Multi-Country Study of Medicine Supply and Distribution Activities of Faith-Based Organizations in Sub-Saharan African Countries

World Health Organization

Ecumenical Pharmaceutical Network

WHO/PSM/PAR/2006.2

Multi-Country Study of Medicine Supply and Distribution Activities of Faith-Based Organizations in Sub-Saharan African Countries

Department of Medicines Policy and Standards
World Health Organization, Geneva, Switzerland
and
Ecumenical Pharmaceutical Network, Nairobi, Kenya

Authors

Mr Marlon Banda, Pharmacist consultant, Belfast, Ireland

Dr Eva Ombaka, Ecumenical Pharmaceutical Network (EPN), Nairobi, Kenya

Ms Sophie Logez, Department of Medicines Policy and Standards (PSM), WHO, Geneva, Switzerland

Ms Marthe Everard, Department of Medicines Policy and Standards (PSM), WHO, Geneva, Switzerland

Address for correspondence:
Marthe Everard: everardm@who.int
Department of Medicines Policy and Standards
World Health Organization
20, Avenue Appia
1211 Geneva 27, Switzerland
Fax: +41 22 791 41 67

Dr Eva Ombaka: epn@wananchi.com
Ecumenical Pharmaceutical Network
P.O. Box 73860-00200
Nairobi
Kenya
Fax: +254 (020) 4440306

Contents

Acknowledgements

This study received continuous support and valuable contributions from Dr Eva Ombaka, Coordinator, Ecumenical Pharmaceutical Network (EPN), and Mr Marlon Banda, primary investigator of the study.

The authors acknowledge with sincere thanks the valuable contributions made by the assessors for the country studies:

Ms Lisa Uwamwezi Munyakazi (BUFMAR, Rwanda), Dr Camille Kalimwabo (BUFMAR, Rwanda), Mr Hans Peter Bollinger (EPN, Francophone Africa, Burkina Faso), Ms Irène Tankoua Yonkeu (EEC, Cameroon), Mr Robert Chana (PCC, Cameroon), Mrs Marsha Maccata-Yambi (CSSC, United Republic of Tanzania), Mrs Stella Feka (OCASC, Cameroon), Mr Sule Abah (CHANPharm, Nigeria), Mrs Maria Akiyemi (CHANPharm, Nigeria), Mrs Chishiba Chibuta, (CHAZ, Zambia), Mr Kandeke Chipupu (CHAZ, Zambia), Ms Regina Mbindyo (MEDS, Kenya), Isaac Annan (CDC, Ghana), Mr Charles Allotey (CDC, Ghana), Mr Chrispin Thundu (CHAM, Malawi), Dr Jessy Mughogho (CHAM, Malawi), Ms Donna Kusemererwa, (JMS, Uganda), Mr Sylvester Rugumambaju (JMS, Uganda), Dr Leon Kintaudi, (ECC, Democratic Republic of Congo).

They would also like to thank all the other staff of these faith-based organizations who were involved in managing and arranging the country visit schedules for the assessment teams, including the visits to health facilities.

The authors are very grateful to the following church leaders who were interviewed and gave the necessary time to allow for full and frank discussions:

Pastor Joseph Mfochive (Cameroon), Mr Thomas Lynywe (Cameroon), Pasteur Majella Josué Tshimungu (Democratic Republic of Congo), Dr Gilbert Buckle (Ghana), Mr Emmanuel K. Danquah (Ghana), Rt. Rev. Bishop Chisenusa (Malawi), Rev. Augustine C. Musopole, PhD (Malawi), Bishop A. Assolari (Malawi), Fr. M. Likamba (Malawi), Fr L. Namwera (Malawi), Dr Aboi J K Madaki (Nigeria), Rev. Dr Elisée Musemakweli (Rwanda), Pasteur Charles Kasekezi (Rwanda), Mr Richard Wagner (South Africa), Mr Elvis Simanununa (Zambia), Bishop Enock Shamapani (Zambia).

Mr Jean-Louis Mbeke Mosoko (Democratic Republic of Congo); Mr Celestine Haule, Mr Per Kronslev (United Republic of Tanzania); Mr Godfrey Kadewele (Malawi); Mr Vedaste Munyankindi, Mr Claude Sekabaragar, Ms Aline Mukerabireri (Rwanda); Ms Joycelyn Azeez (Ghana); Mr Kampamba, Ms Dorothy Zulu, Mr Albert Lupupa, Mr Johan Richter (Zambia).

They thank all the staff of the following health care facilities for their time and willingness to complete the customer questionnaires:

Dr Fatulu Kilay and Dr Nsabi Mendyamo (Democratic Republic of Congo).

Rev. Samuel O. Asare-Duah, Sister Cecilia Appiah, Mr Charles Allotey, Sr Comfort Ashinyo, Mr Tony Ellis; Mr Samuel Ayeh, Mr Francis Difomu, Sheabeth Kumah, Sister Brenda Guieb, Emmanuel Mensak, Bismarck E.D. Dufe, Stan I. Mahama, Rev. Edward Abeasi, Mr Samuel Ayeh, Sr Mary Veronica Amponsah, Ms Suzie O. Kabe, Ms Theresa Quaye (Ghana).

David Chione, Félix Kuburi, Dr George Gwaza; Sr Bernadette Kazadzula, Mr H.M.F. Mukochi (Malawi).

Nuhu Dauda, Adeoti Funsho, B.T. Yayok, Mrs Jane Anusionwu, Rev. Sr. Josephine Borogo, E.A. Ogwuche, Dr A. N.Haameen, Mr Ezekiel Bala, Fr Jerry Gwamna, David Nantok (Nigeria).

Faustin Munyankindi, Radegonde Karasira, Thomas M. Nsabiyaremye, Sister Bogdana, Bamporineza, Dr Sylverstre Ndajimana, Nepo Biziyaremye, Sister Carmelinda Sergi, Theogene Habiyambere, Augustin Mugenzi, Sister Niyonsenga Bernard, Waldina Martinez, Jolanta Kostrzewska (Rwanda).

Fatima J. Mbunda and Dr Jane Ilahukatrish Moriarty Heriana (United Republic of Tanzania).

Mercy Mulubwa, Elisabeth Mulamfu, Mrs A. Mulethambo, Sr Scola Shangwe, Sr Beatrice Malambo, Ms Miyanda Nondo, Mrs B.N.C. Mulonga, Sr Beatrice Sakala, Geoffry Chilunda, Rebekah Carey, Catherine Sianyeuka (Zambia).

The authors express their gratitude to staff of PSM who assisted in data entry (Mr Claude Da Re), and major review and technical advice (Dr Hans Hogerzeil, Dr Clive Ondari, Dr Richard Laing and Mrs Kath Hurst).

The undertaking of the multi-country study would not have been possible without the financial support of the Swedish International Development Cooperation Agency (SIDA).

Abbreviations

ADR	Adverse drug reaction
ARV	Antiretroviral
AMFA	Affordable Medicines For Africa
BNF	British National Formulary
BUFMAR	Bureau des Formations Médicales Agrées au Rwanda
CAP/EPC	Centrale d'Approvisionnement en Médicaments de l'Église Presbytérienne Camerounaise
CAPP	Centre d'Approvisionnement Pharmaceutique Provincial
CBC	Cameroon Baptist Convention
CCT	Christian Council of Tanzania
CCZ	Christian Council of Zambia
CDC	Catholic Drug Centre
CAMERWA	La Centrale d'Achats des Médicaments Essentiels du Rwanda
CENAME	Centrale Nationale d'Approvisionnement en Médicaments et Consommables Médicaux Essentiels
CEPECC	Centrale Pharmaceutique de l'Église du Christ au Congo
CHAG	Christian Health Association of Ghana
CHAK	Christian Health Association of Kenya
CHAM	Christian Health Association of Malawi
CHAN	Christian Health Association of Nigeria
CHAZ	Churches Health Association of Zambia
CISS	Community Initiatives and Social Services
CSN	Catholic Secretariat of Nigeria
CSSC	Christian Social Services Commission
DFID	Department For International Development (UK)
DMIS	Drug management information system
DSO	Drug supply organization
ECC	Église du Christ au Congo
ECM	Episcopal Conference of Malawi
ECWA	Evangelical Church of West Africa
ECZ	Episcopal Conference of Zambia
EDM	Essential Drugs and Medicines Policy Department (WHO)
EEC	Église Évangélique du Cameroun
EED	Evangelischer Entwicklungsdienst
EELC	Église Évangélique Luthérienne au Cameroun
EFZ	Evangelical Fellowship of Zambia
EPN	Ecumenical Pharmaceutical Network
FEFO	First expiry, first out
GMP	Good manufacturing practices
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICCO	Inter-Church Organization For Development Cooperation

IDA	International Dispensary Association
IEC	Information, education and communication
JMS	Joint Medical Stores
KEC	Kenya Episcopal Conference
KfW	Kreditanstalt für Wiederaufbau (Reconstruction Bank of Germany)
MCC	Malawi Christian Council
MEDS	Mission for Essential Drugs and Supplies
MEMS	Mission for Essential Medical Supplies
MOH	Ministry of Health
MSD	Medical Stores Department (Tanzania)
MSF	Médecins Sans Frontières
MSH	Management Sciences for Health
NCMAC	Northern Christian Medical Advisory Council
NDP	National Drug Policy
NGOs	Nongovernmental organizations
NORAD	Norwegian Aid for Development
OCASC	Organisation catholique pour la Santé au Cameroun
OSEELC	Oeuvre de Santé de l'Église Évangélique Luthérienne au Cameroun
PCC	Presbyterian Church in Cameroon
PEP	Post-exposure prophylaxis
PRDU	Promotion of rational drug use
QA	Quality assurance
QC	Quality control
SIDA	Swedish International Development Cooperation Agency
SOPs	Standard operating procedures
TEC	Tanzania Episcopal Conference
UCMB	Uganda Catholic Medical Bureau
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UPMB	Uganda Protestant Medical Bureau
USPDI	United States Pharmacopeia Drug Information
WCC	World Council of Churches
WHO	World Health Organization

Executive summary

Faith-based organizations are part of the "not-for-profit" sector and play an important role in the advocacy, financing and delivery of health care, including pharmaceutical supply services in many countries. Although nongovernmental organizations' share in health service delivery and essential medicines provision varies considerably between countries, in low-income African countries it can be as much as 50% of curative services. Studies have shown that faith-based organizations contribute up to 40% of overall health care services in some places but their specific role in drug supply and procurement activities is not well documented. The research project reported here started from the hypothesis that these organizations' contribution to national medicines supply systems would be as significant as their input to health care provision generally in sub-Saharan African countries.

During 2003, the Ecumenical Pharmaceutical Network (EPN) collaborated with the World Health Organization (WHO), in a descriptive, comparative multi-country study on the work of 16 EPN member faith-based drug supply organizations (DSOs) and their contribution to medicines supply in 11 sub-Saharan African countries. The study's approach and execution was in line with the Swedish International Development Cooperation Agency's objective for operational research to assist decision-makers in identifying problems and evaluating performance in health services, including the pharmaceutical sector.

Methodology

A set of four standardized questionnaires was developed to gather information about the DSOs. The study generated data on how the 16 DSOs were operating, as well as information on how their services were perceived by customers, founding church bodies and governments. A database for data generation and analysis was specially developed for this study as part of the WHO Survey Management System, and it allowed for comparative data analysis between countries and topics.

Peer-review on good practices through "learning by evaluating" and by "learning how to evaluate", using paired country assessments, was an important element of the study design. Staff from the DSO of country X visited country Y to collect data on DSO activities there, and, in a reciprocal visit, staff from country Y assessed DSO activities in country X. This experimental approach was based on the assumption that senior DSO staff had sufficient technical expertise in the area of drug supply and management to successfully assess the work of colleagues in other countries.

From the outset of the study it was planned to hold a feedback meeting, which took place in June 2004. This meeting brought together all the assessors to review the results and findings. The strengths and weaknesses of the selected DSOs were identified, together with priority areas of work where collaboration among DSOs could be strengthened, and where EPN and other partners could offer support.

Findings

The study produced comprehensive information about DSOs' operations and how their services are perceived. The results confirmed that DSOs are generally performing well, largely due to their transparent procurement procedures, competitive prices and highly motivated staff. They have won the trust of their customers, appreciation from ministries of health and good relationships with their founding church bodies.

Among the major findings was that the proportion of the population served by 15 faith-based DSOs in 10 countries ranged from 25-60%, with an average of 43%. This figure indicates that public medicines supply systems do not cover the entire population and that faith-based supply organizations are a necessary complement to public systems. (One DSO was excluded from this calculation as it only supplied customers in other countries).

Another key finding was that DSOs behave like small business entities, with either elected or nominated boards or committees to oversee their work. The majority of DSO functions and the services offered were based on a mix of options, which was appreciated by customers and which allowed DSOs to be more flexible in their own operations. For example, choices were offered in procurement practices, supply and funding sources, methods of inventory control and quality control testing, delivery systems and methods of customer payments.

The study highlighted areas of weakness in some DSOs' systems. These included quality assurance, computerized drug management information and rational use of medicines policies. In a number of DSOs, lack of adherence to good storage, distribution and drug donation practices created inefficiencies that affected the DSOs' sustainability and increased their operating costs. Some DSOs were hampered by having no business plan.

During the feedback meeting, quality assurance was identified as the highest priority area in the action plan participants developed to improve DSO performance. Only half the DSOs undertook regular quality control testing of the batches they procured and few retained batch samples for an agreed period of time. All DSOs reported that they were unable to carry out full GMP site inspections of their suppliers.

Half the DSOs received drug donations for distribution to their customers free of charge, and the study revealed that these donations could create problems rather than responding to real needs. When communication and coordination between DSOs and donors were inadequate, inappropriate donations adversely affected supply management, storage and distribution. DSOs' financial systems had to cope with unforeseen costs and the reduced revenues generated for their revolving drug funds.

Overall customer feedback about DSO services was positive, with all expressing their appreciation of the quality and price of products and the good personal relationships established. However, many customers indicated that only 0-50% of the number of items and between 50-100% of the quantities of items ordered were met by DSOs. The study showed that customers had multiple sources of supply besides DSO supply services and that they supplemented their stocks with government supplies or buying from private wholesalers.

To improve DSO performance, all customers interviewed indicated that they needed to be offered a wider range of medicines and quantities. They wanted more information-sharing on current prices and quantities of products in stock, and improved delivery services. All the customers indicated the need for technical assistance and supervisory visits to improve their management of medicines at health care facility level. Also requested were in-service training courses on prescribing, dispensing and rational use of medicines, especially ARVs, and on drug supply management, quality issues, stock control and estimating drug needs.

Government representatives greatly appreciated faith-based DSOs' contribution to supply systems. However, they indicated room for improvement in formal reporting and collaboration between DSOs and their respective ministries of health, and for better drug donation policies. Licensing of DSOs by national drug regulatory authorities was identified as one major step towards official recognition and increased collaboration with governments.

Conclusions

From an EPN perspective, the study boosted staff morale by offering an opportunity to learn how others in similar situations overcame their problems and by sharing knowledge of good practices. The paired assessment methodology developed evaluation skills, helping to instil a sense of empowerment among EPN members and leading to ownership of the study results. The study was perceived by all participating EPN members as a first step of a process for further collaboration among Network members. Based on the characteristics of a well-functioning DSO as identified during the feedback meeting, a simplified self-assessment tool should now be developed for annual use by DSOs. A redesigned version of the initial WHO/EPN multi-country study assessment tool could be used at longer intervals. More detailed DSO-specific capacity building tools should be developed, such as "how to" manuals on the key areas identified for improvement. Feasibility studies were recommended on local production of medicines by DSOs and on DSO drug delivery services. EPN members should be supported in accessing more information sources on supplier prices of essential medicines, including ARVs and other newly marketed essential medicines.

The feedback meeting demonstrated how well DSO staff could work together to use the study results and findings and to successfully evaluate their performance. They prepared an action plan to improve their performance in priority areas, such as: quality assurance (including issues related to drug donations); training; distribution/delivery services; procurement; storage and drug management capacity; sustainability of DSO operations; and collaboration. The next step for the EPN Secretariat will be to seek external financial and technical support for the action plan and through this increase the impact and sustainability of DSOs in sub-Saharan African countries.

From a WHO perspective, the successful participatory and empowering process of the study is one of the key achievements of the methodology used. It has added value to the use of the results by facilitating development of a specific action plan, which in turn has helped the EPN Secretariat to prepare its proposals for donor assistance. The use of peer review during the assessments showed a new way of working for WHO, and through the EPN network, WHO can continue to provide assistance, information and guidance to a group of DSOs in many countries.

The multi-country study was valued by EPN and WHO as a baseline for identifying benchmarks and enhancing good practices in drug supply management, procurement and distribution activities undertaken by faith-based DSOs. All DSOs should now move together towards achieving "best practices" in the priority areas of work that they identified. It was agreed that a similar study should be undertaken in two to three years time in order to document the improvements made by the individual DSOs and by EPN as a network.

The study succeeded in showing that faith-based DSOs play a crucial role in terms of increasing access to medicines, especially in rural and other remote areas of Africa, and provide a complementary service where government supply measures may fail to serve the public health system. In such circumstances faith-based DSOs offer a "safety net" function in the pharmaceutical supply system.

1. Introduction

1.1 Background

In many countries, nongovernmental organizations (NGOs), part of the "private not-for-profit sector", play an important role in advocacy, and in the financing and provision of health care, including pharmaceutical supply services.[1,2] Faith-based organizations are one type of NGO. Although NGOs' share of health service and essential medicines provision varies considerably between countries, in low-income African countries this can be up to 50% of curative services.[2] A literature review by Kawasaki and Patten in 2001[3] found that between 30 and 40% of health care services in developing countries was provided by church-related health care facilities.

A 1998 WHO report[2] recommended further investigation of the role of NGOs, as they provided an independent and potentially efficient complement to government health and pharmaceutical supply services. A 1997 study[4] made two main recommendations:

- to establish an evidence-based overview of the importance of NGOs involved in drug supply and distribution activities; and
- to collect and document the experiences of NGOs involved in drug supply and distribution activities.

A study on the drug supply systems of two missionary organizations in Uganda and Kenya stimulated EPN's interest in the current multi-country study.[3] EPN was formerly known as the Pharmaceutical Programme of the World Council of Churches/Community Initiatives and Social Services, which evolved out of the Council's Christian Medical Commission. EPN's remit is to address pharmaceutical issues in the church health care system. This involves both providing health care and focusing on advocacy and the promotion of justice and equity, including access to essential medicines and their rational use. EPN, in collaboration with the WHO Department of Medicines Policy and Standards[a] agreed to carry out a multi-country study to document the contribution of faith-based drug supply organizations (DSOs) in sub-Saharan Africa in 2003. EPN was selected by WHO as it is in official relations with the Organization, and because of its members' involvement in developing quality pharmaceutical care through the church health care system.

[a] Prior to 2005 known as the Department of Essential Drugs and Medicines Policy

1.2 Objectives of the multi-country study

The study was intended to:

- document and compare the various experiences and practices of the medicine supply and distribution systems of faith-based organizations in selected sub-Saharan African countries by:
  - undertaking a structured assessment and data collection of key functions of their medicine supply and distribution systems for review at a feedback meeting;
  - identifying success factors, lessons learnt, problems and constraints in their supply and distribution activities;
  - recommending actions to improve DSOs' performance.
- strengthen the human resource capacity of EPN to evaluate medicine supply systems in the Network;
- strengthen the working relationship between WHO and EPN on issues related to essential medicines and improving access to them.

A drug price survey was added to the study, to collect data on the DSOs' procurement prices, using a methodology adapted from that in the WHO/HAI manual, Medicines Prices: A New Approach to Measurement.[5]

1.3 Expected outcomes of the multi-country study

The study's expected outcomes were:

- a joint WHO/EPN publication on faith-based organizations' drug supply and distribution systems in selected sub-Saharan African countries containing advice based on the lessons learnt during the study;
- a self-assessment tool for EPN members to review performance of their medicine supply organizations;
- an improvement in EPN's decision-making on future supply challenges and interventions;
- the creation of a consultants' network to assist faith-based drug supply organizations in the EPN;
- a higher profile for EPN's medicine supply and distribution work;
- increased awareness of DSOs' support to government medicine supply systems;
- a set of field-tested questionnaires to be adapted for use in a similar multi-country study on public medicines supply systems in Africa;
- an additional outcome is that the results of the drug price survey will be used to guide DSOs in future procurement practices.

1.4 DSO selection

The criteria used to select eligible DSOs were:

- being an active member of EPN;
- situated in the sub-Saharan African region;
- operating in either Anglophone or Francophone African countries;
- faith-based organizations involved in medicine supply and distribution activities to more than five health care facilities;
- procurement with characteristics of "pooled" or grouped procurement.

Based on these criteria, 16 DSOs in 11 countries were chosen to participate in the study (Table 1). Two DSOs which had been considered could not take part - for security reasons in the case of the DSO in the Central African Republic, and because CHAG in Ghana ceased operations in 1999. For ease of reference, the number of staff employed per DSO in 2003 is also provided. This table shows the diversity in size of supply management operations between the selected DSOs.

Table 1: List of the 16 DSOs included in the 2003 multi-country study

No.	Countries	DSOs	Anglo-phone	Franco-phone	No. of DSO customers (2003)	No. of DSO staff (2003)
1	Cameroon	CAP/EPC		√	40	23
2	Cameroon	CBC	√		73	14
3	Cameroon	EEC		√	47	1
4	Cameroon	OCASC		√	210	7
5	Cameroon	OSEELC		√	28	20
6	Cameroon	PCC	√		20	2
7	D.R. Congo	ECC/DOM		√	3200	50
8	Ghana	CDC	√		117	32
9	Kenya	MEDS	√		1000	110
10	Malawi	CHAM	√		149	32
11	Nigeria	CHANpharm	√		1920	91
12	Rwanda	BUFMAR		√	117	30
13	South Africa	AMFA	√		23	5
14	Tanzania	CSSC	√		29	35
15	Uganda	JMS	√		1171	54
16	Zambia	CHAZ	√		125	34
		Total	**10**	**6**	**8269**	**540**

2. Methodology

2.1 Data collection tool

Four structured questionnaires were developed for gathering information about the DSOs. One was to collect information from the founding bodies; the second for assessing the DSOs' functions; the third for collecting information from health care facilities, (the DSOs' customers) on supply, distribution and other services offered by DSOs; and the fourth to find out how ministry of health officials perceive DSOs.

The founding bodies questionnaire was designed to obtain information about reasons for establishing the DSOs, and their support and commitment to them. The DSO questionnaire aimed to obtain descriptive information and data about aspects such as governance, planning, infrastructure, drug management services and customers served. Questions also covered drug selection and procurement, quality assurance, drug supply and distribution, and financial and human resource information.

It was planned to interview 20 customers of each DSO using the third questionnaire. Some DSOs selected customers due for routine visits during the period of the country assessment, while others posted the questionnaire to selected customers for completion and return. The ministry of health questionnaire focused on the DSOs' overall performance, from the viewpoint of the country's health authorities. In addition, information, documentation and reports on national drug policies, the pharmaceutical sector legal framework, and prevailing economic and health data were collected during the country visits.

The four questionnaires were translated into French for use in the study's Francophone African countries. The completed French questionnaires were not translated back into English because drug supply management terminology is not exactly equivalent in the two languages and some of the precise meanings in the responses would have been lost in translation. Copies of the structured questionnaires are available on request from the WHO address given on page ii.

2.2 Field-testing of the data collection tool

The four questionnaires designed as the study's data collection tool were field-tested in Ghana and Zambia between January and March 2003. After minor revisions, they were used to assess the other nine countries selected for the study.

2.3 Assessment teams for data collection

The principle of paired country assessments was used to facilitate an exchange of experiences between senior staff of the two DSOs - "learning by evaluating" - and skills development - "learning to evaluate". This was an innovative method of working, used experimentally on the assumption that senior DSO staff had sufficient technical expertise in the area of drug supply for reciprocal, paired country assessments to work well.

Due to the lack of agreed benchmarks for performance in the area of drug supply and drug management, this study will be a first step towards developing a self-assessment tool for future work.

Table 2 provides detailed information about the country pairings. The main criteria applied were the:

- language spoken in both countries;
- geographical proximity of the two countries;
- scale of DSO operations - a minimum of 10 customers necessary;
- availability of senior staff (assessors) from the participating DSOs.

The DSO assessment teams consisted of a primary investigator (PI) to ensure standardization of data collection and a total of four assessors from the two paired DSOs. Two senior staff from the DSO of country X visited and collected data on the DSO activities of country Y, and subsequently the two senior DSO staff from country Y visited country X to assess DSO activities there. The PI assessed all DSOs in order to ensure consistency in data collection. More details are provided in Table 2. Data collection took place during 11 country visits, each lasting five working days, held between May and December 2003. The assessment teams collected the information necessary to document drug supply and distribution activities. Later, at the feedback meeting, they were among those reviewing successes and remaining challenges in key supply system and service functions, as identified by data analysis of the questionnaires.

Table 2: Paired DSOs for the assessments of the 16 DSOs in 11 countries

Countries	Assessed DSO(s)	DSOs associated as assessors
Cameroon	OCASC, PCC, OSEELC, EEC, CAP/EPC and CBC	PI, BUFMAR, JMS and EPN Secretariat
D.R. Congo	ECC/DOM	PI, OCASC, CSSC, WHO staff member and EPN Secretariat
Ghana	CDC	PI, CHANpharm and EPN Secretariat
Kenya	MEDS	PI only*
Malawi	CHAM	PI and CHAZ
Nigeria	CHANpharm	PI, MEDS and CDC
Rwanda	BUFMAR	PI, PCC, EEC and EPN Secretariat
South Africa	AMFA	PI, JMS, ECC/DOM and EPN Secretariat
Tanzania	CSSC	PI and CHAZ
Uganda	JMS	PI and EPN Secretariat
Zambia	CHAZ	PI, CHAM and WHO staff member

* PI was able to collect additional data only because a previous study[3] had been conducted on MEDS and JMS in 2001

2.4 Data generation

The PI drafted a descriptive report for each DSO assessment and shared it with the other members of the assessment team for their review. After inclusion of their comments, the report was finalized and cleared by the respective DSO(s).

Information collected with the questionnaires was entered into a database, which was specially designed and developed for this study. This database is part of the WHO Survey Management System (version v3.0) and allowed for comparative data analysis between countries and topics. All the DSOs' responses to a particular question could be retrieved and the information which had been inputted verified by validation of the data reports for each question.

2.5 Data analysis and reporting

Data analysis followed a two-stage approach. Firstly, the data were tabulated to produce simple tables of the findings of the DSO assessments, which are given in Chapter 3. Chapter 4 gives the results of the assessments by customers, DSO founding bodies and governments, with more detailed information provided in Annexes 1 to 5. Secondly, the results and findings of the multi-country study were discussed with the members of the assessment teams during a three-day joint WHO/EPN feedback meeting, held in Nairobi, Kenya, in June 2004.

2.5.1 Feedback meeting

EPN and WHO staff participating in the study were joined at the meeting by EPN board members and representatives from Mission for Essential Medical Supplies, (MEMS) a newly established Tanzanian DSO and a new member of EPN. Unfortunately, the assessors from the six DSOs in Cameroon could not attend. Chapter 5 and Annexes 7a to 7g describe the proceedings of this meeting, at which group analysis of the study findings, lessons learnt and recommendations were developed in a participatory manner. Additionally, participants were asked to identify the characteristics of a well-functioning DSO and verifiable ways to measure performance, so giving defined indicators to monitor the impact of improved DSO operations.

At the feedback meeting, the results of the price survey were also shared with participants. Prior to the meeting, a form listing selected essential medicines had been sent to the DSOs. They were requested to complete this form with their purchase prices (in US$). Nine DSOs brought their price information to the meeting. The price survey methodology used was the methodology developed by the WHO-HAI medicine prices project. The results of this price survey are provided in section 3.8 and in Annex 3. Discussion and conclusions of the results of the multi-country study, including the feedback meeting, are provided in Chapters 7 and 8 respectively.

3. Results of the DSO assessments

3.1 Establishment of the surveyed faith-based DSOs

Among the 16 DSOs assessed, four were founded in the early 1970s, five during the 1980s, another five in the 1990s and two DSOs started their activities after 2000. The majority of DSOs were established during the time that many sub-Saharan African countries initiated reforms in their public health and supply systems. In general, DSOs became more involved in drug procurement and distribution activities when the public medicine supply system of the country increasingly failed to meet the medicines needs of the faith-based health care facilities or of government health care facilities run by faith-based organizations. Most of the DSOs established their supply and distribution activities with donations of medicines or financial support for capitalization, and most DSOs have received long-term external support.

The founding bodies reported that the main reasons for initiating DSO activities were to:

- extend the work of the church to better reach the poor and to provide them with health care services;
- better meet the drug needs of the population they serve through their faith-based health care facilities;
- respond to increasing drug stock-outs and supply failures by the government medical stores;
- manage pooled procurement for different religious denominations within the same country.

3.2 Governance and administration of DSOs

3.2.1 Governance of DSOs

Relationship between the founding bodies and DSOs

Most of the founding bodies maintained close relationships with the DSOs. All founding church bodies had representatives on the boards of DSOs.

The founding bodies expected DSOs to:

- provide medicines and pharmaceutical services to church-related customers;
- generate funding to support other church-related projects.

DSO boards

Seven DSOs had elected boards and another six DSOs had nominated boards. Two DSOs had committees functioning as boards and one did not have a board structure.

Functioning of the boards

The main functions of the 15 DSO boards and committees were:

- to endorse annual plans and budgets: 13 DSOs (87%);
- to formulate policy: 12 DSOs (80%);
- to approve capital investment: 11 DSOs (73%);
- to appoint and discipline senior DSO staff: 11 DSOs (73%);
- to mobilize funds and support: 7 DSOs (47%);
- for advocacy purposes: 7 DSOs (47%).

DSO boards met from once a year (one DSO), half yearly (four DSOs) to four times a year (10 DSOs). Twelve DSOs also had management committees and seven of these met on a weekly basis.

3.2.2 Management of DSOs

Table 3 shows the staffing situation and qualifications held by senior staff of the 16 DSOs. Five of the main functions were usually held by staff with a pharmacy degree whereas the Chief Executive Officer post was usually held by someone with a medical degree. The very low numbers of qualified quality control, procurement, and sales/distribution managers and the lack of human resource and warehouse managers may be due to the size of the DSO operations or to one person performing more than one function. More details are provided in Table 3.

Table 3: Senior staff positions in DSOs

Senior staff in place for the management of DSOs	In place	Not in place	Acting	Main qualification
Chief Executive Officer	14	2	-	Medical Doctor
Supply Officer-in-Charge	14	1	1	Pharmacist
Finance Manager	11	3	2	Accountant
Warehouse Manager	9	7	-	Pharmacist
Human Resource Manager	8	3	5	Administrator
Sales/Distribution Manager	6	9	1	Pharmacist
Procurement Manager	5	10	1	Pharmacist
Quality Control Manager	4	10	2	Pharmacist

3.2.3 Planning

Thirteen of the 16 DSOs operated with annual plans and budgets. Nine DSOs had business plans integrated in their strategic or annual plans. Eleven DSOs had developed 3-5 year strategic plans.

Planned improvements to DSO operations

Fifteen DSOs had three main objectives for the next two to three years:

- to increase the number of customers: 12 DSOs (80%);
- to improve delivery services to their clients: 7 DSOs (47%);
- to collaborate with other DSOs: 7 DSOs (47%).

Among other issues these 15 DSOs reported as needing improvement for them to better respond to current and upcoming supply and management activities, and which they had included in their annual action plans, were:

- increasing the numbers of skilled staff;
- regular staff training;
- storage capacity and delivery services;
- procurement procedures;
- supplier selection and monitoring supplier performance;
- assured quality of medicines;
- drug management information systems;
- drug inventory control;
- customer services.

Most of these areas for improvement, identified by the DSOs themselves, were confirmed by the study findings. No DSO mentioned improving quality assurance systems during the assessment visits, only the quality of medicines. However, during the feedback meeting the issue of improving DSOs' quality assurance systems was recognized and discussed at length.

External factors influencing DSO operations

The external factors identified by the 16 DSOs as adversely affecting their operations included:

- economic situation, including severe inflation and currency devaluations: 6 DSOs (35%);
- political situation: 5 DSOs (29%);
- poverty of the population: 5 DSOs (29%);
- no tax exemption for imported medicines and supplies: 4 DSOs (25%);
- government policies (regulations, drug registration, etc.): 3 DSOs (19%);
- competition from other providers: 2 DSOs (13%).

The external factors identified as strengthening the DSO's operations included:

- political stability: 4 DSOs (25%);
- weak public medicine supply systems: 3 DSOs (19%);
- a high level of entrepreneurship: 3 DSOs (19%);
- existing local production: 2 DSOs (13%);
- tax exemption: 2 DSOs (13%).

Internal factors influencing DSO operations

The internal factors reported as adversely affecting the DSOs' operations included:

- inadequate financing: 8 DSOs (50%);
- drug donations: 5 DSOs (38%);
- lack of qualified staff for management and DSO activities: 3 DSOs (19%);
- resistance to change: 2 DSOs (13%);

During the WHO/EPN feedback meeting additional internal factors were identified:

- accumulating customer debts;
- lack of autonomy from the management of faith-based organizations;
- demand for financial support from DSOs requested by the founding bodies.

3.2.4 Registration status of the DSOs

Of the 13 DSOs, eight were registered with the ministry of health or drug regulatory authorities. Three of the eight were licensed and the other five DSOs had an authorization or a written agreement.

3.3 Infrastructure

3.3.1 Location of DSOs

The 16 DSOs surveyed were located in capital cities, except in Nigeria where the DSO was based in Jos, a regional capital, and in Cameroon where three out of the six DSOs visited were located in regional capitals, Douala, Buéa and Ngaoundéré.

3.3.2 Infrastructure and utilities

Thirteen of the 16 DSOs had warehouses or storage capacity to store and handle medicines and medical supplies. All 16 DSOs had the necessary utilities in place, including piped water, electricity, telephone/fax, and computer equipment. All but two DSOs in one country had regular email access (either an institutional or private account).

3.4 DSO services offered to customers

The services offered by the 16 DSOs are listed in Table 4 and an individual breakdown for each DSO is provided in Annex 1.

Table 4: Services offered by the 16 DSOs

Services offered by the DSOs	DSOs (No.)	DSOs (%)
Procurement	15	94
Storage	13	81
Training	13	81
Distribution/delivery services	10	56
Maintenance service for medical equipment	6	38
Drug production	6	38
Drug information services	2	12
Negotiated arrangement with government DSO	2	12
Production and distribution of IEC* materials	2	12

* Information, education and communication

3.4.1 Procurement

One of the 16 DSOs was not considered to be managing a procurement service for its health care facility members because it was not directly involved in procurement of medicines and medical supplies. Instead this DSO pooled together orders from its health facility members and negotiated drug requirements and supply conditions with the national procurement agency.

3.4.2 Storage

Three of the 16 DSOs had no warehouse. The remaining 13 DSOs had warehouses or storage capacity to store and handle medicines and medical supplies. Five of these had regional warehouses, ranging from one to four in number. Two DSOs had their most distant depots 1000 km and 1200 km away from the central warehouse. Five of the 13 DSOs had purpose-built cold rooms and the other eight used household refrigerators. One DSO with a warehouse had a cold room under construction.

3.4.3 Training

Thirteen DSOs provided drug supply management training to their customers. The topics covered were:

- rational use of medicines for prescribers: 8 DSOs (61%);
- stock management: 7 DSOs (53%);
- management leadership: 3 DSOs (23%);

Major constraints reported by the DSOs involved in training activities were:

- high costs involved in organizing training courses: 5 DSOs (42%);
- lack of funds: 3 DSOs (25%);
- lack of trainers: 3 DSOs (25%);
- training activities not included in the business or annual plan: 2 DSOs (13%).

None of the DSOs reported lack of training materials as a constraint. DSO pharmacists often acted as course facilitators.

3.4.4 Drug distribution / delivery services

Ten DSOs offered delivery services to their clients through their own delivery services (3 DSOs) or through contracting out to courier services (7 DSOs). The three DSOs with their own delivery services allowed customer's to make their own arrangements also. Two DSOs only used courier services and two only used direct deliveries by suppliers.

Ten DSOs offered customers the option of making their own arrangements. Five DSOs insisted that customers made their own arrangements. Seven DSOs had mixed distribution arrangements, such as customer's own arrangement and courier services, customer's own arrangement and DSO's delivery service or courier services and direct delivery by suppliers. More information is provided in Table 5.

Table 5: Drug distribution / delivery service options

Drug distribution / delivery services	DSOs (No.)	DSOs (%)
Customer's own arrangement	10	62
Courier services	7	44
DSO delivery services	3	31
Direct delivery services	3	18

The three DSOs who offered their own delivery services had at least one covered lorry to transport medicines and medical supplies.

The 10 DSOs with no delivery services reported the following constraints:

- lack of vehicles: 10 DSOs (100%);
- high cost of maintaining delivery services (fleet of vehicles, maintenance and repairs, etc.);
- 5 DSOs (50%);
- wide geographical distribution of customers across the country: 5 DSOs (50%).

3.4.5 Maintenance services

Six DSOs offered their customers a maintenance service for medical equipment. The main reasons the other 10 DSOs gave for not offering this service:

- maintenance services not included in the business plan: 7 DSOs (70%);
- other departments or organizations were offering these services: 4 DSOs (40%);
- high cost of staff training: 2 DSOs (20%).

3.4.6 Drug production

Of the 16 DSOs, six reported that they had local production units to manufacture a range of products. More details are provided in section 3.7.3.

3.4.7 Drug information services

Of the 16 DSOs, two reported that they had a unit providing drug information services. These two DSOs were not members of the International Society of Drug Bulletins.[a] Five DSOs provided drug information by responding to specific queries from customers and three DSOs issued newsletters with drug information dedicated to their customers. None of the 16 DSOs reported using the WHO Model Formulary (2002) as a source of drug information. The sources of information used by nine DSOs (56%) are listed in Table 6.

Table 6: Sources of drug information

Sources of drug information	DSOs (No.)	DSOs (%)
Martindale	5	31
Internet	5	31
Pharmaceutical journals	5	31
WHO information	4	25
British National Formulary (BNF)	4	25

Adverse drug reaction reporting

Of the 15 DSOs, five indicated that their customers reported on adverse drug reactions. Four of them reported only to the supplier concerned and one DSO reported both to the supplier concerned and the Ministry of Health/Drug Regulatory Authorities.

3.4.8 Negotiated arrangement with government DSO

Of the 16 DSOs, two reported that they always used the government DSO as their main supplier whenever possible, one of them arranged distribution services through the government DSO.

[a] ISDB is the International Society of Drug Bulletins. Its main function is as an information-sharing network, with members having access to all ISDB bulletins.

3.5 Customers served by the DSOs

3.5.1 Customer increases

Between the time they were established and 2003, all 16 DSOs had seen an increase in the total number of their customers - an overall increase of 2.7, from 3030 to 8269. In 2003, the reported number of customers served by the 16 DSOs ranged from 20 to 3,200 reflecting an average annual increase of customers that varied from 1.4 - 55.9 since their creation. The average annual increase in the number of customers was calculated by dividing the difference between the number of customers in the founding year and in 2003 and the number of years in operation. More details are provided in Table 7a.

Table 7a: Increase in DSO customer numbers

Countries	DSO	Founding year of DSO	No. of customers in founding year	No. of customers in 2003	Average annual increase in no. of customers since establishment
Cameroon	CAP/EPC	1996	30	40	1.4
Cameroon	CBC	1989	12	73	4.4
Cameroon	EEC	1994	5	47	4.7
Cameroon	OCASC	1984	150	210	3.2
Cameroon	OSEELC	1972	10	28	1.7
Cameroon	PCC	2000	3	20	5.7
D.R. Congo	ECC/DOM	1971	2000	3200	37.5
Ghana	CDC	1983	50	117	3.2
Kenya	MEDS	1986	50	1000	55.9
Malawi	CHAM	2000	129	149	6.7
Nigeria	CHANpharm	1973	358	1920	52.1
Rwanda	BUFMAR	1975	50	117	2.4
South Africa	AMFA	1997	1	23*	3.7
Tanzania	CSSC	1992	8	29	1.9
Uganda	JMS	1980	84	1171	47.3
Zambia	CHAZ	1999	90	125	6.3
Total			**3030**	**8269**	**2.7**

* Customers in other countries

Population served

The proportion of the population served by 15 DSOs in 10 countries, through their customers, was reported by DSO staff to be between 25 - 60%. One DSO was excluded as it only served customers in other countries. More details are provided in Table 7b. Based on the percentage of the population served, as provided by the DSOs, the 10 countries had a total population of 284.4 million, of whom 112.1 million (43%) were covered by DSO drug supply services.

Table 7b: Proportion of the population served by 15 DSOs in 10 countries

Countries	DSO	Population (HDR 04) (Millions)	% of population served according to DSOs	Population Served per DSO* (Millions)
Cameroon	CAP/EPC	Total: 15.7	Total: 30%	Total: 4.7
Cameroon	CBC			
Cameroon	EEC			
Cameroon	OCASC			
Cameroon	OSEELC			
Cameroon	PCC			
D.R. Congo	ECC/DOM	51.2	60%	30.7
Ghana	CDC	20.5	40%	8.2
Kenya	MEDS	31.5	40%	12.6
Malawi	CHAM	11.9	37%	4.4
Nigeria	CHANpharm	120.9	25%	30.2
Rwanda	BUFMAR	8.3	40%	3.3
South Africa**	AMFA	-	-	-
Tanzania	CSSC	36.3	40%	14.5
Uganda	JMS	25	40%	10
Zambia	CHAZ	10.7	33%	3.5
	Total	**284.4**	**43%**	**112.1**

* based on data from 2002 provided in the Human Development Report (HDR), UNDP 2004

** customers in other countries

3.5.2 Type of customers

The 16 DSOs provided services to a total of 8,269 customers divided between DSO members (53%) and non-members (47%). Member health facilities made up the majority of customers. Of these member health care facilities, 5% were hospitals, 29% health care centres and 19% health posts. The fact that the member health care facilities served were mainly health centres and health posts may indicate that these health services are offered in rural areas. This was acknowledged by the government officials interviewed (see 4.3.1). The non-member facilities were not always health facilities but health services in an institution, such as a school clinic or a dental clinic. More details are provided in Table 8.

Table 8: DSO customers by type of health care facilities in 2003

Country	DSO	No. of member hospitals[a]	No. of member health care centres[b]	No. of member health posts[c]	No. of non member customers	Total no. of customers in 2003
Cameroon	CAP/EPC	8	32	0	0	40
Cameroon	CBC	2	21	40	10	73
Cameroon	EEC	5	8	34	0	47
Cameroon	OCASC	10	200	0	0	210
Cameroon	OSEELC	3	0	10	15	28
Cameroon	PCC	6	14	0	0	20
D.R. Congo	ECC/DOM	12	75	600	2513	3200
Ghana	CDC	31	60	6	20	117
Kenya	MEDS	66	153	385	396	1000
Malawi	CHAM	20	129	0	0	149
Nigeria	CHANpharm	150	1200	500	70	1920
Rwanda	BUFMAR	13	95	0	9	117
South Africa	AMFA	23	0	0	0	23
Tanzania	CSSC	0	29	0	0	29
Uganda	JMS	114	346	0	711	1171
Zambia	CHAZ	34	58	5	28	125
	Total no. of customers	**497**	**2420**	**1580**	**3772**	**8269**

3.5.3 Distance from customers served

Of the 11 DSOs responding, four DSOs had their furthest customer between 150-500 km away, five between 550 - 900 km and two DSOs between 1500-2000 km. This wide geographical distribution of customers was an issue raised by DSOs that did not have their own delivery services.

3.5.4 Customers outside their country

Of the 16 DSOs, six indicated that some of their customers are situated in other African countries. More details are provided in Table 9.

Table 9: DSOs with customers in other countries

Country	DSO	Customers in other countries supplied
South Africa	AMFA	Angola, Benin, Botswana, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Lesotho, Madagascar, Niger, Rwanda, Togo, Uganda, Zambia, Zimbabwe
Uganda	JMS	Kenya, Sudan (south)
Rwanda	BUFMAR	Democratic Republic of Congo
Kenya	MEDS	Uganda, Sudan (south), United Republic of Tanzania, Somalia, Democratic Republic of Congo
Ghana	CDC	Togo
Cameroon	CBC	Nigeria, Central African Republic

[a] Secondary or tertiary level of care

[b] Primary health care level

[c] Facilities run by community health care workers

3.5.5 Customer acceptance

Table 10 shows the categories of customer accepted by the 16 DSOs. Five of them accepted all health care providers in both the public and the private sectors (commercial and non-profit). Three DSOs accepted only not-for-profit health care providers. The remaining eight DSOs accepted customers who were faith-related.

Table 10: Categories of customer used by DSOs

Categories of customer	DSOs (No.)	DSOs (%)
Any health care provider	5	31
Only Christian members	4	25
Only not-for-profit health facility	3	19
Only same religious denomination	2	13
Only faith-based health facility	2	13

3.5.6 Customer performance monitoring

Over the years, 12 DSOs developed criteria for monitoring the performance of their customers, seven using multiple criteria, while four DSOs reported that they did not monitor customer performance. The criteria used by the 12 DSOs for reviewing customers are listed in Table 11.

Table11: Criteria for reviewing customer's performance

Criteria	DSOs (No.)	DSOs (%)
Credit worthiness	8	50
Level of purchase	6	38
Number of patients served	3	19
Faith affiliation	2	13

3.5.7 Penalties for customers

The 12 DSOs that monitored customer performance had a penalty system in place for when, after review, customers' performance was found unsatisfactory. A number of penalty options were used by four DSOs, as shown in Table 12.

Table12: Penalty options for customers

Penalty options	DSOs (No.)	DSOs (%)
Removal from the DSO customers list	8	67
Withdrawal of all services	4	33
Withdrawal of credit terms	3	25

3.5.8 Payment options for customers

Fourteen DSOs with a revolving drug fund mechanism offered different payment options to their customers. Twelve offered more than one payment option to customers, depending on the customer's ability-to-pay. Moreover, the DSOs did not want to penalize patients when the member health care facility had short-term cash flow problems.

The remaining two DSOs did not have a revolving drug fund. One of them charged customers the sales price with no mark-ups and the other one distributed medicine supplies free-of-charge to their customers. These two DSOs had external donor funding to support their operations. Table 13 shows the different payment options.

Table13: Payment options offered by DSOs to their customers

Payment options	DSOs (No.)	DSOs (%)
Cash and carry (no credit)	11	79
Credit, 30 days	9	64
Prepayment/Customers with accounts	4	29
Credit, 60 days	1	7

3.5.9 Pricing policy for customers

Among the 12 DSOs which sold medicines, nine did not apply differential pricing depending on whether customers were members or non-members. The remaining three did make a distinction, charging non-members more than members. One of these offered a 5% discount to their member customers and the remaining two DSO did not report on the different charges.

3.6 Drug selection and quantification

3.6.1 Drug selection

The 16 DSOs' drug selection was performed by:

- drug committees (DSO, hospital or ministry of health): 7 DSOs (44%);
- DSO's procurement team: 5 DSOs (31%);
- DSO pharmacist or doctor taking an individual decision: 2 DSOs (13%);
- customer taking an individual decision: 2 DSOs (13%).

3.6.2 Supply list

For 16 DSOs, the drug supply list was either based on the national list of essential drugs (14 DSOs) or on the WHO Model List of Essential Medicines (one DSO) or on local needs (one DSO). Four DSOs used both the national list and the WHO Model List. Four DSOs allowed non-essential medicines in their supply list, with their number ranging from 10 to 70. "Customer satisfaction" was given as the main reason for buying these products, and a desire to prevent these customers buying their supplies elsewhere.

As shown in Annex 2, the total number of items in DSOs' supply lists ranged from 23 to 1407, and the number of medicines from 22 to 400 products. Out of the total number of items procured by the DSOs, the proportion of 64% was of medicines and 36% of medical supplies. Nine DSOs reviewed their lists at least once a year and five other DSOs did reviews on an irregular basis.

From the total number of medicines on the supply list, there was an average of 31% injectables, 46% solid dosage forms (tablets, capsules, pessaries) and 7% oral liquids.

3.6.3 Written generics policy

Fourteen of the 16 DSOs had a written policy supporting the procurement of generic medicines. The remaining two did not have a written policy but they also procured generics.

3.6.4 Antiretrovirals and HIV diagnostic tests

During 2003, only four DSOs distributed both HIV diagnostic tests and antiretrovirals (ARVs), with one of these receiving nevirapine from an international NGO, one from a donor, one procured triple therapy from the government medical stores for post-exposure prophylaxis (PEP) for their personnel and another one initiated the procurement of ARVs. Eight DSOs procured and supplied only HIV diagnostic tests during 2003.

3.6.5 Quantification of medicine needs

Thirteen DSOs quantified medicine needs based on the consumption method, using sales data from preceding periods. Two of them also used data retrieved from customers' requests. Eleven of the 13 DSOs used only the past consumption method and the remaining two also used population-based or morbidity patterns. Two of the three DSOs which did not quantify medicine needs at all ordered the quantities that their customers requested. The remaining DSO ordered pre-packed kits within their given budget.

3.7 Procurement

3.7.1 Procurement methods

The 16 DSOs used various methods of procurement, as detailed in Table 14. Eight DSOs used multiple methods according to their policy, local circumstances or instructions received from donors. The value of the drug orders and emergency orders of medicines influenced the procurement method chosen. In total, 12 DSOs made direct purchases, seven of them locally and the other five internationally. Among these 12 DSOs, three bought exclusively from local suppliers and just one exclusively from international suppliers. Four DSOs used only direct purchasing from both international and local suppliers. The remaining four used a mix of direct purchasing and negotiated or restricted tendering. Direct local purchases were made whenever required and also when emergency orders were received, while direct international purchases were made only between one and four times a year from pre-selected suppliers. Restricted tendering was used by seven DSOs, five of which used this system exclusively. The remaining two DSOs used a mix of restricted tendering and direct purchase. One DSO used negotiated tendering as its

only procurement method. The three remaining DSOs used negotiated tender in combination with other procurement methods, as indicated above.

Table 14: Procurement methods used by DSOs

Procurement methods	DSOs (No.)	DSOs (%)
Direct procurement[f] (from local suppliers)	7	44
Restricted tender[g]	7	44
Direct procurement (from international suppliers)	5	31
Competitive negotiation[h]	4	25
Open tender[i] (from international suppliers)	1	6

3.7.2 Emergency orders

Six DSOs reported that they had had to order emergency supplies during the previous year, with an average per DSO of five emergency orders per year.

3.7.3 Supply sources

The sources of supplies used by the 15 DSOs are listed in Table 15. The majority of DSOs purchased their supplies from a mix of local and international supply sources.

Table 15: Supply sources used by DSOs

Sources of suppliers	DSOs (No.)	DSOs (%)	Range of items (%)
Local suppliers[j]	15	94	2 - 100
International suppliers	13	81	20 - 98
DSO manufacturing sites	5	31	1 - 25

Table 16 provides details about each DSO's proportion of local and international suppliers and on site production in relation to the total value of procured supplies. As can be seen Cameroon used a mix of suppliers in different proportions. A comparison between countries and individual DSOs did not show any particular trend. Mixed sources depended mainly on the presence of a local private pharmaceutical industry, local arrangements with the government medical stores or donor requirements.

[f] Direct procurement: is the simplest, but one of the most expensive methods of procurement, and implies direct purchase from a single supplier, either at the quoted or at the negotiated price (MDS, 1997).

[g] Restricted tender: also known as selective tender, is a procurement method in which participation in bidding is limited to suppliers that meet certain prerequisites or have previously registrered as suppliers (MDS, 1997).

[h] Competitive negotiation: also known as international or local shopping, is a procurement method in which the buyer approaches a small number of selected potential suppliers for price quotations and bargains with them to achieve specific price or service arrangements (MDS, 1997).

[i] Open tender: a formal procedure by which quotations are invited from any manufacturer or supplier on a local or worldwide basis, subject to the terms and conditions specified in the tender invitation (MDS, 1997).

[j] Local suppliers include local wholesalers and local manufacturers. Local wholesalers may import medicines and supplies from international suppliers/manufacturers.

Table16: Proportion of total value of procured supplies by DSOs in 2003

Countries	DSO	Local suppliers (%)	International suppliers (%)	DSO manufacturing (%)
Cameroon	CAP/EPC	80	20	-
Cameroon	CBC	10	80	10
Cameroon	EEC	100	-	-
Cameroon	OCASC	40	60	-
Cameroon	OSEELC*	100	-	-
Cameroon	PCC	29	70	1
D.R. Congo	ECC/DOM	15	85	-
Ghana	CDC	55	20	25
Kenya	MEDS	75	25	-
Malawi	CHAM	-	100	-
Nigeria	CHANpharm	5	91	4
Rwanda	BUFMAR	15	75	10
South Africa	AMFA	5	95	-
Tanzania	CSSC*	100	-	-
Uganda	JMS	53	45	2
Zambia	CHAZ	2	98	-

* through government medical stores

Local suppliers

Of the 16 DSOs, 15 bought medicines from local suppliers and one did not. Eleven of the 15 DSOs bought medicines from local private-for-profit suppliers. Eight of the 15 mainly bought their medicines from public supply organizations in their own country. Two of the eight bought exclusively from public supply organizations.

International suppliers

Of the 16 DSOs, 13 bought internationally, with one buying exclusively from international suppliers.

The three main reasons reported for buying internationally were:

- competitive prices: 12 DSOs (75%);
- assured quality: 10 DSOs (63%);
- absence of local manufacturers for the required medicines: 10 DSOs (63%).

The main constraints encountered in purchasing internationally were:

- long delivery times: 11 DSOs (69%);
- government policy restrictions: 5 DSOs (31%).

The main international suppliers used were:

- International Dispensary Association (IDA), the Netherlands: 10 DSOs (77%);
- Three UK-based suppliers: Durbin, Hencourt and Pace Grove: 4 DSOs (30%);
- Missionpharma, Denmark: 3 DSOs (23%);
- Two international manufacturers Cipla, India: 2 DSOs (15%) and Nubenco, USA: 1 DSO (8%).

DSO local manufacturing facilities

Of the 16 DSOs, six had their own local manufacturing units. Only three DSOs reported on the products they produced such as, syrup (quinine), various topical ointments and lotions (calamine), pessaries and suppositories (painkillers and anti-haemorrhoid), various tablets (e.g. quinine, mebendazole, metronidazole, pyrimethamine), eye drops and infusions (metronidazole 0.5%, sodium chloride 0.9%, dextrose 5%). Local production as a proportion of total procurement value was between 1 - 4% for three DSOs and between 10 - 25% for another three. The two DSOs that manufactured the lowest percentage (1% and 2%) of the procurement value had undertaken a cost-benefit study but the results were not reported.

3.7.4 Means of shipment of imported goods

Of the 13 DSOs that imported supplies, four used all three means of shipment - air, sea and road. Twelve DSOs used air and sea transport and one shipped exclusively by air. Eight DSOs reported that they imported between 90 - 99% of imported supplies by sea. The methods of shipment reported by the 13 DSOs are listed in Table 17. The remaining three DSOs did not import supplies, as they purchased locally.

Table 17: Means of shipping used by the DSOs

Means of shipment	DSOs (No.)	DSOs (%)
Air	13	100
Sea	12	92
Road	4	30

3.7.5 Customs and port clearance

Of the 13 DSOs that imported supplies, eight used private clearing agents and four undertook clearance procedures themselves. One DSO used both options.

3.7.6 Lead-time

Average time between placing orders and arrival at the port of entry

Ten of the 16 DSOs reported on this but for three DSOs it was not applicable as they did not import supplies. For five DSOs the average time was below 100 days and for the five others it was over 100 days, as shown in Table 18.

Table 18: Average time between placing orders and the arrival to the port of entry

Average time between placing orders and arrival to port of entry	DSOs (No.)	DSOs (%)
0 - 49 days	2	20
50 - 99 days	3	30
100 - 199 days	2	20
≥ 200 days	3	30

Average time between the port of entry and arrival at the warehouse

Ten of the 16 DSOs reported on this, with nine stating that the average time period was between 1 - 9 days and the remaining DSO (in a country experiencing civil unrest) reported an average of 195 days.

Average time between arrival at the warehouse and clearance for distribution

Nine DSOs reported on this. Seven stated that the average time period was between 1 to 29 days and the remaining two DSOs reported an average time period of 30 to 49 days. More details are provided in Table 19.

Table 19: Average time between arrival at the warehouse and clearance for distribution

Average time between arriving at the warehouse and clearance for distribution	DSOs (No.)	DSOs (%)
1 - 9 days	2	22
10 - 19 days	4	44
20 - 29 days	1	11
30 - 39 days	1	11
40 - 49 days	1	11

3.8 Medicines prices

3.8.1 Comparison of purchase prices of drugs between DSOs

Prior to the feedback meeting (See Chapter 6), a form listing 13 selected essential medicines was sent to the DSOs for them to insert their 2003 purchase prices (in US$). Nine DSOs responded, bringing their price information to the meeting. Only one of these reported prices on all 13 medicines. However, all nine DSOs reported on three medicines (amoxicillin, diazepam, pyrimethamine + sulfadoxine), eight reported on five medicines (carbamazepine, co-trimoxazole, diclofenac, glibenclamide, phenytoin), seven on two medicines (ciprofloxacine, hydrochlorothiazide), five DSOs reported only on artesunate and three DSOs reported on two medicines (atenolol, fluconazole). During the feedback meeting, the results of the price survey were shared with DSO participants. The price data were compared with Management Sciences for Health (MSH) median prices.[6] The price survey methodology was that developed by the WHO-HAI medicine prices project.[5] Price ratios were obtained from the DSO prices collected and the MSH median prices, and were compared by medicine and by DSO. See Annex 3 for more details.

3.8.2 Median drug price ratios by DSO

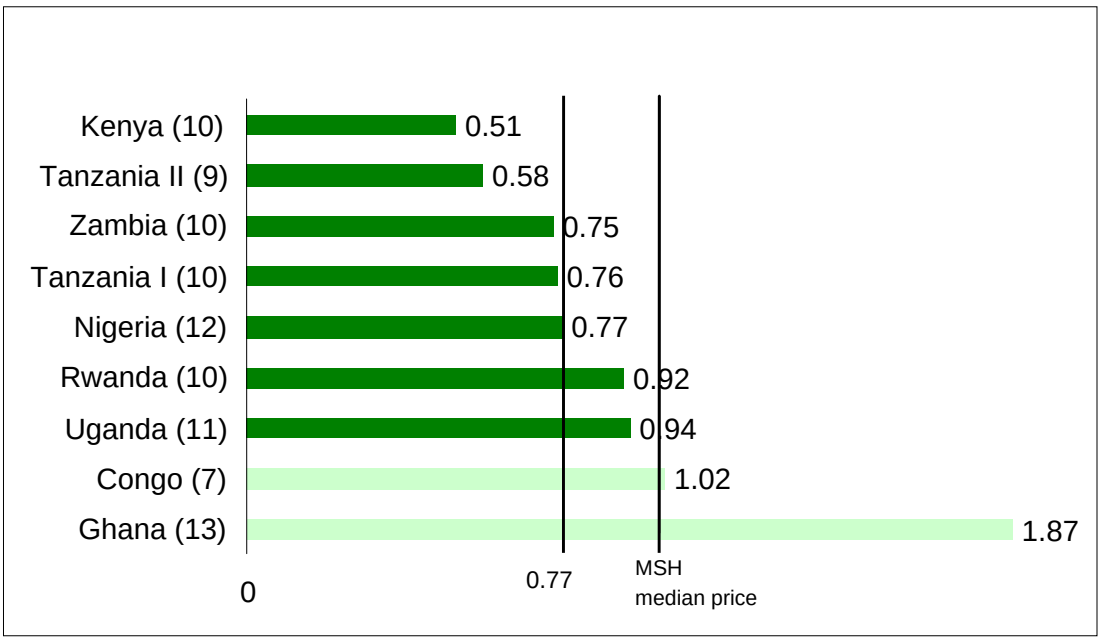
Compared with MSH reference prices, seven DSOs had median prices below 1 (0.51 - 0.94) and two DSOs above 1 (1.02 - 1.87). None of the DSOs had price ratios which were all below 1. Overall the median of the median prices for the surveyed medicines was 0.77, indicating that for the sample essential medicines the price paid was 77% of the MSH reference price. Four countries had their median price below the median of the median prices. Seven countries had their median price

below the MSH reference price, one had the same as MSH and one was above. Detailed price ratio data by DSO are provided in Figure 1 and Annex 3.

3.8.3 Median drug price ratios by individual medicine

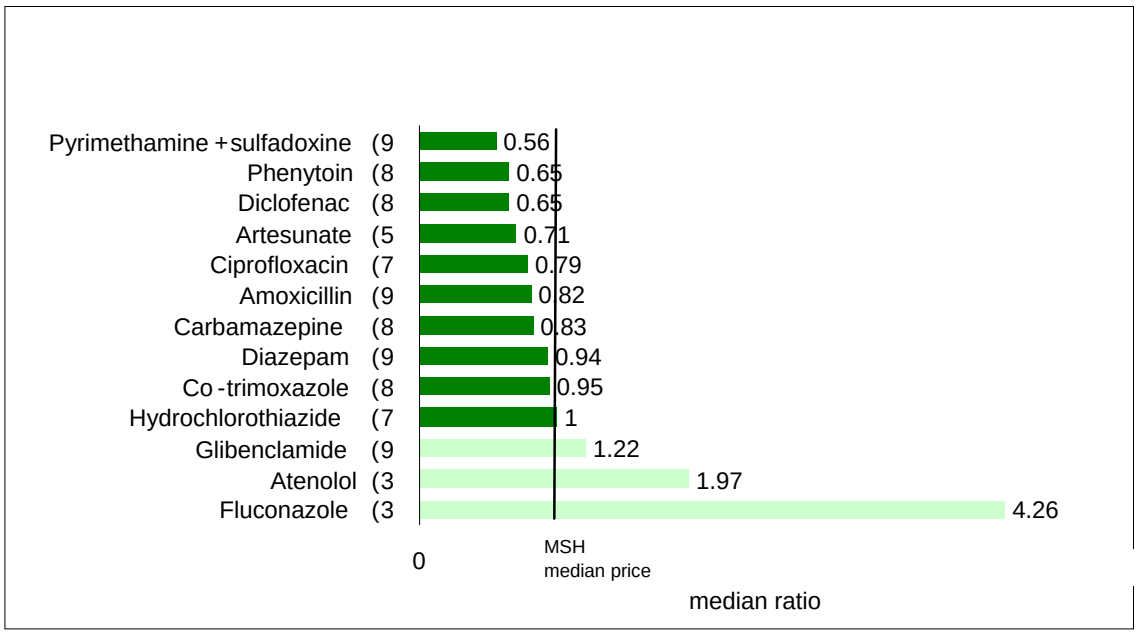
A number of medicines were priced well below the MSH reference price, nine products were less than the MSH reference price, one was the same and three were higher. Detailed price ratio data by medicine are provided in Figure 2 and Annex 3.

Figure 1: Median price variation by country



(n=number of medicines surveyed per country)
Tanzania I = CSSC; Tanzania II = MEMS

Figure 2: Median price ratio per medicine compared to MSH price, 2003



(n = number of countries that responded)

3.8.4 Sources of drug price information

Of the 15 DSOs which procure medicines, 10 reported that they used individual company price lists as their main source of price information. Only one DSO mentioned that they used the International Drug Price Indicator Guide as a reference. WHO/AFRO Essential Medicines Price Indicator[7] was used by one DSO too. More detailed information is provided in Table 20.

Table 20: Sources of drug price information used by DSOs

Drug price information	DSOs (No.)	DSOs (%)
Individual company price lists	10	67
Government price list	3	20
Local price indicator	2	13
MSH/WHO International Drug Price Indicator Guide	1	6
WHO/AFRO Essential Drugs Price Indicator	1	6

3.8.5 Price lists or catalogues

Of the 13 DSOs that distributed medicines and medical supplies, 12 DSOs sent price information to their customers. Of these 12, seven sent price catalogues one to four times a year, three DSOs sent stock lists at least once a year, and two only sent price lists for special items.

3.9 Quality assurance

3.9.1 Standard Operating Procedures (SOPs)

Among the 16 DSOs, seven reported having written SOPs in place for specific supply management activities, in the areas of procurement, pricing, storage and distribution. SOPs are authorized, written instructions,[8] detailing procedures to be followed, and the sequence of activities and tasks to be performed by the responsible staff. They also set out what documents need to be produced for certain tasks, to facilitate the tracing back of information when necessary. All seven DSOs reported that they had developed more than one SOP. More detailed information is provided in Table 21.

Table 21: Number of DSOs with written SOPs in place for specific supply management activities

Written SOPs	DSOs (No.)	DSOs (%)
Procurement	6	38
Pricing	6	38
Storage and distribution	5	31
Quantification of items to be ordered	4	25
Supplier selection	4	25
Quality assurance for procured items	4	25
Tender process	3	19
Quality assurance for manufactured items	2	13

3.9.2 Supplier selection

Twelve DSOs reported that they purchased mainly from selected suppliers. These DSOs used multiple selection criteria, with quality of products, price competitiveness and delivery time the most important of these (see Table 22).

Table 22: Number of DSOs using selection criteria for suppliers

Selection criteria for suppliers	DSOs (No.)	DSOs (%)
Quality of products	12	100
Price competitiveness	10	83
Delivery time	7	58
Registration with national drug regulatory authority	4	36
Sole supplier	3	27
Credibility (track record) of supplier	3	27

The main documents used by DSOs during tender bid evaluations were:

1. Good Manufacturing Practices (GMP) certificates; and
2. reports obtained from the national drug regulatory authorities regarding adherence to GMP.

In addition, among the 15 DSOs, nine requested batch samples as part of tender specifications. All 16 DSOs indicated that they were unable to carry out full GMP site inspections of their local and international suppliers.

3.9.3 Supplier performance monitoring

Among the 14 DSOs, two reported that they did not monitor supplier performance. The remaining 12 DSOs indicated that they used multiple criteria, which are listed in Table 23.

Table 23: Criteria for reviewing suppliers' performance

Criteria	DSOs (No.)	DSOs (%)
Quality of service*	11	92
Quality of products	8	67
Prices	7	58
Availability of products	3	25
Payment terms	3	25
Product range	2	17
Documentation/packaging	2	17

* In terms of appropriate communication, flexibility, reliability, response to complaints

3.9.4 Exchange of information on supplier performance

Among the 15 DSOs, eight reported that they shared information on supplier performance mainly with institutions in their own country, such as other not-for-profit organizations and government drug supply organizations. Only one DSO exchanged supplier performance information with the national drug regulatory authorities and ministry of health. More detailed information is provided in Table 24.

Table 24: Exchange of information on supplier performance

Institutions	DSOs (No.)	DSOs (%)
Other not-for-profit organizations in the country	4	27
Government drug supply organization	3	20
Ministry of health	1	7
National drug regulatory authorities	1	7
Donors	1	7
Customers	1	7
Founding bodies	1	7

3.9.5 Drug quality control testing

Among the 15 DSOs, eight conducted quality control (QC) testing of batch samples requested with the tender biddings. These eight DSOs also undertook regular batch testing after the consignments had arrived to their stores. Five of them used external QC laboratories, including private and government QC laboratories. Three DSOs used their own QC units and two DSOs used Minilab® screening kits. Three DSOs used more than one drug quality control facility. None of the DSOs reported on the QC testing costs or the percentage of operating costs spent on QC testing.

Only four of the 16 DSOs retained batch samples for a period of time, ranging from six months to two years, while one DSO did not know how long samples were kept. The various drug quality control facilities are listed in Table 25.

Table 25: Drug quality control facilities used by DSOs

Drug quality control facilities	DSOs (No.)	DSOs (%)
Private QC laboratory	4	25
Government QC laboratory	3	19
DSO's own QC unit	3	19
Minilab® (screening kit)	2	13
Supplier information reviewed	1	6

3.9.6 Products with quality defects

Among the 14 DSOs responding, 10 recorded quality-related problems. All 10 notified the supplier concerned and returned batch samples of the defective products with a request for product replacement. They also informed their customers about quality-defective products. Only seven DSOs recalled the products from their customers and only two of these indicated that they destroyed the defective products themselves.

3.9.7 Product exchange policy

From the 15 DSOs with procurement activities, eight had a policy in place to allow customers to exchange products with short expiry dates.

3.10 Store management

3.10.1 Stock arrangement

Of the 15 DSOs that performed procurement activities, 13 had warehouses. The remaining two had direct delivery arrangements with suppliers.

Nine of the 13 DSOs arranged their stocks in alphabetical order. Two arranged them according to dosage forms (e.g. tablets, syrups, injections) and another two did so according to therapeutic classification. Five of the nine DSOs that arranged stocks alphabetically reported that they did so according to the FEFO principle ("first expiry first out").

3.10.2 Warehouse management

Security measures

The 13 DSOs with warehouses had various security measures in place to secure their premises. All had security guards and restricted entry to the stores. Additional measures in place were:

- keys kept by authorized persons: 11 DSOs (85%);
- metallic/grill doors: 9 DSOs (69%);
- burglar proofed windows: 7 DSOs (53%);
- double locking doors: 6 DSOs (46%);
- high wall fence: 6 DSOs (46%).

Temperature control

Of the 13 DSOs with warehouses, 11 used various temperature control measures, while two did not monitor warehouse temperatures. Five DSOs had purpose-built cold rooms for storing heat- sensitive products and one had a cold room under construction (more details in section 3.4.2). Five DSOs had air conditioners installed, five had special roofing and two had ceiling fans. Six DSOs used a variety of temperature control measures in their warehouses.

Pest control

Of the 13 DSOs with warehouses, nine had various pest control measures in place: four did regular rodenticide baiting, two used traps, three DSOs undertook irregular chemical spraying and another sprayed regularly. Four DSOs took no action to deter pests.

3.10.3 Drug requisition handling

Ordered number of items supplied

Fifteen of the 16 DSOs reported their estimates of items delivered compared to the number of medicine items ordered by customers. Seven DSOs estimated that they could deliver between 75-100% and five DSOs between 50-75%. Only one DSO claimed 100% success in delivering the number of items that were ordered. One DSO could not answer this question as it used pre-packed kits (see Table 26).

Table 26: Estimated proportions of drug items delivered by DSOs compared to drug items ordered by customers

Proportion of ordered items delivered	DSOs (No.)	DSOs (%)
Always 100%	1	7
75 - 100 %	7	47
50 - 75%	5	33
25 - 50%	1	7

Ordered quantities of items supplied

All 16 DSOs gave an estimate of the proportion of the quantity of medicines they delivered compared to the quantities ordered by customers. Twelve DSOs estimated that they could deliver between 75-100% and four DSOs claimed to always deliver the quantities ordered. More information is shown in Table 27.

Table 27: Estimated proportions of drug quantities delivered by DSOs compared to quantities ordered by customers

Proportion of ordered quantities delivered	DSOs (No.)	DSOs (%)
Always 100%	4	25
75 - 100 %	8	50
50 - 75%	3	19
25 - 50%	1	6

Time needed for the dispatch of orders

Of the 14 DSOs that reported, nine indicated that they needed some hours to prepare a dispatch. These DSOs did not have their own delivery services and their clients visited the warehouse. Five indicated that they could dispatch within a 7-day time period. Four DSOs used more than one dispatch option and two DSOs did not respond. More details are provided in Table 28.

Table 28: Estimated time between receiving orders and dispatch

Time period	DSOs (No.)	DSOs (%)
Hours	9	64
< 7 days	5	36
1 - 2 weeks	2	14
2 - 3 weeks	0	0
3 - 4 weeks	1	7
> 4 weeks	1	7

3.10.4 Drug inventory control systems

Of the 13 DSOs that had warehouses, 12 had drug inventory control systems in place and one did not because it only stored pre-packed kits.

Computerized inventory control systems

Of the 12 DSOs with drug inventory control systems, eight had computerized inventory control systems and four still did manual inventory control checks. Three DSOs only used computerized inventory control systems, whereas five others used both a computerized and a manual system in the form of stock cards.

Manual inventory control systems

Four DSOs only had a manual system with stock cards either on the shelves or on a desk. Table 29 provides more details about the inventory control systems.

Table 29: Drug inventory control systems in place by DSOs

Drug inventory control systems	DSOs (No.)	DSOs (%)
Computerized stock control and stock cards kept on the shelves/desk	5	42
Stock cards kept on the shelves/desk	4	33
Computerized stock control only	3	25

3.10.5 Drug inventory control checks

Twelve DSOs reported that they carried out drug inventory control checks at regular intervals, as shown in Table 30.

Table 30: Drug inventory control checks undertaken by DSOs

Drug inventory control checks	DSOs (No.)	DSOs (%)
Monthly basis	4	33
Quarterly basis	4	33
On a random basis	3	25
Annual basis	1	8

Three DSOs reported that they used random stock checking, which is an advanced method of stock checking and is less time-consuming. This is seen as best practice. However, checking expiry dates was done manually by nine DSOs and only three DSOs could use their computerized systems for this. Monitoring medicine shortages and surpluses was done manually by eight DSOs, while three were able to use their computerized systems for this task. One DSO did not monitor shortages or surpluses. The 12 DSOs reported that discrepancies existed between manual stock checks and computerized stock control, and the main causes reported are listed in Table 31.

Table 31: Drug inventory control discrepancies

Inventory control discrepancies	DSOs (No.)	DSOs (%)
Late posting of stock transactions	8	66
Incorrect picking	8	66
Breakages	7	58
Poor or inaccurate record entries	6	50
Theft	3	25

3.11 Drug distribution

3.11.1 Supply systems

Indent system - "pull system"

Fourteen DSOs delivered according to the needs of their customers (indent system) or on customers' requests, known as a "pull" system or inventory-based system.[9]

Pre-packed kit system - "push system"

Two DSOs distributed medicines in pre-packed kits, also known as a "push" supply system,[10] to health care facilities according to their own drug supply policy, which was not always based on the government policy. One of these two DSOs had an indent system too. Pre-packed kits were mainly used for areas which faced logistic and security constraints and which were often inaccessible, so creating a continuous "emergency" situation.

The main disadvantage of a pre-packed kit system, such as over and under stocking of medicines and medical supplies, are well recognized.[10] However, a pre-packed kit system was still favoured because kits were easy to distribute and record keeping was simple. No information was provided about under-use of certain products in the pre-packed kits which will result in over-stocking and getting expired over a longer period of time.

Drug donations

Six of 14 DSOs received drug donations for distribution to their customers. Although they applied either existing institutional, national or WHO-published interagency guidelines on drug donations,[11] all of them encountered problems with donations. Major problems that they reported include:

- medicines received are expired or close to expiry;
- medicines received do not match local needs;
- quantities received do not meet local requirements and are irregular;
- medicines received are in damaged packaging or incomplete boxes.

Another concern expressed by the majority of DSOs are drug donations that are not received and distributed by the DSOs but that go directly to the individual member health care facilities. These are so-called "suitcase donations". Before visiting health care facilities run by a faith-based organization, individuals from abroad collect returned or nearly expired medicines from community and hospital pharmacies and take them into the country they are visiting in their luggage.

Reporting complaints on drug donations

None of the six DSOs reported these problems to their donors or to WHO. Discussions revealed that complaining about gifts was considered inappropriate, as it might harm long-standing relationships and cause DSOs and their faith-based organizations to miss out on other kinds of support.

Quality control testing and distribution of drug donations

Quality control testing was not performed on donated medicines before or after receipt. In addition, it was reported that these donations had to be distributed free-of-charge to their customers, which hampered the recovery of distribution costs and the generation of funds needed to revolve the DSOs' drug funds. DSOs also stated that large quantities of donated medicines disrupted the distribution of regular supplies in stock, resulting in expiry before they could be distributed.

3.11.2 Drug delivery

Delivery services by DSOs

As mentioned in 3.4.4, of the 10 DSOs that offered drug delivery services (their own by three DSOs or contracted out to a courier service by seven others), seven DSOs reported that the delivery times varied from less than a week (five DSOs) up to two weeks (two DSOs). Besides offering a delivery service, three DSOs also allowed their customers to pick up drug orders using their own transport, and this allowed for collecting emergency orders as well.

Supplies collected by customers

Customers of the five DSOs that did not offer any delivery services visited their DSOs to submit and collect their supply orders. The time between submission, preparation and collection was a few hours.

Direct delivery by suppliers

Three DSOs had negotiated direct delivery of goods with their suppliers/manufacturers, and the delivery time was one month on average.

3.12 Drug management information system (DMIS)

3.12.1 Computerized DMIS

Of the 16 DSOs, 14 DSOs had functioning computers in the work place. Most used Word and Excel programmes. Six DSOs had integrated and computerized finance and drug management systems and analysed their inventory data by applying ABC[k] and/or VEN analysis[l] for decision-making purposes. The main reasons for not having a computerized DMIS system were: lack of suitable software; lack of hardware and software; too costly; and lack of staff knowledgeable in this area.

DMIS software packages

DSOs with computerized DMIS used the following software packages: Impact, Navision, Ciel and Peachtree. Four DSOs had adapted software tools, but none had developed their own software tools.

[k] ABC analysis assembles data from recent or projected procurements to determine where money is actually being spent, allowing managers to focus first on high cost items when considering ways to reduce procurement costs. (MDS, 1997)

[l] VEN (Vital, essential, nonessential) analysis classifies drugs in 2 or 3 categories according to how critical the drug is for treating commom diseases. (MDS, 1997)

3.12.2 Manual DMIS

Of the 16 DSOs, 14 reported carrying out the operations listed in Table 32 manually. Twelve of them reported that multiple operations were still undertaken manually.

Table 32: DMIS operations carried out manually by DSOs

Manual operations	DSOs (No.)	DSOs (%)
Inventory control/stock management	9	64
Checking/verification of drug items during packing	8	57
Completion of drug order forms	8	57
Completion of drug dispatch forms	8	57
Completion of drug receipt forms	7	50
Invoicing and billing of drug orders	4	29
Calculating of re-ordering level	4	29
Calculating of credit or payment status	4	29

Twelve DSOs reported that the main problems encountered with manual DMIS operations were that they were too slow and tedious; too time-consuming; and that they increased the risk of human errors (wrong postings of quantities and items).

3.12.3 Monitoring of supply operations

All 16 DSOs kept records on drug management operations. Fifteen of them kept multiple records, mainly on customer purchase orders, customer invoices, delivery sheets and customer statistics. One DSO just kept records of purchase orders. A detailed list is provided in Table 33.

Table 33: Records kept by DSOs for monitoring supply management operations

Records kept by DSOs	DSOs (No.)	DSOs (%)
Customer purchase orders or requisitions for supply	14	88
Customer invoices	13	83
Delivery sheets	12	75
Customer statistics	11	69
Inventory audits or stock taking reports	9	56
Customer requests for special items	7	44

3.12.4 Monitoring of customer satisfaction

From the 14 DSOs, only five used customer surveys (questionnaires) to follow up on customers' satisfaction, while two DSOs did not monitor this aspect at all. Nine DSOs followed up on their customers' views by using two sources of information, for example, informal verbal feedback from customers (9 DSOs) and customer-initiated correspondence (7 DSOs).

3.13 Human resources

3.13.1 DSO staff

As mentioned in Table 1, the number of staff employed by each of the 16 DSOs varied from 1 to 110. Fourteen employed at least one pharmacist and the remaining two had no pharmacist. The number of pharmacists at the DSOs which employed them ranged between 1 - 6. One DSO operated with only one member of staff, a pharmacist, who collected the drug requests from member hospitals and arranged supplies with the government medical stores. As Table 3 shows, of the 16 DSOs, 14 employed medical doctors. The number of medical doctors per DSO ranged between 1 - 12. Five DSOs reported that they employed pharmacy technicians, with their numbers ranging between 1 - 7.

3.13.2 Ratios of annual revenue to number of staff, customers and items

Annex 4 provides the ratios of annual revenue of the 10 reporting DSOs per staff member, per customer and per item they had in stock. Some ratios of annual revenue per staff member may indicate that some DSOs (OCASC, JMS and CBC) may be under-staffed with US$188,911, US$143,278 and US$109,169 per staff member respectively and some DSOs (CHANpharm and CHAZ) may be over-staffed with US$7,071 and US$2,674 per staff member respectively.

The ratio of annual revenue of DSOs per customer may indicate that some DSO customers (CBC and OSEELC) purchase on average to a higher monetary value with US$20,937 and US$17,948 per customer respectively, than customers of other DSOs CHANPharm and CHAZ) with US$335 and US$720 per customer respectively. This may indicate that customers of the latter two DSOs do not buy exclusively from them.

Ratios of annual revenue of DSOs per item in stock may indicate that some DSOs (MEDS and CHANpharm) may have a higher turn-over per item with US$13,534 and US$7,149 per item in stock respectively, than some other DSOs (CBC, PCC and CHAZ) with US$1,569, US$1,290 and US$536 per item in stock respectively.

3.13.3 Staff policy

Of the 16 DSOs, 14 reported that they had a staff policy in place and 12 of them provided written job descriptions. Of the 16 DSOs, 10 provided staff with copies of the disciplinary code.

3.13.4 Staff recruitment

Job vacancies were advertised by 10 DSOs. For all 16 DSOs, recruitment was done by a selection committee and new staff had to serve a probationary period. Recruitment of staff by eight DSOs was based on religious affiliation for certain positions, while three DSOs did not include this as a criterion. Nine DSOs invited only the best applicants for an interview.

3.13.5 Staff performance monitoring

Of the 16 DSO, three reported that they did not monitor staff performance. The majority of the remaining 13 DSOs indicated that they had annual staff appraisals. Only two DSOs had biannual appraisals.

3.13.6 Expatriate staff

Of the 16 DSO, five had at least one expatriate staff member and one DSO had entirely expatriate management. The main reason for employing expatriate staff was that it was a donor requirement or for training local counterparts. One DSO had a co-partnership.

3.13.7 Staff wages

One DSO did not want to disclose any information on staff wages. However, 15 DSOs reported that their staff wages were in general higher than government wage levels and for nine of them their wages were generally lower than those offered in the private/commercial sector. Four DSOs claimed wage levels generally equal to the private/commercial sector and only two DSOs reported having higher wages than the private/commercial sector. Two DSOs reported that in the main they had higher staff wages than other NGOs in their country, while four claimed equal wage levels and seven generally lower wage levels than other NGOs. Two DSOs could not respond as they did not know other NGO wage levels in their country.

Pharmacists' wages

Ten DSOs reported the annual wages (US$) of their pharmacists as shown in Table 34. These wages varied widely between US$2,400 and US$13,450, with a median salary of US$5,780 among the 10 DSOs in seven countries.

Ratios of annual salaries to gross domestic product (GDP)/capita of the countries confirmed the variations among DSOs - ranging between 1.13 - 16.01. Five Francophone DSOs had ratios between 3 - 4 whereas five Anglophone DSOs had ratios between 1 - 16. The median ratio of pharmacist salary to GDP/capita is 3.72.

Table 34: Salaries of pharmacists employed in 10 DSOs, 2003

DSOs*	Annual salaries, 2003 (US$)	GDP/capita[m], 2002 (US$)	Ratio of salary to GDP/capita
1	6,200	2,000	3.1
2	7,000	2,000	3.5
3	6,000	2,000	3.0
4	5,560	2,000	2.8
5	2,400	2,130	1.1
6	8,880	1,020	8.7
7	5,270	580	9.1
8	5,000	1,270	3.9
9	3,600	580	6.2
10	13,452	840	16.0
Median	**5,780**	**-**	**3.7**

* DSOs are numbered and not named to maintain confidentiality

3.13.8 Staff benefits

The top five benefits provided to and appreciated by senior staff were:

- Transport allowances;
- Housing allowances;
- Medical insurance;
- Professional training;
- Pension schemes.
- One important benefit senior staff would have liked was a leave bonus.

3.13.9 Staff motivation

Senior staff from 11 DSOs indicated that the main factors that contributed to staff motivation were team-building exercises, bonus schemes, staff appraisal systems, staff meetings and finally church-fellowship-related activities (see Table 35 for more details). These methods of promoting staff motivation are in line with prevailing management policies aimed at improving communication between staff.

[m] The GDP/capita were from the UNDP website: http://hdr.undp.org/statistics/data/

Table 35: Means of staff motivation indicated by DSO senior staff

Means of staff motivation factors	Number of senior staff	DSOs (%)
Team-building exercises	7	64
Bonus schemes	4	36
Staff appraisal systems	4	36
Staff meeting	3	27
Church fellowship-related activities	1	9

3.13.10 Staff departures

In 2000, nine of the 16 DSOs, reported that a total of 42 staff had left mainly due to restructuring of the DSO (35 staff) and a better job elsewhere (6 staff). In 2001, 12 staff left mainly to go to a better job elsewhere (6 staff), death (3 staff) and for further studies (2 staff). In 2002, a total of 50 staff left, mainly as a result of restructuring (25 staff), no contract renewal (10 staff), retirement (9 staff) and death (3 staff).

3.14 Financial management

3.14.1 Computerized accounting system

Of the 16 DSOs, 11 reported having a computerized accounting system in place. Four DSOs did not have a system and one did not indicate whether it did or not.

3.14.2 Surplus/deficit in budget

Surplus

Nine DSOs indicated that if there was a budget surplus, the money was used for: more drug purchases, investment in infrastructure, recapitalization, capital purchases, staff bonuses, discounts to customers, and financial donations to the founding body.

Deficit

In case of a budget deficit, most of the DSOs indicated that corrective measures were undertaken, margins on drug prices were changed, management changes were introduced, and less money was made available for drug purchases.

3.14.3 DSO operating expenditures

Of the 16 DSOs, 10 provided 2002 budget figures (see Annex 5). Of these 10, nine reported that sales of supplies constituted between 90 - 100% of their total revenues. Purchase costs were the main budget line in the financial overviews of the 10 DSOs. Proportions of drug supply purchases were between 25-89% of total revenues. Staff costs were the second highest item in the overviews, accounting for 0-12% of total revenues (median 7%).

3.14.4 Proportion of income provided by donors

Nine DSOs reported that part of their income was covered by donor support. Six DSOs claimed to have 50-100% of their income covered by donor support. However, specific figures were not provided in their financial reporting. See section 3.15 for more details.

3.14.5 Customs/import duty and value added taxes (VAT) on imports

As shown in Table 36, of the seven DSOs responding, five reported that they paid customs duty or VAT on essential medicines, while two paid no taxes.

Table 36: DSOs reporting paying tax on essential medicines

Taxes on essential medicines paid	DSOs (No.)	DSOs (%)
No taxes or duties paid	2	43
Customs duty	5	43
VAT	3	14

Sea consignments

Five DSOs reported that they paid customs duty on consignments at the port of entry. Five DSOs paid between 0.5-20%. Three DSOs paid VAT (5%, 17%, 18% respectively) on sea consignments as well as duty.

Air consignments

Three DSOs reported that they paid customs duty (0.5%, 4%, 10%) for consignments arrived at the airport. Two DSOs paid VAT (5%, 18%) on air consignments, as well as duty.

Road consignments

No DSOs reported on customs duty or VAT payments for road consignments crossing frontiers.

3.14.6 DSO's liability to pay customs/import duty and VAT

Imported medicines (essential and non-essential)

Three DSOs reported that they paid customs duty or VAT on both essential and non-essential medicines with no differentiation made between them.

Imported medial equipment

Of the six DSOs responding, five paid duty and four paid VAT on medical equipment. Three DSOs paid both.

Imported raw materials

Four DSOs reported that they paid duty and two DSOs paid VAT on raw materials. Two DSOs paid both.

Imported packaging materials

Three DSOs reported that they paid both duty and VAT on packaging materials.

Imported distribution vehicles

Three DSOs reported that they paid both duty and VAT on distribution vehicles.

A number of DSOs (see 3.2.3) indicated that the lack of tax exemption for imported medicines and supplies was one of the external factors adversely affecting their operations. Taxes and duties should be minimized or abolished on importation of essential medicines as well as on raw materials and finished products, especially those imported by sea and by air.

3.14.7 Mark-ups applied

Among the 16 DSOs, 11 reported that they added categories of mark-up to medicines sales prices. Eight DSOs had mark-ups based on either variable percentages linked to the type or quantity of products or type of client of which two of them applied more than one category of variable mark-up to their customers. The remaining three DSOs had a fixed mark-up that they added to all products. Two DSOs did not add any mark-ups at all on their sales prices, with one distributing medicines free-of charge and the other DSO arranging their supplies through the government medical stores. Three DSOs did not report at all. A detailed list is provided in Table 37.

The three DSOs that added fixed percentage mark-ups to the cost price of their medicines indicated either 25%, 30% or 35%. The eight DSOs, that added variable percentage mark-ups to the cost price of their medicines, indicated a range between 2 - 160%. The majority of DSOs added variable percentage mark-ups between 10 - 40%.

For example, in terms of variable percentage mark-ups only one DSO added a maximum of 160%, and another one added different mark-ups for imported products (26%) and locally purchased products (13%), and another one had a multiple mark-up of 10 - 12% but offered a discount of 5% to its member health care facilities. One DSO had a reduced mark-up of 2% for medicines for chronic diseases, including ARVs.

Table 37: Categories of mark-up added to sales prices of medicines

Mark ups	DSOs (No.)	DSOs (%)
Variable percentage linked to category of items of drugs	7	64
Variable percentage linked to category of clients	3	27
Fixed percentage added to all items of drugs	3	27
Variable percentage linked to quantities ordered	1	9

The 11 DSOs that reported that they added mark-ups to their sales prices included costs as indicated in Table 38. The majority of DSOs included packing/handling and transport costs in their mark-ups. Eight DSOs included more than one cost in their mark-up. No information was collected about minimum or maximum mark-ups. Only five DSOs included costs of quality control testing in their mark-ups.

Table 38: Costs covered by mark-ups applied by DSOs

Costs in mark-ups	DSOs (No.)	DSOs (%)
Packing/handling costs[n]	10	91
Transport costs	8	73
Currency devaluation	5	45
Cost of quality control testing	5	45
Depreciation costs	3	27

3.14.8 Written sales pricing policy

Of the 16 DSOs, only six DSOs had a written sales pricing policy in place. One DSO indicated that their sales price components varied annually based on the prevailing circumstances.

3.15 Donor support

Of the 16 DSOs, 11 reported that they received donor support, excluding government support. Ten DSOs received donor support from faith-based organizations based in Europe and the USA and three of them received support from bilateral aid agencies such as USAID (USA), KfW (Germany) and DFID (UK). Four DSOs received also support from more than one donor source. Only two DSOs reported that they could not accept donations from certain charity organizations. Of the 11 DSOs, nine reported receiving more than one type of donor support - see Table 39 for more details.

Table 39: Types of donor support received by DSOs

Types of donor support	DSOs (No.)	DSOs (%)
Financial support	9	75
Training/fellowship support	9	75
Personnel support	8	67
Material support	7	58

3.16 Future perspectives indicated by DSOs

Fifteen DSOs indicated their intention to scale up their activities over the coming 3 - 5 years and the remaining one intended to maintain its current level of activity. Thirteen DSOs proposed activities to improve their performance mainly in terms of their service to customers, as shown in Table 40.

[n] Handling costs include personnel costs and running costs.

Table 40: Activities proposed by DSOs to improve their performance

Activities to increase performance	DSOs (No.)	DSOs (%)
More competitive prices	11	85
Improved delivery time	9	69
Better customer services	7	54
Provision of extra services	7	54
Improved range of medicines	6	46
Concentration on selected customer needs	5	38

Ten DSOs proposed taking measures to improve their financial management, as indicated in Table 41. The majority of DSOs planned a mix of actions in order to better control their financial situation by being more pro-active in decision-making and by monitoring more effectively.

Table 41: Activities proposed by DSOs for their financial management

Actions for better financial management	DSOs (No.)	DSOs (%)
More frequent price revisions	7	70
Greater control of stock levels	6	60
Stricter cost controls	6	60
Stricter adherence to short credit periods	5	50

Twelve DSOs identified strategies to increase their number of customers as given in Table 42. None indicated an intention to expand customer numbers outside their own countries. They proposed a mix of strategies, and plan to establish marketing and customer units to improve monitoring of customer satisfaction levels.

Table 42: Strategies identified by DSOs to increase the number of customers

Strategies to increase number of customers	DSOs (No.)	DSOs (%)
Shorter delivery times	8	67
Face-to-face sales promotion	6	50
Regular surveys of customer needs	6	50
Flexible ordering schedules	4	33

Ten DSOs indicated that activities were planned to increase their collaboration with other DSOs, NGOs and the government, as listed in Table 43. The majority of DSOs indicated a mix of activities to reinforce collaboration with their main local partners. Existing in isolation is seen as no longer sustainable.

Table 43: Activities proposed by DSOs to increase collaboration with partners

Activities to increase collaboration	DSOs (No.)	DSOs (%)
Regular informal meetings	8	80
Regular formal meetings	7	70
Regular issuance of DSO newsletter	5	50
Regular reporting	4	40
Promoting DSO services	3	30

4. Results of other assessments - customers, founding bodies and governments

4.1 Customers

The customer questionnaire was developed to obtain information about the various services offered by the DSOs to the health care facilities or institutions (customers) they serve, the reasons for being a DSO customer and the areas where DSOs should improve their performance. The completion of the customer questionnaire was more difficult than expected. Failure to assess the anticipated 20 health care facilities per DSO was mainly due to time constraints and DSO customers' lack of familiarity with this type of questionnaire.

4.1.1 DSO customers interviewed

The customers of 12 DSOs that were interviewed included managers of health care facilities and district hospitals. The total number of customers interviewed was 54 (23%) instead of the 240 planned for the 12 DSOs. Of these, 38 health care facilities had become customers between 1980 and 2000. More details are provided in Table 44. The customers interviewed explained that the increase in the number of faith-based health care facilities during this time resulted from a slowdown in socio-economic development in Africa, and the fact that reforms introduced in the public health sector did not achieve increased access to health services for the poor.

Many customers indicated that their faith-based organizations took over the running of "abandoned" government health care facilities, especially those in remote areas. The government still owns these facilities but has "contracted out" the provision of health care and pharmaceutical services. It was also reported that the basic salaries of health staff are paid by the government.

Most customers generated income on fees for services, an out-of-pocket payment. Fees may vary between patients as the "ability to pay" principle is applied. Only the poorest patients received health care free-of-charge.

Table 44: Year of becoming a DSO customer

Year	Health care facility (No.)	Health care facility (%)
< 1980	8	15
1980 - 1990	14	27
1990 - 2000	24	46
> 2000	6	12

4.1.2 Health care facility with beds

Of the 49 health care facilities responding, 32 facilities indicated that they had more than 50 beds (see Table 45).

Table 45: Health care facility with beds

No. of beds	Health facility (No.)	Health facility (%)
< 50 beds	13	27
50 - 100 beds	10	20
> 100 beds	22	45
No beds	4	8

4.1.3 Distance between customer and DSO

The distance between the health care facilities interviewed and the DSOs are provided in Table 46.

Of the 51 customers responding, 39 indicated that this was between 1 - 249 km.

Table 46: Distance between interviewed health care facility and its DSO

Distance	Health facility (No.)	Health facility (%)
< 100 km	19	37
100 - 249 km	20	39
250 - 499 km	6	12
≥ 500 km	6	12

4.1.4 Supply systems

Of the 54 customers, 44 responded that they ordered items and quantities as needed (indent system or "pull system"). Nine customers indicated that they received pre-packed kits ("push system"). One customer received only donated medicines when these were available.

4.1.5 Supply sources used by the customers interviewed

As well as the supplies received from their DSOs, customers could rely on various other supply sources, such as the government supply organization, private wholesalers and pharmacies, to supplement their needs. Sales representatives provided medicine samples free-of-charge. The majority of customers used a mix of private wholesalers and government supply organizations to supplement DSO supplies when necessary (see Table 47).

Table 47: Additional supply sources used by customers

Sources of supply	Health facility (No.)	Health facility (%)
Private wholesalers	41	79
Government supply organization	36	69
Private pharmacies	25	48
Sales representatives	13	25

4.1.6 Budget spent on drug supplies

Of the 40 customers responding, 29 indicated that they spent less than 50% of their drug budget on buying medicines from their DSOs and the remaining 11 facilities spent more than 50%.

4.1.7 Customer perception of supply reliability

Number of drug items ordered

Of the 48 customers responding, 26 only received between 0 - 50% of the number of items they ordered from their DSOs, whereas 13 DSOs claimed to provide between 50 - 100% of items. Table 48 provides more details. In this case customer and DSO perceptions are contradictory.

Table 48: Percentage of the number of drug items ordered that were received

Proportion of items ordered that were supplied	Health facility (No.)	Health facility (%)
Always 100%	2	4
75 - 100%	10	21
50 - 75%	10	21
25 - 50%	12	25
0 - 25%	14	29

Quantities of drug items ordered

Of the 47 customers responding, 35 indicated that they received a proportion between 50 - 100 % of the quantities of drug items they ordered from their DSOs. Eleven of the DSOs claimed to provide quantities between 50 - 100%. In this case customer and DSOs perceptions matched. Table 49 provides more details.

Table 49: Percentage of the quantities of drug items ordered that were supplied

Proportion of quantities ordered that were supplied	Health facility (No.)	Health facility (%)
Always 100%	17	35
75 - 100%	13	28
50 - 75%	5	11
25 - 50%	7	15
0 - 25%	5	11

4.1.8 Frequency of ordering

Current ordering arrangement

Of the 53 customers responding, 22 indicated that they ordered from their DSOs on a monthly basis (see Table 50).

Table 50: Current frequency of ordering

Frequency of ordering	Health facility (No.)	Health facility (%)
Monthly	22	42
2 - 3 times/month	9	17
Quarterly	7	13
Ad hoc	6	11
Other	9	17

Preferred ordering arrangement

Of the 53 customers, 22 indicated that they preferred a monthly ordering arrangement with their DSOs. Another 11 customers indicated that they preferred an *ad hoc* ordering arrangement. The remaining customers tended to prefer monthly or quarterly ordering arrangements. Details are provided in Table 51.

Table 51: Preferred frequency of ordering

Frequency of ordering	Health facility (No.)	Health facility (%)
Monthly	22	42
Ad hoc	11	21
Quarterly	9	17
Fixed order	6	11
Weekly	2	4
Other	3	5

4.1.9 Drug delivery services

Current delivery arrangement

Of the 48 customers that responded, 47 of them indicated that their DSO did not offer delivery services. Only one customer indicated that they got their supplies delivered by their DSOs. Details are provided in Table 52.

Table 52: Current delivery services

Delivery services offered	Health facility (No.)	Health facility (%)
Customer's own transport	45	94
Other delivery means	2	4
DSO delivery services	1	2

Preferred delivery arrangement

Of the 53 customers, 29 customers indicated that they preferred the DSO's delivery services and 23 others preferred their own means of transport as they could combine other tasks at the same time and could keep in contact with their DSOs for information on medicines in stock and verify the ordered supplies at their DSOs. Details are provided in Table 53.

Table 53: Preferred delivery services

Preferred delivery services	Health facility (No.)	Health facility (%)
DSO delivery services	29	55
Customer's own transport	23	43
Courier services	1	2

4.1.10 Drug requisition handling

Of the 52 customers, 44 indicated that the time period between ordering and supplies received was a few hours, as they collected their supplies at the DSOs. Six customers indicated that the period was between 1 - 3 days. Another 3 customers indicated that the period varied between 2 - 6 weeks.

Shortfall of supplies

Of the 25 customers responding, 13 customers indicated that within 7 days the supplies were made available for collection or delivery, nine customers had to wait between 30-180 days, and the remaining three customers between 7-30 days.

4.1.11 Purchasing from the DSOs

Of the 50 customers responding, 37 indicated that their main reason for purchasing from their DSOs was product quality, followed by competitive prices and good customer services. Being a member of the faith-based organization to which the DSO belonged, was indicated by 25 customers (See Table 54 for details).

Table 54: Reasons why customers purchase from their DSOs

Reasons for purchasing from DSOs	Health facility (No.)	Health facility (%)
Product quality	37	74
Competitive prices	29	58
Good customer services	27	54
Member of faith-based organization	25	50

4.1.12 Payment arrangements offered by the DSOs

Current payment arrangement

Of the 51 customers responding, 38 customers indicated that they had a cash and carry arrangement with their DSOs, 15 customers had credit terms of 30 days arrangement and one customer had credit terms of 90 days. One customer had an account with its DSO. Four customers had beside their cash and carry arrangement the option of credit. Details are provided in Table 55.

Table 55: Payment arrangements offered by the DSOs

Payment arrangements	Health facility (No.)	Health facility (%)
Cash and carry	38	75
Credit term (30 days)	15	29
Credit terms (90 days)	1	2
Account with DSO	1	2

Preferred payment arrangement

Of the 52 customers responding, 24 customers indicated that they preferred a cash and carry arrangement with their DSOs, 20 customers preferred credit terms of 30 days and four customers preferred credit terms of 90 days. One customer preferred to have an account with the DSO. Four customers preferred to have a mix of payment arrangements, such as cash and carry and credit terms of 30 days. Details are provided in Table 56.

Table 56: Preferred payment arrangements

Preferred payment arrangements	Health facility (No.)	Health facility (%)
Cash and carry	24	46
Credit term (30 days)	20	38
Credit terms (90 days)	4	8
Account with DSO	1	2

4.1.13 ARV prescribing

Of the 50 customers responding, only seven customers indicated that they prescribed nevirapine for PMTCT. The other 43 customers did not prescribe nevirapine or any other antiretroviral medicine.

ARV treatment guidelines

Out of 16 customers who responded, four indicated that they only had copies of national standard treatment guidelines for HIV/AIDS, four only copies of the WHO treatment guidelines, and four only copies of "informal" guidelines. Four had copies of more than one type of treatment guidelines.

ARV training received

Of the 47 customers responding, 13 customers indicated that they received training on ARV prescribing and use. The other 34 customers did not receive any training in the area of HIV/AIDS.

ARV training provided

Of the 13 customers that indicated that they prescribed ARVs, four customers received training from the Ministry of Health, three customers from a Government supply organization, three from NGOs, and another three from international agencies. Three customers indicated that their training was provided by bilateral donors. Five customers indicated that they received training from more than one training provider. Details are provided in Table 57.

Table 57: ARV training

Institutions that provided ARV training	Health facility (No.)	Health facility (%)
Ministry of Health	4	31
DSO	3	23
International agency	3	23
NGOs	3	23
Bilateral donor	3	23
In-house training	1	8

4.1.14 Product exchange policy

Of the 53 customers responding, 25 customers indicated that their DSOs allowed product exchange and the DSOs of the remaining 28 customers did not allow any exchange.

4.1.15 ADR reporting

Of the 44 customers responding, 20 customers did not report on adverse drug reactions. However, 15 customers indicated that they reported to their DSOs, seven customers to their Ministry of Health and two customers to their district medical officers. The majority of customers reported on adverse drug reactions.

4.1.16 Customer perceptions of DSO services

Important issues identified by customers

All customers responding prioritized the following issues they found "very important" in relation with DSO services:

- Good quality products;
- Good prices;
- Sufficient range of products;
- Training;
- Payment arrangement;
- Personal relationship.

Although services and the prevailing local circumstances may differ between DSOs and the countries in which they operate, the customers providing feedback rated the general standard of DSO services as follows:

- "Excellent" for: 1) quality of the products; 2) personal relationships; and 3) expiry dates.
- "Good" for: 1) accuracy of filling of drug orders; 2) prices of products; 3) customer preference allowed; and 4) payment arrangements
- "Acceptable" for: 1) response to complaints; 2) drug information; and 3) complete filling of drug orders.
- "Poor" for: 1) maintenance; 2) drug delivery; 3) support visits; 4) training; and 5) feedback.

Areas to be improved by the DSOs

The 37 customers responding specified the following areas as ones in which the DSOs should improve:

- Range of products offered: the range was not large enough; and hardly any new treatment options were offered when they entered the market.
- Pre-packed kit system: this was found unsatisfactory because the quantity and number of items are fixed. An indent system was seen as better meeting customers' supply needs.
- Information on product quantities available: particularly for customers in remote areas. DSOs provided no information about their drug availability and stock levels.
- Price information: to be communicated on a regular basis to allow customers with a cash-and-carry payment arrangement to bring sufficient cash for the drug supplies they need.
- Flexible payment system: customers often faced a cash flow problem, and with a cash-and-carry arrangement they had difficulty in obtaining sufficient supplies. Credit terms of 30 days should also be offered.
- Drug delivery services: customers collected supplies at their DSOs. Most of them combined collection of supplies with other tasks, and this can be an important factor in binding clients to their DSOs. They chose other suppliers when the DSO could not meet their supply needs.
- Training: customers felt a need for more up-to-date information in the areas of prescribing/dispensing and rational use of drugs, including ARVs; quality of medicines; stock management; and quantification of needs.
- Customer services of an individual nature, such as response to complaints and support visits should be improved.

4.2 Founding bodies

The founding bodies were interviewed to obtain information on the reasons their DSOs existed, and their support to and expectations from their DSOs. Some faith-based organizations arrived in Africa in the late 1890s or at the beginning of the 20th century. Health and education were the main areas of faith-based organizations' work.

4.2.1 Relationship

The relationship between church leaders and DSOs was mainly based on the presence of church leaders' representatives on DSO boards and committees. Most of the church leaders indicated that the DSO's operations were still needed and might even need to expand to fulfil the missions of the various faith-based organizations, such as: "to reach every citizen with preventive and curative services that are as near as possible to them"; "to present a Christian perspective to health care"; " to provide affordable health care, especially to the poorest among the population".

4.2.2 DSO support to the founding bodies

In general, the founding bodies valued their DSOs as necessary supply structures to support their on-going faith-based health care activities. In addition, some of the funds generated by the DSO revolving drug fund were used to establish projects initiated by the church leaders.

4.3 Governments

Government representatives from ministries of health and government supply organizations in seven countries were interviewed about the overall performance of DSOs from their viewpoint, as the countries' health authorities.

4.3.1 DSO contribution to the public supply system

These representatives expressed great appreciation of the contribution faith-based DSOs make to the government health and supply systems. In most cases faith-based DSOs were seen as supportive of government drug policies and viewed as a complementary supply system to the public medicine supply system in meeting the pharmaceutical needs of the population, particularly in rural or other remote areas. However, some government supply organizations saw effective faith-based DSOs as competitors, especially in terms of sales prices and customer services offered. The overall rating of DSOs' quality of services by the seven countries was 3 on a scale of 1 - 5, with 1 as poor and 5 as excellent.

4.3.2 Issues raised by the governments

Government representatives indicated the following areas in which faith-based DSOs should improve:

- Better communication with government policy makers (MOH);
- Improved professionalism in medicine supply management;
- Improved quality control system for medicines;
- Better drug donation policies.

5. Lessons learnt and practical recommendations

5.1 WHO/EPN feedback meeting

This section is based entirely on the discussions and recommendations of participants at the WHO/EPN feedback meeting on the multi-country study, held in Nairobi, Kenya, from 31 May to 2 June 2004. From this research study's inception a feedback meeting was viewed as a critical and integral element of the participatory process that was the basis of the multi-country study and essential for its success. The meeting was an opportunity to inform EPN board members, assessment team members and others in EPN not involved in the study of its results. (The full meeting report can be requested from the EPN Secretariat at the address given on p.ii).

5.2 Group analysis

5.2.1 Priority areas in drug supply and management

After the presentations of the study results by the WHO staff involved in the study, participants' initial task was to identify the key findings and to prioritize them, so highlighting the main areas in the DSOs' drug supply and management operations. These were identified as:

1. Quality assurance;
2. Training;
3. Distribution/delivery services;
4. Procurement of medicines;
5. Storage and drug management capacity;
6. Sustainability of DSO operations;
7. Collaboration.

Although several DSOs mentioned pricing of medicines, it was not viewed as a priority area overall.

In small working groups, participants developed "problem trees" for each priority area, to identify possible underlying causes of problems and to propose feasible ways to solve them. See Annex 7 for more details of the priority areas of an action plan, including the possible causes of problems and suggested activities for DSOs, the EPN members and external partners.

The working groups then identified the main lessons learnt from the study and went on to discuss the characteristics of a well-functioning DSO, to use as a basis for measuring changes and improvements over time. The frank and wide-ranging discussions at the meeting resulted in recommendations that were approved by all participants.

5.2.2 Lessons learnt from the WHO/EPN multi-country study

Participants prioritized the main lessons as follows:

- The study process gave DSOs an opportunity for self-assessment.
- Involvement in the study strengthened the human resources capacity of EPN by improving networking between its members and with WHO, as one of EPN's external partners.
- The study's emphasis on documentation as evidence for policies and drug management systems encouraged correct recording, documentation and monitoring of activities within DSOs.
- Peer-review on best practices through learning by evaluating and by learning how to evaluate was encouraged. In addition, the interviews stimulated technical discussions between the assessors.
- Assessors from twinned DSOs learnt from the assessment exercises, and some of them introduced activities to improve their own systems, even before the study results were known and discussed at the feedback meeting.
- The assessments revealed whether DSOs had mechanisms in place to demonstrate transparency and accountability, or whether greater efforts were needed to address this.
- Although the study aimed to document how each DSO operated, it was evident that DSOs are dynamic institutions, adapting their way of working on a continuous basis, necessitating planning for similar follow-up studies at regular intervals.
- The study methodology proved correct in recognizing the importance of meeting and communicating in other ways with different categories of DSO staff, their customers, officials of the founding bodies, ministries of health and government supply organizations.
- The study opened up new ways of collaboration among DSOs, in terms of addressing current challenges and problems and sharing relevant experiences.
- Ownership and trust were maximized by using assessors from other EPN member DSOs to undertake assessments. The exchange visits were useful.
- The cooperation, honesty and openness between the four assessors of the twinned DSOs indicated the strength of team spirit developed.
- The importance of open mindedness when carrying out assessments was underlined.
- The use of external assessments was a good choice.
- Stronger links between DSOs and governments should be encouraged.
- Interviewers learnt more than interviewees during the assessments.
- It was important to have questionnaires in both English and French.

Additional points raised during discussions:

- More emphasis should be given to explaining the purpose of the study, the twinned assessments for data collection, and to managing expectations.
- As different terminology was used in each country, definitions should have been included in the questionnaires, although using assessors had minimized misunderstandings.
- Although organizing and implementing a multi-country study is a challenge, EPN had successfully achieved this, together with WHO.

5.2.3 Characteristics of a well-functioning DSO

Based on the study results, participants were asked to identify and rank the characteristics of a well-functioning DSO. These characteristics should be measurable to allow changes to be monitored over time. After discussion, the indicators and means of verification were agreed upon by participants, as shown in Table 58.

5.3 Group recommendations

In addition to the priority areas for further action, the following general recommendations emerged from the meeting and should be considered by the EPN Secretariat and WHO as an external partner:

- the findings of the study should be viewed as a baseline for follow-up studies, to be conducted at appropriate intervals;
- the WHO/EPN assessment tool (the set of questionnaires) should be simplified to make it available as a continuous self-assessment tool for DSOs;
- more detailed DSO-specific capacity building tools should be developed, such as "how to" manuals, on the key areas identified for improvement;
- feasibility studies should be undertaken on local production by DSOs and on DSOs' own drug delivery services;
- EPN members should be supported in accessing more information sources on supplier prices of essential medicines, including ARVs and other newly marketed essential medicines;
- the EPN Secretariat should share these recommendations with EPN member DSOs that were not involved in the multi-country study.

Table 58: Characteristics of a well-functioning DSO

Rank	Characteristic	Indicators	Means of verification
1.	Quality assurance procedures written and implemented	Document on SOPs Evidence of implementation	DSO supplied copies of SOPs QA records on file DSO self-assessment reports
2.	Human resource development programme written and implemented	Document on HRD programme Evidence of implementation	DSO supplied copies of HRD programme No. of staff trained under HRD programme
3.	Appropriately qualified staff for organizational efficiency and effectiveness employed	Organigram Key staff CVs and application forms available	DSO supplied copies of organigram Copies of CVs on file Reports of interview panels Records of staff appraisal on file Application forms available
4.	Financial policies written and implemented	Document on financial policies Evidence of implementation	DSO supplied copies of financial policies DSO self-assessment reports Financial audits
5.	Operational revolving drug fund in place	Document on RDF policy and operating procedures Financial analysis over time	DSO supplied copies of RDF policies and procedures Self-assessment reports Revolving fund account records
6.	At least 75% of customer needs satisfied	Customer need audit Customer supply records	DSO self-assessment reports
7.	Pricing policy in place	Document on pricing policy Evidence of implementation	DSO supplied copies of pricing policy Price review records on file
8.	Price information shared and received	DSO price list or catalogue Evidence of dissemination	DSO supplied copies of price list or catalogue DSO supplied lists or catalogues to those outside client list Updated price list Copies of national/ international price lists available
9.	Business plan and budget available	Document of business plan and budget Evidence of implementation	DSO supplied copies of business plan and budget Periodic progress reports
10.	Board and management roles and functions clearly delineated	Document on terms of reference for board and management Evidence of implementation	DSO supplied copies of terms of reference Minutes of board meetings Minutes of management meetings

Rank	Characteristic	Indicators	Means of verification
11.	Documentation policy in place	Document on documentation policy Evidence of implementation	DSO supplied copies of documentation policy documents on file
12.	Competitive prices offered to customers	Regular comparative analysis of prices	Feedback from customers Updated comparative price analysis
13.	Appropriate drug management information system in place	Information and documentation system (electronic or manual) Evidence of implementation	Documents, records and routine information retrievable (manual or electronic) DSO self-assessment reports

6. Discussion of the findings

6.1 The importance of faith-based supply organizations

While numerous researchers have addressed the problems developing country governments face with their drug supply systems, there have been few detailed studies on efficient management of faith-based organizations' supply systems, despite their frequently significant contribution to health care in developing countries. One of the main reasons for this dearth of information was the lack of appropriate assessment tools and agreed benchmarks to measure best practices in pharmaceutical supply and management operations run by faith-based organizations. This descriptive, comparative research study was a first step towards filling this important "knowledge gap".

Given the documented evidence of the importance of faith-based organizations to health care provision in sub-Saharan African countries, this research project started from the hypothesis that their contribution to national medicine supply systems would be equally significant. The observed increase in the number of faith-based health care facilities during the last 25 years resulted from a slowdown in socio-economic development in Africa, and the fact that reforms introduced in the public health sector did not achieve increased access to health services for the poor. Where the government could not offer health services, faith-based organizations stepped in and took over the running of health care facilities.

A similar trend was identified in terms of the creation of the majority of DSOs, which were established in the period when health reforms, including decentralization, were initiated in public health and supply systems. Government supply systems increasingly failed to meet the medicines needs of faith-based health care facilities which were initially dependent on these government supplies.

DSOs in 10 countries indicated that the proportion of the population they served ranged from 25-60%, and for the majority of them it was an average of 43%. This means that together these DSOs cover a population of 112.1 million out of a total population of 284.4 million in the 10 countries. The study therefore produced convincing evidence of the current importance of faith-based DSOs in providing access to essential medicines, particularly in rural and other remote areas. DSOs complement the supply needs of national health systems when government systems fail to perform adequately. Such a significant contribution to medicines supply in some parts of these sub-Saharan African countries underlines the need for documenting DSOs' experiences and practices for the benefit of others.

The complementary role of faith-based DSOs may increase in the near future due to the prevailing socio-economic and political situation and the ongoing reform of public health and supply systems. During the assessments DSOs indicated that this was the case when public supply systems failed to meet people's needs.

6.2 Study methods used

6.2.1 Structured questionnaires

Four structured questionnaires were developed as the assessment tool for the multi-country study. To verify the information provided during the assessments other relevant key and supportive documentation was also collected. Mainly due to time constraints some questions were not answered or were only partially completed, or the responses were of poor quality. This was a limitation of the study, which will need to be addressed in future surveys. However, where possible, in cases of incomplete responses the information was verified by checking with the individual DSO reports or completed by requesting additional information from the DSO concerned.

6.2.2 Paired assessments

The use of paired country assessment teams allowed team members to become fully involved in a comprehensive data collection exercise and in-depth interviews of the various stakeholders as part of a descriptive research study. Peer-review on good practices through "learning by evaluating" and by "learning how to evaluate" was encouraged. This development of evaluation skills helped to instil a sense of empowerment among the EPN members and led to ownership of the study results. The one-to-one interviews stimulated technical discussions between the assessors and the DSO staff visited. Assessors from twinned DSOs learnt from the assessment exercises, and some of them introduced activities to improve their own systems, even before the full study results were known and discussed at the feedback meeting. The various participating DSOs got to know each other even better in the Network, and trust, transparency and collaboration drove the study.

6.2.3 Database

A database was specially developed for this study. It allowed for comparative data analysis between countries and topics after entering the information collected with the questionnaires. The information entered was verified by validating the data reports for each research question, checking with the completed questionnaire and with information available in other documents.

6.2.4 Feedback meeting

From the outset of the study a feedback meeting was planned, giving an opportunity to verify the hypothesis and study results by bringing together all the assessors (who represented the individual DSOs). They received a comprehensive overview of the performance, operations and services offered by the 16 DSOs. The

organizations' strengths and weaknesses were identified, as well as priority areas for an action plan. Based on these, individual DSOs could improve their functions and operations, EPN as a network could assist in providing support to identified priority activities, and WHO and other external partners could offer technical and financial support. It became apparent that DSOs faced very similar problems and participants reached the same conclusions on how to improve their operations.

Fourteen characteristics of a well-functioning DSO were identified at the meeting to be used to measure changes and improvements over time. This will be a starting point for developing objective benchmarks for faith-based drug supply organizations' performance.

The successful participatory and empowering process of the study is one of the key achievements of the methodology used. It has added value to the study and has facilitated the use of the results to draw up a specific action plan and develop a proposal for technical and financial assistance.

6.3 Measuring performance of the selected DSOs

6.3.1 Introduction

The study results described in Chapter 3 and customer, founding body and government perceptions of DSOs discussed in Chapter 4, reveal the diversity of DSOs in some areas, including:

- governance and management;
- human resources policies and the number of qualified staff employed;
- number of pharmacists employed and their annual wages;
- number of customers served and customer policies;
- DSO services offered to customers;
- procurement, storage and distribution policies;
- drug donation policies;
- quality assurance systems, including written standard operating procedures;
- drug financing policies and income generated through sales of medicines and medical supplies and donor support;
- sustainability of the DSOs' operations linked to the overall financial situation and organizational structure.

The differences between these 16 DSOs as seen in their size, operating procedures and service provision were influenced by external factors, namely the political and socio-economic climate of the individual countries, which affected the DSOs' "business environment". The internal factors influencing DSO operations mainly related to the availability of adequate financial and human resources.

6.3.2 Quantitative performance indicators

Benchmarks introduced during data analysis can be used to review DSOs' performance and cost-effectiveness. The benchmarks may be further developed for measuring "best practices":

- median drug price ratios (for effective purchasing of medicines);
- ratio of annual revenue to number of staff (for staff work load);
- ratio of annual revenue to number of customers (for customer satisfaction);
- ratio of annual revenue to number of items (for stock turnover);
- ratio of pharmacist salary to GDP/capita (for setting salary levels).

Most of the DSOs offered their customers prices that were competitive when compared to the median prices quoted in the International Drug Price Indicator Guide, 2003, published by MSH in collaboration with WHO.[6] Most DSOs managed to procure their medicines at very competitive prices compared with median international prices. They can therefore sometimes be a "competitor" to the national or government supply organizations, where both entities are operating successfully and are not subject to taxes or tariffs. Comparing medicine prices among DSOs may generate more internal discussion about price acceptance, type of supply contracts and payment conditions.

The ratios of annual revenue per staff, per customer, and per item stocked are good indicators for reviewing the performance and cost-effectiveness of DSOs. The ratios of annual revenue per member of staff varied widely among the participating DSOs. Some ratios may indicate under-staffing at certain DSOs while others may be over-staffed. Some DSO customers purchase on average to a higher monetary value than customers of other DSOs. This may indicate that customers of the latter do not buy exclusively from their DSO. The ratios of annual revenue per item in stock indicated that some DSOs may perform better with a relatively limited list of items than others with a relatively large list of items.

When comparing JMS in Uganda and MEDS in Kenya, which have generally similar revenues, JMS is performing better when considering annual income ratio to number of staff, while MEDS' performance is better in terms of annual income ratio to number of items. However, they are more or less equal in their ratios of annual revenue of DSOs per customer. More research is needed to determine which of these DSOs is operating most cost-effectively, as this is dependent on numerous factors. When comparing CHANpharm and BUFMAR, BUFMAR is performing better when considering annual income ratio to number of staff and to number of customers. CHANpharm's performance is better in terms of annual income ratio to number of items.

Annual wages varied widely. Ratios of annual salaries to gross domestic product (GDP)/capita of countries showed a median ratio of salary to GDP of 3.72 for pharmacists which may be seen as acceptable.

6.3.3 Qualitative performance indicators of good practices

The key finding in the study was that the majority of DSOs performed drug supply and management functions and offered services through a mix of options, rather than a fixed set of rules, so allowing more flexibility for their own operations and for their customers. Examples of such options could be found in procurement practices, supply and funding sources, methods of inventory control and quality control testing, delivery systems and methods of customer payments. Offering such a mix of options can be viewed as "good practices", which need to be developed and implemented by all DSOs in the near future. As EPN members, DSOs should obtain support and guidance to work together to incorporate these options into their systems if not currently available, and at a later stage "best practices" can be defined in the area of drug supply and management.

Some of the study's key findings are discussed in more detail below:

Small businesses - governance and administration

The majority of DSOs behave like small business entities, and to maximize efficiency they should be approached and managed as such. All DSOs had either elected or nominated boards or committees to oversee their work. Members of the boards and committees, and senior administration need to have suitable qualifications, adequate skills and competencies to advise and lead the DSOs. Strategic plans, including business plans and budgets are essential to implement and monitor DSO operations. Some of the DSOs did not have business plans and faced difficulties as a result. Most of the founding church bodies maintained close relationships with the DSOs, with all of them having representatives on the DSOs' boards or committees.

Staff retention

The motivation of senior DSO staff is mainly professional and not religious. DSOs' staff wages were higher than government wage levels for equivalent staff and some of them claimed their wages were equal to those in the private/commercial sector. To retain qualified and skilled staff, and to maintain or increase staff motivation and commitment, in-service training courses and team building exercises were thought to be important by the majority of staff interviewed. Good communication among staff members through regular staff meetings is equally important for a good working environment.

Senior DSO staff listed the following staff benefits they received as important: transport allowance; housing allowance; medical insurance; professional training; and a pension scheme. A leave bonus was identified as being of equal importance but was not provided.

Pharmacists employed

Pharmacists are essential in drug supply and management activities. The majority of DSOs employed at least one pharmacist. The role and functions of qualified pharmacists are consistently undervalued in many DSOs. Pharmacists should be members of the senior management team, the drug selection committee, and the procurement and tender committees. They should also be involved in quality assurance and control of medicines, drug information and training.

Supply systems

The majority of DSOs supplied items according to customer needs (an indent or "pull" system) and only two DSOs used mainly pre-packed kits (a "push" system). One of them allowed for both systems. Customers who received pre-packed kits looked forward to having a more demand-driven "pull" system. The kit system does not respond accurately to customer needs, and it is now widely recognized that it can be used as a first phase when initiating or developing a distribution network but it is not effective as a long-term drug distribution system. One problem is that kits can create stock-outs of essential medicines that are used faster than other items and surpluses of medicines that are less used. This situation can lead to storage problems at health facility level. As stated, DSOs operate as small businesses with drug revolving funds as their financial mechanism. An indent or "pull" system is a more appropriate supply system than a pre-packed kit system when medicines have to be paid for by customers.

Procurement

All DSOs used various methods of procurement, with the majority using multiple methods according to their policy, local circumstances or instructions received from donors. The methods used were mainly direct purchases, negotiated or restricted tendering from selected local and international suppliers. Half of the DSOs procured mainly from local suppliers. Most imported supplies arrived by sea or air.

Pooled procurement

Some of the bigger DSOs (MEDS and JMS) evolved from various small faith-based supply organizations in the same country. These DSOs are performing well, indicating that pooled procurement may be an option to consider for a group of smaller DSOs in Cameroon, or even for other DSOs in the Network, to increase volume and purchasing power to achieve better prices by economies of scale, especially for small volumes of expensive, newly marketed essential medicines.

Local production

Self-sustainability in supplies through local production by the DSOs was an important issue discussed in the feedback meeting but no consensus was reached. Several DSOs had production units, and the cost-benefit of upgrading and maintaining production units, including the trained personnel required, was questioned. A feasibility study on local production by DSOs is mentioned under priority area 4 of the specific action plan (see Annex 7d).

Contracting out of services - DSO delivery services

The study showed that the majority of DSOs provided drug delivery services to their clients. Some had their own delivery services and the others used courier services (a "contracted out" activity). DSOs used customers' own arrangement too, with several having mixed distribution arrangements. From the point of view of convenience, customers, especially those in remote areas indicated a preference for DSOs' own delivery services. A feasibility study on DSO delivery services, which should include the possibility of delivery systems at cost, was mentioned under priority area 3 of the specific action plan (see Annex 7c).

Contracting out of services - port clearance procedures

The majority of the DSOs that imported supplies used private agents to clear their shipments on arrival in the country. Good service provision and minimum loss of DSO staff time were the main reasons for this.

Drug management information systems

Drug management information systems (DMIS) are important for planning, managing and monitoring procurement, storage and distribution activities. Data collection and analysis, including VEN and ABC analysis, support informed decision-making. Computerized DMIS systems reduce manual drug management tasks. They are more accurate and less time-consuming for data collection and analysis, as well as for immediate oversight of the current stock on hand and on order, price information and for ascertaining the financial situation when linked to a computerized accounting system. The main drug management operations still done manually were inventory control, checking of drug items during packing, completion of drug orders, drug dispatch, receipt forms, and invoicing and billing.

Inventory control

Almost all the DSOs with warehouses had inventory control systems in place, using either computerized or manual systems. DSOs with inventory control systems in place undertook inventory control checks at varying intervals, between one and four times per year. DSOs should preferably use random or cyclic stock checking rather than the traditional annual count of medicines in stock, as recommended in the manual, Managing Drug Supply, 1997. This method should be promoted as a cost-effective approach to verify quantities of 10 randomly selected items per week.

Mark-ups

The study showed that the majority of DSOs added mark-ups to their sales prices to cover packing/handling and transport costs, but only a few DSOs included quality control testing costs in their mark-ups. This needs to be rectified, and a fixed percentage mark-up for quality control testing should be included in all sales prices. A minimum of 2-3% is recommended as is current practice with major international low-cost suppliers.

Conclusion

Key positive results of the multi-country study affirmed good performance by DSOs due to their being managed as small businesses; their multiple procurement procedures; contracting out of services; competitive prices of quality medicines; and their highly motivated staff. In line with the group work and results of the feedback meeting on what constitutes an effective DSO, many plan to develop long-term strategic plans, including annual business plans and budgets, and to improve "good practices" in drug supply and management functions and services.

6.3.4 Opinions expressed by customers, founding bodies and governments

Customer views

Overall customer feedback about DSO services was positive, with all expressing their appreciation of the quality of products; the long expiry dates of the products received; and DSO prices. Personal relationships established; consideration of customer preferences; payment arrangements; and accuracy of filling out drug orders were also commended. However, many customers indicated that only 0-50% of the number of items and between 50-100% of the quantities of items ordered were met by DSOs. The study showed that customers had multiple sources of supply beside DSO supply services and they supplemented their stocks government supplies or buying from private wholesalers.

To improve DSO performance, all customers interviewed indicated the need for a wider range of medicines and quantities, in order to meet their requirements. They wanted information-sharing on current prices and quantities of products available in stock so that they could be better prepared for cash-and-carry arrangements; and also wanted a drug information service. They also expressed a preference for longer credit terms. Customer services of a more individual nature, such as support visits, responses to complaints and feedback were mentioned by customers who were a long way from their DSOs. Drug delivery services were seen as another area for improvement by customers who had to collect supplies from their DSOs.

To improve their management of medicines at health care facility level, all customers interviewed indicated the need for technical assistance and regular supervisory visits. Also requested were in-service training courses/seminars on prescribing/dispensing and rational use of medicines, especially ARVs, and on drug supply management, quality, stock control, and estimating drug needs.

Founding body views

All the founding bodies expressed the view that DSOs were instrumental in supporting the health and pharmaceutical services offered by faith-based health care facilities to patients in rural and other remote areas. However, founding bodies also saw DSO revolving drug fund mechanisms as an additional source of financial support for church leader-initiated projects, and this constitutes a challenge to their long-term financial sustainability (see also the section on financial management below).

Government views

Government representatives greatly appreciated the contribution faith-based DSOs make to supply systems. The DSOs were seen as providing complementary supply systems to meet the population's requirements for essential medicines. However, there is room for improvement in formal reporting and collaboration between DSOs and their respective ministries of health, and for better drug donation policies (see below). Licensing of DSOs by national drug regulatory authorities was identified as one major step towards official recognition and increased collaboration with governments.

Conclusion

The key positive results of the multi-country study mentioned previously are therefore confirmed by the trust expressed by DSOs' customers, by the good relationships with their founding church bodies and the general appreciation of ministries of health.

6.3.5 Weak areas identified

The study highlighted the following challenges on which DSOs should focus. Most of these had already been acknowledged by the DSOs themselves during the assessments. Currently a mix of options is under consideration by those DSOs that have to improve these services and functions, so moving towards the development of "good practices":

Quality assurance and performance monitoring

A functioning quality assurance system is the backbone of every drug supply organization with procurement, storage and distribution operations. Some DSOs had written standard operating procedures (SOPs) in support of good practices in these operations. However, lack of adherence to good storage, distribution and drug donation practices created inefficiencies that affected the DSOs' sustainability and increased their operating costs - a situation which needs to be rectified.

A reliable quality control mechanism is part of a quality assurance system. Only half of the DSOs undertook regular quality control testing of the batches they procured. They used either external quality control laboratories or their own quality control units for screening of samples or comprehensive quality control testing. Only a few DSOs retained batch samples for an agreed period of time.

The introduction of monitoring and evaluation mechanisms by the DSOs, including performance indicators, is needed to facilitate the assessment of action plans, procurement and distribution activities, supplier performance, and customer satisfaction. Monitoring and evaluation are integral parts of the drug management cycle, and are vital for informed decision-making and improving DSOs' medicine supply and distribution systems. The majority of DSOs bought supplies from their list of pre-selected suppliers, which was established using multiple selection criteria. All DSOs reported that they were unable to carry out full GMP site inspections of their suppliers.

During the feedback meeting quality assurance, including quality control, was identified as the highest priority area of the specific action plan (see Annex 7a). Identification of the characteristics of a well functioning DSO was a starting point for monitoring and evaluation of DSO performance over time.

Drug donations

Half the DSOs received drug donations for distribution to their customers. The interviews revealed that donations can create problems rather than responding to real needs. Donations may affect the overall drug management system when medicine needs and the range, quantities and quality of donated medicines received are not always well communicated, coordinated or guaranteed between DSOs, founding bodies and donors. This can lead to stock distortion, risk of waste and loss of existing stocks, wasting staff time for sorting donated medicines and additional and unforeseen costs for storage, handling, distribution, and even for appropriate destruction.

The quality of donated medicines was not tested either before or after receipt. These inappropriate drug donations were of a great concern to DSOs. In addition, revolving drug fund mechanisms can be adversely affected by unwanted or unplanned drug donations, resulting in supplementary costs for DSOs that have to distribute these drugs free-of-charge to customers. Moreover, these donations created expired stocks of medicines, and decreased sales of medicines. The founding bodies and donors involved were unaware of the detrimental effects of drug donations on DSOs' revolving drug fund mechanisms.

The fact that the quality of donated medicines was not guaranteed was a matter of particular concern to DSOs. Some of the governments questioned the quality of donated medicines distributed by the DSOs. Additionally, the selection of donated medicines was not always found appropriate.

The majority of DSOs expressed great concern about so-called "suitcase donations". These are supplies of returned or soon-to-expire medicines collected from community and hospital pharmacies in their home countries by guests visiting faith-based organizations' health care facilities. These visitors ignore the principles relating to quality, quantity, needs and expiry dates, which are included in the interagency drug donation guidelines. Although these inappropriate donations were not a direct problem for DSOs, they often were for the receiving health care facilities, as revealed during the interviews with customers. However, customers indicated that they welcomed appropriate drug donations, as these medicines were free-of-charge to their patients, and so particularly benefited the poor.

For these reasons DSOs, faith-based organizations and donors need to adhere to existing national or institutional drug donation guidelines, in addition to the interagency guidelines published by WHO[11] and formally endorsed by EPN, among others. Promotion, implementation and adherence to these guidelines need to be undertaken by EPN Secretariat members, senior DSO staff, leaders of faith-based organizations and founding church bodies running DSOs. The impact of drug donations on supply management, storage, distribution and to financial

management (the revolving drug fund mechanism) needs to be explained, together with the consequences of additional and unforeseen costs, stock wastage and the reduced revenues generated for the revolving drug fund. It may be necessary for the EPN Secretariat to start a campaign to promote awareness that financial donations rather than donations in kind will better support DSOs' operations, and ultimately the pharmaceutical care and the health of patients.

In addition, the lack of reporting of bad donations hampers the implementation of good donation practices. The EPN Secretariat should encourage its members to report breaches of drug donation guidelines despite their reluctance to do so. Only through reporting can donors improve their performance.

Essential medicines concept

The study showed that DSOs did not always adhere to the essential medicines concept in terms of medicine selection and rational use or in advocacy to customers. A balance had to be achieved between responding to customers' preferences or demands and essential medicines policy, although the importance of adherence to the policy wherever possible was acknowledged by the majority of the DSOs. This will remain a discussion point, as DSOs' sustainability is mainly based on the sales of medicines, and this may be an issue for running health care facilities too. Poly-pharmacy should be monitored carefully. This subject may be included in training courses for customers on rational prescribing and dispensing of medicines, including the need to follow treatment guidelines, and patient education on the use of medicines.

Drug and price information

Hardly any DSOs used existing WHO drug and price information, such as the WHO Model Formulary,12 MSH/WHO International Drug Price Indicator Guide,6 and the AFRO Essential Medicines Price Indicator.7 DSOs used individual company price lists as their main source of price information. The finding that one supplier set different conditions for different DSOs, in terms of prices, credit terms and delivery times indicates that DSOs did not operate in exactly the same way or had not negotiated the best supplier conditions. A price intelligence service may be set up to monitor prices and procurement conditions among DSOs as a Network activity. An intranet site for EPN members may be developed for sharing price and supplier information. The EPN Secretariat should disseminate all relevant WHO documents to the DSOs in the Network, as recommended at the feedback meeting.

Financial management

The multi-country study showed that the operations of the majority of DSOs are based on a revolving drug fund mechanism. The majority of DSOs reported that sales of supplies constituted between 90-100% of their total income. Purchase costs constituted the main budget line in the financial overviews of the 10 DSOs reporting their budget figures, representing between 75-91% of total revenues. Staff costs were the second main budget line in the financial overviews. Many DSOs planned to increase drug supply and distribution activities to improve their financial sustainability.

During interviews it was revealed that some DSOs transferred money to their founding bodies to support church leaders' projects. Also, some DSOs lent money to departments of their faith-based organizations involved in health-related activities. These loans were not paid back in a timely manner if at all, so jeopardizing drug budgets and the DSOs' overall financial situation.

Financial transfers and internal borrowing affected the efficiency of the revolving drug fund mechanism, potentially resulting in decreasing revolving drug fund budgets, no investment for the future, diminishing purchasing power and weakened sustainability. It was reported that one DSO, an EPN member, had to declare itself bankrupt and cease operations because the revolving drug fund could not generate sufficient money for the DSO's own drug supply operations. As mentioned unplanned and unwanted drug donations also adversely affected DSOs' revolving funds.

Some of the bigger DSOs have become financially sustainable and have expanded their supply activities to both the public and private-not-for profit sectors. These DSOs enjoyed a considerable number of years of committed external donor support before reaching their financial break-even point. Moreover, the study showed that the majority of the smaller DSOs need continued donor support to maintain most of their activities, underlining the generally low level of sustainability of these small faith-based supply organizations. For the DSOs receiving external funding this was in the form of long-term financial donor support. Some of them received support from multiple donors, including bilateral agencies.

One significant finding was that initial investment for construction of buildings, computer hardware and software, or introducing new treatments, such as antiretroviral therapy, can only be done with commercial bank loans or extensive financial donor support. This was because the financial policy of most DSOs did not allow for saving money for capital investments or future activities.

Strict adherence to financial policies and good financial practice is essential as DSOs have to revolve sufficient money on sales of medicines and medical supplies to replenish their stocks and cover their running costs. Strategic planning, including business plans, should support DSOs as small business entities, and where possible DSOs should be allowed to save money for approved future capital investments and upgrading their operations. This measure should be introduced as "good business practice".

Customer services

The study showed that the majority of DSOs proposed to create customer services units to respond more efficiently to requests and queries. Most of the DSOs indicated that they wanted to use the customer questionnaire at regular intervals and to adapt it to meet their own needs. For many DSOs the frank replies to the questionnaires and the ensuing discussions with customers were revealing and provided pertinent information about their customers' level of satisfaction.

Collaboration

In the feedback meeting DSOs indicated that they wanted to implement a mix of activities to reinforce collaboration with their main local partners, such as ministries of health, other faith-based organizations and local and international NGOs. Existing in isolation is seen as no longer sustainable. In addition, DSOs stated that they wanted to strengthen communication and collaboration between DSOs within the Network, especially in terms of price and supplier information, quality assurance and joint staff training, so supporting DSOs' efforts towards effective and sustainable management.

7. Conclusion

The multi-country study showed that the DSOs provided needed medicines of good quality at competitive prices, and that they were appreciated by their customers and ministries of health in this work. The DSOs also received the full backing of their founding church bodies. From the study results it is clear that participating DSOs play and will continue to play a very important role in supplying medicines to those in need, particularly in remote areas of sub-Saharan Africa.

One of the key positive findings of the study was that DSOs behave like small business entities and should be approached and managed as such. The majority of DSO functions and the customer services offered were driven by a mix of options, which can be viewed as "good practices". The benchmarks introduced in the data analysis can be further developed as a basis for evaluating DSO performance and cost-effectiveness. All DSOs should work together towards "best practices" in the priority areas of work that they themselves identified in the feedback meeting.

The study also highlighted the weaknesses in DSO quality assurance systems, drug donations, price information, rational use of medicines policies, computerized drug management information systems, customer services, financial sustainability and the relationship with the ministry of health and other local partners. More use can be made of WHO drug and price information, and drug donation guidelines. These challenges were acknowledged during the assessments of the individual DSOs and measures considered for corrective action.

The study was perceived by all participating EPN members as a first step of a process for further collaboration among Network members. Moreover, it was seen as a baseline for identifying and enhancing "good practices" in drug supply management, procurement and distribution activities undertaken by faith-based drug supply organizations. Based on the characteristics of a well-functioning DSO as identified during the feedback meeting, a simplified self-assessment tool should now be developed for annual use by DSOs. A redesigned version of the initial WHO/EPN multi-country study assessment tool could be used at longer intervals.

The feedback meeting demonstrated how well DSO staff could work together to use the study results and findings to prepare a specific action plan to improve their performance in priority areas such as: 1) quality assurance; 2) training; 3) distribution/delivery services; 4) procurement of medicines; 5) storage and drug management capacity; 6) sustainability of DSO operations; and 7) collaboration.

The next step for the EPN Secretariat will be to present the priority areas into a plan of action and to seek external financial and technical support for this plan, which will increase the impact and sustainability of DSOs in sub-Saharan African countries.

7.1 Expected outcomes of the multi-country study

All of the expected outcomes of the multi-country study were achieved. These were: an assessment tool in the form of a set of questionnaires in English and French; a set of adapted questionnaires for a similar multi-country study to be undertaken on public medicines supply systems in Africa; a consultants' network formed by the assessors; an action plan for the areas in DSO drug supply and management that need to be improved; a joint WHO/EPN publication; and increased visibility of EPN by using this publication for advocacy and awareness purposes.

In addition, the paired country assessment teams allowed team members to build up their evaluation skills. The new assessment tool for faith-based DSOs can now be adapted into a self assessment tool. The WHO database created for data management provides EPN with unique information on DSOs' work in the areas of drug supply and management and their complementary contribution to the public pharmaceutical sector. In addition, the study has expanded WHO's and EPN's capacities in information collection, analysis and results' generation.

7.2 Perspectives of partners

SIDA

The approach and execution of such a multi-country study is in line with the Swedish International Development Cooperation Agency's objective for operational research to assist decision-makers in identifying problems and evaluating performance in health systems, including medicine provision. Moreover, the study was in support of the key priorities of SIDA's strategy, such as:

- Research collaboration with low-income countries where operational research is linked to drug policies' implementation. Human resource development through research activities has an element of competence building;
- Policy and institutional development based on the development and implementation of evidence-based policies obtained from experiences, lessons learnt and international comparisons;
- Consensus building, networking and teamwork which are important for achieving participation, ownership and consensus in collaborative projects with health personnel in order to develop common practice.

EPN

From an EPN perspective, the study boosted staff morale by offering an opportunity to learn how others in similar situations overcame their problems and by sharing knowledge of good practices. Knowledge of "good practices" elsewhere gave the impetus to DSOs to reassess their own targets and increased levels of expectation. The opportunity to work with DSOs in

other countries and to collaborate with an international organization such as WHO broadened the perspective of staff, and helped them to realize the importance of their work, not only for their clients but in the national context.

WHO

From a WHO perspective, the successful participatory and empowering process of the study is one of the key achievements of the methodology used. It has added value to the use of the results through the creation of a specific action plan and has led to the development of a proposal for donor assistance. The study and feedback meeting demonstrated that DSO staff could successfully evaluate their performance and identify areas of work which should be improved. Local technical experts are available and they need to be used and further exposed to other assessment work within the Network.

In addition, the use of peer review during the assessments showed a new way of working for WHO. It highlighted that DSOs learnt from each other's problems and solutions, and were open to accepting advice from each other. Through the Network, WHO can continue to provide assistance, information and guidance to a group of DSOs in many African countries willing to work collectively on drug supply and management-related issues.

Recommendation for repeating the multi-country study

One of the group recommendations was that a similar study should be undertaken in two to three years time, in order to document the improvements made by the individual DSOs and EPN as a network and to develop "best practices" over time.

Importance of faith-based drug supply organizations

In conclusion, the results of the study affirmed that DSOs are generally performing well, largely due to their transparent procurement procedures, competitive prices and highly motivated staff. These have won the trust of their customers, appreciation from ministries of health and good relationships with their founding church bodies. Faith-based drug supply organizations play a crucial role in terms of increasing access to medicines, especially in rural and other remote areas, and where governments supply systems tend to fail to serve the public health system. They can therefore have a vital "safety net" function when government supplies are unavailable or are insufficient.

References

1. Public-private roles in the pharmaceutical sector. Implications for equitable access and rational drug use. Geneva: World Health Organization; 1997. (WHO/DAP/97.12).
2. Health reform and drug financing. Selected topics. Geneva: World Health Organization; 1998. (WHO/DAP/98.3).
3. Drug supply systems of missionary organizations. Identifying factors affecting expansion and efficiency: Case studies from Uganda and Kenya. Report prepared for WHO/EDM by E. Kawasaki and J. Patten. 2002. (Unpublished).
4. Collaboration between NGOs, ministries of health and WHO in drug distribution and supply. Geneva: World Health Organization; 1998. (WHO/DAP/98.12).
5. Medicine prices: a new approach to measurement. Working draft for field testing and revision. Geneva: World Health Organization; 2003.
6. International drug price indicator guide. Arlington, USA: Management Sciences for Health; 2003.
7. AFRO essential medicines price indicator. Brazzaville: WHO Regional Office for Africa; 2003.
8. Quality assurance of pharmaceuticals. A compendium of guidelines and related materials. Volume 2, updated edition. Geneva: World Health Organization; 2004.
9. Managing drug supply 2nd ed. Chapter 27, p.407-418. West Hartford, USA: Kumarian Press; 1997.
10. Drug supply by ration kits. Geneva: World Health Organization; 1991. WHO/DAP/91.2.
11. Guidelines for drug donations. Interagency guidelines. Geneva: World Health Organization; 1999. WHO/EDM/PAR/99.4.
12. WHO model formulary. Geneva: World Health Organization; 2004.

Annexes

Annex 1
Services offered by the 16 DSOs surveyed, 2003

Country/DSO	Procurement	Negotiated arrangement with Govt DSO	Storage	Drug distribution/ Delivery service	Training	Maintenance service for medical equipment	Medicine production	Production of IEC materials	No. of services
Cameroon-EEC	X		X		X				3
Cameroon-CAP/EPC	X		X			X			3
Cameroon-OCASC	X			X	X				3
Cameroon-CBC	X		X	X	X		X		5
Cameroon-PCC	X		X	X			X		4
Cameroon-OSEELC	X	X	X	X	X	X			6
DR Congo-ECC/DOM	X		X	X	X				4
Ghana- CDC	X		X	X	X		X		5
Kenya- MEDS	X		X	X	X			X	5
Malawi- CHAM	X		X	X	X	X			5
Nigeria- CHANpharm	X		X	X	X		X		5
Rwanda- BUFMAR	X		X	X	X	X	X	X	7
South Africa- AMFA	X								1
Tanzania- CSSC		X			X	X			3
Uganda- JMS	X		X		X	X	X		5
Zambia- CHAZ	X		X		X				3
Total	**15**	**2**	**13**	**10**	**13**	**6**	**6**	**2**	

Annex 2
Types of items on the supply list of 16 DSOs, 2003

	No. of medicines* (% of total medicines)										
	Injectables		Tablets, capsules		Oral liquids		Total medicines		Total items of medical supplies		Total no. of items on supply list
Country/DSO	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**
Cameroon-EEC	46	38	58	48	11	9	121	80	30	20	151
Cameroon-CAP/EPC	15	18	30	37	5	6	82	61	53	39	135
Cameroon-OCASC	53	28	90	48	15	8	187	66	97	34	284
Cameroon - OSEELC	26	28	43	47	8	9	92	88	12	12	104
Cameroon-PCC	-	-	-	-	-	-	73	59	63	41	124
Cameroon-CBC	77	27	126	45	18	6	282	32	595	68	877
Congo- ECC/DOM	21	37	29	51	2	4	57	54	48	46	105
Ghana- CDC	73	38	73	38	15	8	193	60	131	40	324
Kenya- MEDS	79	31	92	36	33	13	259	46	301	54	560
Malawi- CHAM	6	27	13	59	0	0	22	96	1	4	23
Nigeria- CHANpharm	24	29	48	57	5	6	84	93	6	7	90
Rwanda- BUFMAR	42	31	56	41	8	6	136	54	117	46	253
South Africa- AMFA	53	23	117	51	40	4	230	65	123	35	353
Tanzania- CSSC	33	37	39	44	4	4	89	100	0	0	89
Uganda- JMS	119	30	155	39	27	7	400	28	1007	72	1407
Zambia- CHAZ	38	37	48	47	4	4	103	61	65	39	168
Average (%)		**31**		**46**		**7**		**64**		**36**	

* Only the following categories, injectables, tablets, oral liquids are tabulated

Annex 3
Ratios of 13 essential medicines prices paid by nine DSOs to MSH median international prices, June 2004

Generic name/dosage	MSH median price US$ per unit, 2003	Ratio of the local price to MSH median price									Median ratio per medicines
		Kenya	Ghana	Tanzania (CSSC)	Tanzania (MEMS)	DR Congo	Zambia	Nigeria	Uganda	Rwanda	
Amoxicillin tab 250 mg	0.02	0.67	0.83	0.83	0.76	1.02	0.80	0.70	0.82	0.88	0.82
Artesunate tab 100 mg	0.56		0.31		0.96		0.71	0.67	1.06		0.71
Atenolol tab 50 mg	0.01		3.20					0.75	1.97		1.97
Carbamazepine tab 200 mg	0.02	0.94	1.90	0.72	0.58		0.96	0.42	1.23	0.56	0.83
Ciprofloxacin tab 500 mg	0.03		2.27	0.79	0.58		0.58	0.63	0.86	1.14	0.79
Co-trimoxazole paed susp (8+40)mg/ml	0.003	0.42	0.52	0.68		0.97	1.94	1.58	0.94	1.58	0.95
Diazepam tab 5 mg	0.003	0.26	0.40	0.46	0.86	1.29	0.97	1.43	0.94	1.29	0.94
Diclofenac tab 25 mg	0.005	0.39	0.22	0.88	0.43	0.78	0.59	9.02		0.71	0.65
Fluconazole tab 200 mg	0.12	0.87	22.13						4.26		4.26
Glibenclamide tab 5 mg	0.004	1.32	2.17	1.98		1.68	0.68	0.78	1.12	0.95	1.22
Hydro-chlorothiazide tab 25 mg	0.003	0.37	0.14	1.23	1.11	1.31		0.83		1.00	1
Phenytoin tab 100 mg	0.007	0.51	12.07	0.27	0.42		0.87	5.56	0.79	0.52	0.65
Pyrimethamine+ sulfadoxine tab (500+25) mg	0.026	0.52	1.87	0.07	0.56	0.95	0.50	0.59	0.70	0.49	0.56
variation by country											
Max		1.32	22.13	1.97	1.11	1.68	1.94	9.02	4.25	1.58	1.94
Min		0.26	0.14	0.07	0.42	0.78	0.50	0.42	0.70	0.49	0.42
Median		0.51	1.87	0.76	0.58	1.02	0.75	0.77	0.94	0.92	0.77

Annex 4
Ratios of annual revenue to number of staff, customers and items

DSO	Annual revenue (US$) from sales 2002	Number of staff 2003	Number of customers 2003	Number of items 2003	Ratio of annual revenue (US$) to number of staff	Ratio of annual revenue (US$) to number of customers	Ratio of annual revenue (US$) to number of items
CBC- Cameroon	1,528,373	14	73	974	109,169	20,937	1,569
OCASC - Cameroon	1,322,374	7	210	284	188,911	6,297	4,656
OSEELC - Cameroon	502,538	20	28	104	25,127	17,948	4,832
PCC - Cameroon	160,000	2	20	124	80,000	8,000	1,290
CDC - Ghana	471,428*	32	117	324	14,732	4,029	1,455
MEDS - Kenya	7,579,051	110	1000	560	68,900	7,579	13,534
ChanPharm - Nigeria	643,454	91	1920	90	7,071	335	7,149
BUFMAR - Rwanda	611,378	30	117	253	20,379	5,225	2,417
JMS - Uganda	7,737,005	54	1171	1,408	143,278	6,607	5,495
CHAZ - Zambia	90,017	34	125	168	2,674	720	536

* 2001 figures

Annex 5
Revenues and expenditures of 10 DSOs in 2002 (US Dollars)

Country/DSO	Total revenue, 2002 (US$)	Revenue from sales of supplies, 2002 (US$)	Expenditures - purchase of supplies (US$)	Expenditures - staff costs (US$)	% of sales of supplies out of total revenue	% of total revenue spent on purchasing of supplies	% of total revenue spent on staff costs
Cameroon-CBC	1,528,373	1,528,373	667,203	59,314	100%	44%	4%
Cameroon-OCASC	1,326,751	1,322,374	1,173,788	13,938	100%	88%	1%
Cameroon - OSEELC	524,499	502,538	436,398	12,261	96%	83%	2%
Cameroon- PCC	160,000	160,000	130,000	0	100%	81%	0%
Ghana-CDC (2001)	471,428	471,428	115,714	32,571	100%	25%	7%
Kenya-MEDS	7,669,590	7,579,051	6,377,635	688,860	99%	83%	9%
Nigeria-CHANPharm	717,992	643,454	562,286	60,042	90%	78%	8%
Rwanda-BUFMAR	854,296	611,378	457,955	103,166	72%	54%	12%
Uganda-JMS	7,744,205	7,737,005	6,920,220	312,531	100%	89%	4%
Zambia-CHAZ	90,917	90,017	67,056	7,180	99%	75%	8%

Annex 6
DSO services perceived by customers

Topics	Rating			
	Excellent	Good	Acceptable	Poor
Quality of medicines	**49 %**	45%	4%	2%
Personal relationships	**49 %**	31%	8%	12%
Expiry dates	**49 %**	29%	18%	4%
Accuracy in filling orders	30%	**51 %**	15%	4%
Prices of medicines	22%	**41 %**	25%	12%
Customer preference	32%	**38 %**	14%	16%
Payment arrangements	32%	**34 %**	28%	6%
Response to complaints	20%	18%	**38 %**	26%
Drug Information	34%	18%	**37 %**	11%
Complete filling	21%	31%	**34 %**	14%
Maintenance	3%	6%	18%	**73 %**
Drug delivery	7%	15%	7%	**71 %**
Support visits	9%	7%	16%	**68 %**
Training	14%	25%	18%	**43 %**
Feedback	19%	19%	25%	**37 %**

Annex 7a
Action Plan - Priority area 1: Quality assurance

Causes identified

- No SOPs
- Lack of qualified staff
- Limited use of QC laboratories

Results identified from lack of SOPs

- Poor quality of services
- No monitoring and evaluation
- No sampling
- No feedback
- No documentation

Results identified from lack of qualified staff

- Poor service to customers
- Poor decision making
- No quality guarantee

Results identified from limited use of QC labs

- Bad suppliers pass
- Recalls of medicines
- Counterfeit/substandard products pass

Standard Operation Procedures for QA in place		
DSO	EPN	Partners
Implement SOPs (8 DSOs)	Train on development of SOPs	Provide background and reference materials on QA-related issues (WHO)
Monitor (self audit) (8 DSOs)	Together with DSOs to develop SOPs (3 DSOs) Together with DSOs to develop SOPs when no QC testing is possible (2DSOs)	
Qualified staff employed		
DSO	EPN	Partners
Employ and retain qualified staff (3DSOs)	Advocate on training and exchange visits	Provide short-term technical assistance (donors)
Be a competitive employer (work environment, training, benefits) (3 DSOs)		
QC laboratory used		
DSO	EPN	Partners
Contract out QC lab services (3 DSOs)	Map existing QC labs for collaboration (1 DSO)	Strengthen existing DSO labs (MEDS with external support)
Collaborate with existing QC labs (e.g. government and private labs) (2 DSOs)	Provide updated information on issues related to QC (e.g. counterfeits)	Provide standards for QC lab (WHO)

Annex 7b
Action Plan - Priority area 2: Training

Causes identified

- Poor planning
- Lack of sufficient funds
- Lack of training opportunities
- Lack of in-service training tools

Results identified from lack of training

- Poor services and quality of care
- Misuse of medicines
- Poor management and leadership

Training programmes in place		
DSO	EPN	Partners
Conduct in-service training courses (4 DSOs)	Guide access to existing training courses on drug management	Facilitate and coordinate regional/sub-regional courses on drug management (WHO)
Advocate for funds for training for DSO staff and customers (1 DSO)	Collect and disseminate existing training tools on RDU and drug management Develop management and leadership training tool Facilitate lesson learning	

Annex 7c
Action Plan - Priority area 3: Distribution/delivery services

Causes identified

- No financial means
- No bank loans or grants
- High costs of maintenance services
- No infrastructure and trained personnel
- No vehicles

Results identified from non-availability of distribution and delivery services

- No delivery services offered by DSO
- No drugs and other supplies available at customer level

Delivery services offered to customers		
DSO	EPN	Partners
DSOs with delivery services: to participate in a feasibility study on DSO delivery services and alternative options, including analysis of costs of operation	Facilitate feasibility study on DSO delivery services and alternative options (setting up versus contracting out, expanding with additional depots, mixture of services)	Provide funding and technical assistance for undertaking a feasibility study on DSO delivery services and alternative options (donors)

Annex 7d
Action Plan - Priority area 4: Procurement of medicines

Causes identified

- Insufficient training in procurement
- Lack of sufficient funding
- Lack or non-use of consumption data
- Long lead-times of overseas supplies
- Poor stock management
- Inappropriately calculated mark-ups
- Inappropriate drug donations

Results identified from ineffective procurement of medicines

- Stock-outs
- Waste of medicines and money
- Non-adherence to essential drugs list
- Inefficient or non-existent drug and therapeutics committees
- Loss of clients
- Loss of credibility of DSO
- Less sustainable DSO with risk of collapse
- Patient suffering

Procurement of medicines improved		
DSO	EPN	Partners
Set up a DSO Drug and Therapeutics Committee (4 DSOs)	Advocate for Drug and Therapeutic Committees at DSO level	Inform about training in DTCs (WHO)
Verify use of inventory and/or consumption data for placing orders (3 DSOs)	Facilitate training in drug procurement issues	Inform about training in drug procurement issues (WHO)
Reinforce/use management committees and use of EDL for drug procurement	Facilitate exchange between DSOs on procurement issues (5 DSOs)	
Negotiate with local suppliers/wholesalers for best prices (1 DSO)	Facilitate feasibility study on local drug production by DSOs, including no compromise on quality (3 DSOs)	Provide funding and technical assistance for a feasibility study on local drug production by DSOs, including no compromise on quality (donors)
Set up pooled procurement mechanism for DSOs in one country (3 DSOs in one country)	Facilitate pooled procurement mechanism for DSOs in one country (3 DSOs in one country)	Provide funding and technical assistance for setting up a pooled procurement mechanism for DSOs in one country (donors)

Annex 7e
Action Plan - Priority area 5: Storage and drug management capacity

Causes identified:

- Inadequate physical infrastructure
- Poor stock control
- Poor drug management information system
- Poor drug management and storage systems

Results identified from limited DSO storage and management capacity

- Poor procurement and planning practices
- Loss of revenue due to expiry drugs/ damaged drugs
- Poor services to customers
- Loss of credibility of DSO

DSO	EPN	Partners
Physical infrastructure improved		
Improve physical infrastructure and storage conditions (3 DSOs)	Disseminate information on good drug management and storage practices to DSOs	Provide reference materials on good drug management and storage practices (WHO)
Stock management improved		
Develop written SOPs for storage, inventory control, etc. in participatory manner with all staff (6 DSOs)	Advocate on training and exchange visits	Provide short-term technical assistance (donors)
Develop an adequate DMIS, defining data requirements, collection and analysis, use of data, and reporting to management and feedback to customers (6 DSOs)	Assist in obtaining relevant information on developing appropriate DMIS systems	Provide financial support and short-term technical assistance (donors)
Improve stock management and inventory control by using an appropriate computerized system	Identify appropriate drug management and inventory control software and mobilize funding and short-term technical assistance	Provide funding and technical assistance for computerized packages for drug management and inventory control systems (donors)
Customer services established		
Improve communication with customers on stock position and other complementary information (5 DSOs)		
Procurement practices improved		
	Design, identify and organize training on good procurement practices	Provide funding and technical assistance for training on good procurement practices (donors)

Annex 7f
Action Plan - Priority area 6: Sustainability of DSO operations

Causes identified:

- Poor planning (strategic, business)
- Unrealistic expectations from founding bodies
- Unsound credit mechanisms (policy and implementation)
- Bad credit terms
- Mark-ups not linked to real costs and services
- Narrow range of customers

Results identified from unsustainable DSO operations

- Crisis management
- Financial and emotional tensions due to:
  - Debts and decapitalization
  - Negative perception of DSO management
  - Limited revenue base
  - Shrinking working capital

Sustainability of DSO operations improved		
DSO	EPN	Partners
Train DSO managers on skills in organization, planning and financial management	Facilitate the exchange of existing best practices in financial management and planning	Provide funding for capacity building in financial management and planning (donors)
DSO management to involve founding bodies in the process of planning and financing of DSO activities (participatory way)	Encourage a participatory process in planning and financing of DSO activities	
Report on fund raising activities	Study successful fund-raising activities of DSOs	
Build up a functional revolving drug fund (RDF) mechanism to receive international funding (1 DSO)		
Train DSO managers on the RDF concept to improve the financial sustainability of DSO	Facilitate the exchange of information on RDF experiences and lessons learnt within EPN	

Annex 7g
Action Plan - Priority area 7: Collaboration

Causes identified:

- Poor or no collaboration activities
- No financial resources for collaboration activities
- Fear, distrust and lack of transparency
- Lack of training in collaboration skills
- Lack of management awareness on the importance of collaboration

Results identified from lack of collaboration

- Lack of information exchange
- No sharing culture
- Lack of IEC materials
- Inadequate or no networking

Collaboration improved		
DSO	EPN	Partners
Create awareness among managers and owners of DSO on improving collaboration (paradigm shift from competition towards cooperation) (2 DSOs)	Facilitate and organize regular meetings between DSO management and stakeholders	Provide funding for regular meetings between DSO management and stakeholders (donors)
Train DSO personnel on collaboration skills	Turn EPN website into information portal	
Organize regular meetings with stakeholders and partners	Support mechanisms to regularly exchange visits/ meetings/teleconferences and network among DSO managers	