all levels of the system, the majority of both government and non-government facilities reported that they collect their commodities themselves from the source of supply. Most warehouses, on the other hand, have their supplies delivered from the higher level or directly from the supplier.

The survey further explored what modes of transportation are used to transport commodities to facilities. Poor infrastructure and road conditions and shortages in funding for fuel or other means of transportation often make distribution difficult. The modes of transportation most commonly used by government facilities are facility-managed vehicle (48%) or public transportation (48%) (Figure 3.10). The most common mode of transportation used in non-government facilities is public transport (70%), with a much smaller percentage using a facility-managed vehicle (27%). In the public sector, public transport is more frequently used at the lower levels, while a facility-managed vehicle is more commonly used at the higher levels.

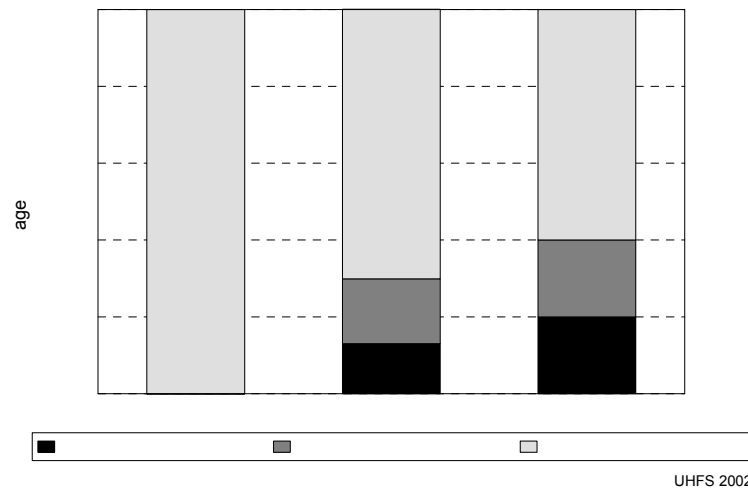Figure 3.11.1 Compliance to minimum storage criteria
(government facilities)

■ < 50% of conditions met ■ 50-75% of conditions met □ > 75% of conditions met

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3.8 Storage condi[tions]

Compliance to minimum storage criteria
(non-government facilities)

All health commodit[ies] ... [tha]t protect their integrity and effectivenes[s] ... [fo]r distribution. When all levels of the syst[em] ... [t]hat they will receive a high-quality produ[ct] ... [le]vel of the system to another, all levels o[f] ... [s]et of minimum standards to protect the [commodities] ... [deliv]ery point.

At each facilit[y] ... [i]n of the commodities studied. If commodi[ties] ... [chec]klist was completed for each area. The su[rvey] ... [cond]itions for all storage areas to ensure quali[ty] ... [condi]tions for larger storage areas that requir[e] ... [surv]ey instrument in Appendix F). Some of [these] ... [le]vel of judgement on the part of the surve[yors].

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Figures 3.11.1 and 3.11.2 present a summary of the level of compliance with the 13 minimum conditions for proper storage of health commodities in government and non-government facilities. It is clear that the non-government facilities comply with these conditions more often than the government facilities, although most of the government facilities also met the majority of the storage conditions studied. Overall, only about one-half of all government facilities met 75 percent or more of the conditions.

The individual storage conditions can also be analyzed to extract problem areas in need of improvement or reinforcement. Figure 3.12 shows the percentage of facilities that met each of the 13 minimum conditions for storage areas, broken down by government and non-government facilities.

Figure 3.12 Compliance with individual storage conditions
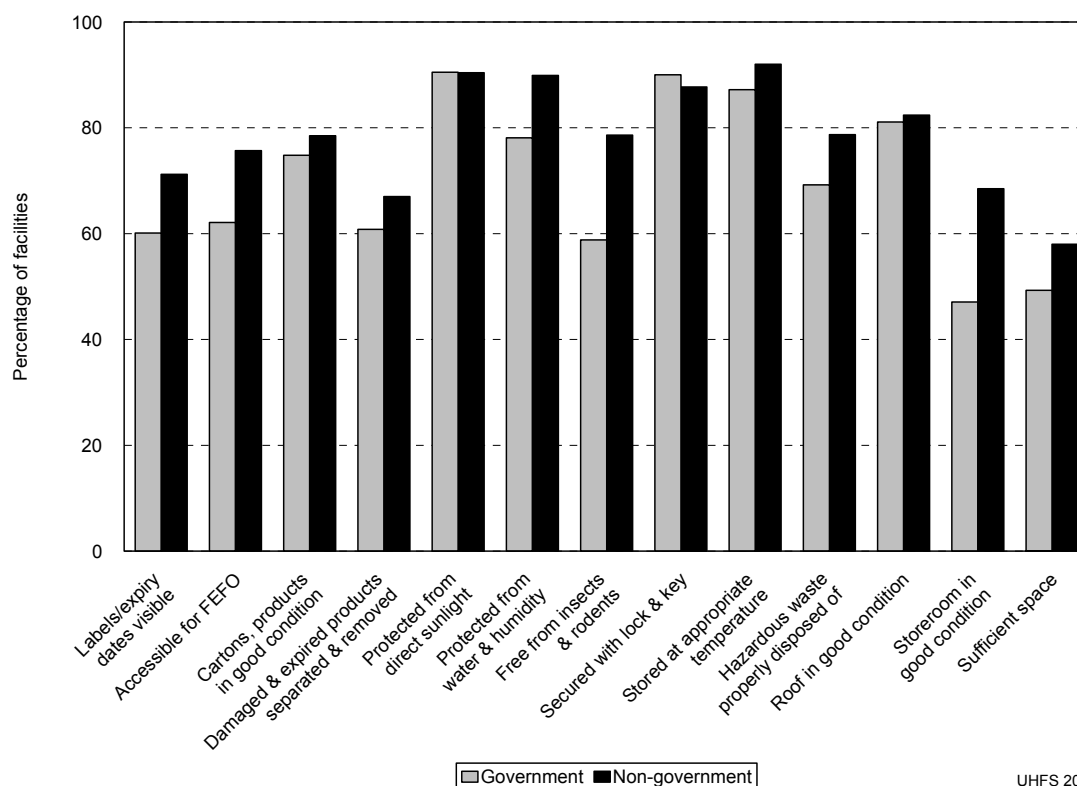
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All of the minimum storage criteria were met by at least half of the facilities visited. However, in the survey team's judgement, about half of government facilities were not maintaining their storage space in good condition (Condition 12),[1] that is, clean, all trash removed, sturdy shelves in place, and boxes organized. Similarly, approximately half of the government facilities and close to half of the non-government facilities did not have sufficient space for the existing commodities (Condition 13)[1] or space for reasonable expansion (i.e., for receipt of expected commodity shipments in the near future). This is difficult to judge, however, because health commodities are not currently maintained in full supply and it is difficult to know whether storage space would be sufficient if commodities were in full supply.

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[1] See storage conditions table, Question 429 (Part II Commodities Management), Survey Instrument (Appendix F).