

**Access to Essential Medicines:
Tanzania, 2001**

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Strategies for Enhancing Access to Medicines Program
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About SEAM

The Strategies for Enhancing Access to Medicines (SEAM) Program is funded by the Bill & Melinda Gates Foundation, and works to improve access to essential medicines and vaccines in the developing world by fostering partnerships between the public and private sectors.

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Acronyms

ADDO	Accredited drug dispensing outlet
AMREF	African Medical and Research Foundation
ASK	Alan Kenyon
CHF	Community Health Fund
CMS	Central Medical Stores
COGS	cost of goods sold
CSSC	Christian Social Service Commission
DDH	Designated District Hospital
DHS	demographic and health survey
DLDB	<i>duka la dawa baridi</i> [private drug shop]
DMO	District Medical Office
DSA	Daily Substance Allowance
ELCT	Evangelical Lutheran Church in Tanzania
FY	financial year
GDP	gross domestic product
GLC	gas-liquid chromatography
GMP	Good Manufacturing Practice
GOT	Government of Tanzania
GPHF	German Pharma Health Fund
HBS	household budget survey
HPLC	high-performance liquid chromatography
ICT	information communication technology
LRM	legal reference methods
MEMS	Mission for Essential Medical Supplies
MOH	Ministry of Health
MSD	Medical Stores Department
MSH	Management Sciences for Health
NBS	National Bureau of Statistics

NEDLIT	National Essential Drugs List
NGO	nongovernmental organization
NHIF	National Health Insurance Fund
NQCL	National Quality Control Laboratory
NSSF	National Social Security Fund
OC	other charges
ORS	oral rehydration salts
PE	personnel emoluments
PER	public expenditure review
PHC	primary health care
POE	port of entry
RTAC	Regional Technical Advisory Committee
SEAM	Strategies for Enhancing Access to Medicines [MSH]
SP	sulfadoxine/pyrimethamine
TANESCO	Tanganyika Electric Supply Company Limited
TANROADS	Tanzania Road Agency
TLC	thin-layer chromatography
TRC	Tanzania Railway Corporation
TZS	Tanzania shilling
USAID	U.S. Agency for International Development
USD	U.S. dollar
WHO	World Health Organization

Executive Summary

Despite Tanzania's stable political structure, poverty has been an enormous challenge to the country's social and economic development. Recognizing the dire effect that poverty has on the nation's potential, the government has instituted a series of policy initiatives as a result of which Tanzania has made some progress in human development indicators in the last decade. The Ministry of Health (MOH) is trying to develop strategies to improve quality of health services and increase equity in health accessibility and utilization. This report presents the results of an assessment of the public and private pharmaceutical sectors in Tanzania by the Strategies for Enhancing Access to Medicines (SEAM) Program. The assessment included (1) determining the status of public and private sector access—in terms of geographical accessibility, availability, quality, affordability, acceptability—to essential public health medicines and health commodities; (2) identifying opportunities for private sector participation in improving access to public health commodities; and (3) determining the feasibility of implementing public/private sector strategies to improve access.

The assessment revealed access gaps in respect to drug availability, primarily in the public sector, and issues related to quality and affordability of products and services, especially in the private retail sector. Key findings from the assessment included the following: (1) geographical access to drugs does not appear to be a problem and is not perceived as a problem by the public; (2) availability of drugs is a problem at the Medical Stores Department (MSD), especially, but not exclusively, at zonal stores outside of the Dar es Salaam zone; (3) availability issues exist in public sector primary health care facilities and also in many hospitals;¹ (4) availability does not seem to be a significant problem at mission health facilities; and (5) in respect to quality of drugs and services, SEAM data from districts surveyed revealed that the public cannot be assured of the drug quality for a significant proportion of drugs in the Tanzanian market.

These findings pose major challenges to the MOH, namely to seek the ways and means to improve the availability of drugs in the public sector, especially in hospitals and primary health care facilities, and to improve the quality of products and services in the private sector. To address these challenges, strategies were developed and approved by the MOH for implementation. The strategies included (1) establishing a network of accredited drug dispensing outlets (ADDOs) in rural and peri-urban areas of the country to provide an increased range of products similar to those approved for primary health care facilities; (2) establishing a tiered pharmaceutical product quality assurance program; and (3) establishing an alternative, private sector supply system to augment the MSD supply system for the public sector, other MSD clients, and possibly rural retail drug outlets by providing quality, competitively priced health commodities. The strategies for establishing a network of accredited drug dispensing outlets and drug quality assurance are currently being implemented. Development and eventual implementation of an MOH-directed alternative supplier program is in its earliest stage.

¹ Districts surveyed included Dar es Salaam-Temeke, Kinondoni, Masasi, Njombe, Karagwe, Kilimanjaro Rural, Tanga Urban, and Dodoma Urban.

Introduction and Background

In 2000, Management Sciences for Health (MSH) received a grant from the Bill & Melinda Gates Foundation to identify and test innovative approaches for improving access to essential medicines in developing countries through greater participation of the private sector. To fulfill this mandate, MSH set out to implement programs to promote access, design a method to measure the nature and extent of the lack of access to essential medicines, and monitor the impact of these programs.

The SEAM access framework was developed after a review of the published and unpublished literature on access to health care in general and to medicines in particular. This framework was later discussed at a consultative meeting jointly sponsored by MSH and the World Health Organization (WHO), in Ferney-Voltaire, France, held December 11–13, 2000. More than 40 experts from 15 countries participated in the discussions and concluded that, as with health services, the concept of access to essential medicines is a construct with several distinct dimensions that are distinguished by sets of specific relationships.

The following four dimensions of access emerged from the discussions—

- Physical availability, defined by the relationship between the type and quantity of product and service needed and the type and quantity of product and service available
- Affordability, defined by the relationship between the products and services and the user's ability to pay for them
- Geographic accessibility, defined by the relationship between the location of the product or service and the location of the potential user of the product or service
- Acceptability (or satisfaction), defined as the fit between the user's and provider's attitudes and expectations about the products and services and the actual characteristics of these products and services

In addition, quality of products and services was defined as an essential component that cuts across all dimensions. Participants developed a set of 17 key indicators to represent the four dimensions of access and one crosscutting characteristic. The indicators are detailed in the Access to Essential Medicines, Vaccines, and Related Health Commodities section of this report.

After several rounds of internal discussions and consultations with experts from WHO and the World Bank as well as with contacts in developing countries, six countries—Ghana, Tanzania, Cambodia, India (state of Rajasthan), Brazil (state of Minas Gerais), and El Salvador—were identified in which to undertake assessments based on the conceptual framework, with the understanding that only two, or at most three, countries would eventually be selected for long-term projects under the SEAM Program. The initial selection criteria included perceived or known significant lack of access to essential medicines, perceived enabling environment for private sector initiatives, political and economic stability, and potential for collaboration with

other MSH and Gates-funded local initiatives. The countries not selected for long-term assistance are expected to have benefited from the assessment exercise, in particular from a SEAM-supported analysis of potential public-private sector initiatives to enhance access to essential medicines. With such an analysis in hand, the country can approach donors and lenders to finance such work, as appropriate.

The assessments were carried out between February and May 2001. Local private, not-for-profit, and academic organizations collaborated in the adaptation of data collection instruments, sample selection, data collection, and analysis. This report presents the assessment results and proposal for Tanzania.

Country Overview

Geography

Tanzania is in eastern Africa on the Indian Ocean between Kenya on the north coast and Mozambique on the south coast. The country covers an area of almost 950,000 square kilometers, roughly twice the size of the state of California. It assumed its present form in 1964 after a merger between the mainland state of Tanganyika and the island of Zanzibar, which had become independent the previous year. Dodoma is the new national capital, though Dar es Salaam is still the business and economic capital. The country is divided into 26 administrative regions (21 mainland and 5 Zanzibar) with 130 administrative districts (120 mainland, 10 Zanzibar) (URT 2003b).

Tanzania is the home of Mount Kilimanjaro, which is the tallest mountain on the continent, and three of the largest lakes in Africa, including Lake Victoria, the second largest freshwater lake in the world. The climate ranges from tropical on the coast to temperate in the highlands.



Source: CIA Factbook: Tanzania (2003).

Figure 1. Map of Tanzania

Demographics

According to the Tanzanian government's 2002 census, the population of the country is about 34.5 million. Tanzania is one of the least urbanized African countries. There are about 9,000 villages with an average of 3,000 inhabitants each (ME&A 2001). Most of the population density is concentrated in Dar es Salaam (1,700 persons per square kilometer) and Urban West in Zanzibar (1,700 persons per square kilometer). The other four regions in Zanzibar, as well as the Mwanza Region, are also more densely populated (URT 2003a). The average rates of growth for the period between 1988 and 2002 range from 4.8 percent in Kigoma Region to 1.4 percent in Lindi. Generally, the population growth has centered in Dar es Salaam and Urban West, except for Kigoma, where much of the growth is caused by the recent influx of refugees from neighboring countries.

Social and Economic Development

Tanzania has gone from 30 years of one-party socialism starting in the 1960s to a multiparty democracy; this political change has been accompanied by sweeping economic reforms. Although the political structure of Tanzania has been stable, poverty has been an enormous challenge to the country's social and economic development. Over 50 percent of the people live in extreme poverty, surviving on less than one U.S. dollar (USD) per day (USAID 2003). While Dar es Salaam is significantly better off than the rest of Tanzania's population by almost all measures, rural households are much poorer than their urban equivalents (NBS 2002). The developmental indicators are not promising: life expectancy has fallen to 44 years in 2001, from 50 years in 1990 (World Bank 2003), and infant mortality is 107 deaths per 1,000 and rising, largely because of HIV/AIDS (about 8 percent of the adult population is HIV-positive) (World Bank 2003). This still-rising incidence of HIV/AIDS is a primary challenge to reducing poverty. Aside from the disease's direct impact on poverty-related indicators, the consequences are critical for the productive labor force and therefore growth. Tanzania's gross domestic product (GDP) could be 15 to 20 percent lower by 2015 due to the HIV/AIDS epidemic compared to a situation without HIV/AIDS (World Bank 2003).

The government recognizes the dire effect that poverty has on the nation's potential and has addressed it through a series of policy initiatives such as the National Poverty Eradication Strategy and Vision 2025, which establishes social and economic objectives to be achieved by the year 2025. To support these strategies, the National Bureau of Statistics (NBS) conducted the Tanzanian Household Budget Survey (HBS) (NBS 2002) in 2000 and 2001, which was the largest household budget survey in Tanzania and one of the largest in Africa.² (See Annex D, Table D-1 for a summary of HBS indicators.)

Table 1 shows that Tanzania has made improvements in some key development areas over the 10 years since the last HBS in 1990–91; the proportion of the population with access to safe drinking water and adult literacy rates have both increased, while average household size and numbers living below the poverty line have decreased moderately. Furthermore, according to the

² The HBS covered more than 22,000 households in urban and rural areas across all 20 regions of the Tanzanian mainland. The analysis focused on the poverty indicators defined in the government's policy strategies, providing national and regional data as a baseline against which future progress can be assessed.

World Bank (2003), Tanzania's overall economic performance over the past several years has been impressive, albeit from a low starting point. For example—

- GDP per capita grew an average 1.6 percent since 1995.
- Real GDP growth since 1995 averaged 5 percent and was 5.8 percent in 2002, with a projected increase to 6 percent in 2003 (with agriculture and tourism as the driving forces).
- Inflation decreased from more than 30 percent in 1995 to 4.5 percent in 2002.

Table 1. National Household Survey Data

Components	1990–91	2000–2001
% Households with protected drinking water source	83	91
% Adult literacy rate	63	71
% Population below basic needs poverty line	39	36
Average household size (persons)	5.7	4.9

Source: NBS 2002.

The economy still depends heavily on agriculture, though fishing and agriculture employed only 63 percent of the workforce in 2001, which was almost 10 percent lower than in the previous decade (NBS 2002). There has been a trend toward private sector employment and self-employment, especially in urban areas. Growth from 1991 to 2002 was highlighted by an increase in industrial production and output of minerals, especially gold. The World Bank, the International Monetary Fund, and donors have funded the rehabilitation of Tanzania's economic infrastructure and programs to alleviate poverty. Continued donor backing and solid macroeconomic policies should support continued real GDP growth of 5 percent in 2003 (CIA 2003).

Infrastructure

Electricity

Tanganyika Electric Supply Company Limited (TANESCO) was established in 1931 and is now a public utility serving Tanzania. Primary energy consumption is 92 percent biomass, 7 percent petroleum products, and 1 percent hydropower and coal (Saleh 2002). The existing TANESCO system consists of an interconnected transmission system and several isolated systems with total installed capacity of 50 megawatts. The generation sources in the national grid comprise hydropower, gas turbines, and diesel generating plants. Tanzania's electricity market is small. Electricity consumption breaks down to 40 percent by households, 50 percent industry and businesses, and the remaining 10 percent public lighting and exports to Zanzibar island (Saleh 2002).

Overall, 10 percent of Tanzanian households are connected to the electricity grid, with an additional 2 percent receiving electricity from other sources. Coverage of the grid is most extensive in urban areas—59 percent of households in Dar es Salaam and 30 percent in other urban areas. In rural areas, only 2 percent of households are connected (NBS 2002). During the 1990s, coverage increased in urban areas but showed little change in rural areas.

Telecommunications

Tanzania has experienced rapid growth and modernization of its information communication technology (ICT) capabilities. As of 2001, Tanzania has seven licensed data operators and about 13 Internet service providers, five licensed operators of mobile cellular networks, and two licensed providers of basic telecommunications services—Tanzania Telecommunications Company Limited has a monopoly in mainland Tanzania and a duopoly with Zantel in Zanzibar (Yonah 2001). Tanzania had about 16 landline or mobile telephones for every 1,000 inhabitants in 2001 (a more than fivefold increase since 1995) and just over three personal computers (Yonah 2001). The proliferation of Internet cafes, especially in Dar es Salaam, points to the public's desire for this connection. In addition, the number of Tanzanian Web sites is growing, including those in Swahili.

Telecommunication coverage is limited mainly to urban areas because of the poor telecommunication infrastructure in rural areas. The goal of the national telecommunications policy is to provide each village with telecommunication service and increase the number of telephones per 1,000 persons to 60 (ME&A 2001). Currently, the banking sector, universities, and parastatals such as TANESCO are the main ICT users.

The people of Tanzania see the expansion of ICT capabilities as an important way to promote economic stability and growth, and various initiatives are under way. The removal of sales tax on computer hardware and software is one signal of the government's intention to promote such growth. One of the most important developments has been the formation of the eThink Tank (ME&A 2001), a forum supported by the United Nations Development Program that promotes public and private development of ICT in Tanzania.

Transportation

Mainland Tanzania has two separate rail systems with different gauges. Each rail system starts in Dar es Salaam and is administered by a separate authority, the Tanzania Railway Corporation (TRC) or the Tanzania-Zambia Railway Authority, the latter of which is a two-country joint railway system. The TRC links to the countries of Kenya, Burundi, Rwanda, and Uganda and also serves an eastern portion of the Democratic Republic of the Congo. Tanzania-Zambia Railway links Dar es Salaam to Tanzania's southern neighbors through Zambia. Although the systems are extensive, they are badly in need of repair, and both are scheduled for privatization.

Roads are important in serving Tanzania's rural areas, where most people live, but the roads are generally in poor condition, with 95 percent of the 85,000 kilometers remaining unpaved as of 2001 (CIA 2003). In an attempt to improve the situation, the government established an

autonomous executive agency, the Tanzania Roads Agency (TANROADS), responsible for the management of trunk road construction, rehabilitation, and maintenance. A National Road Board, with representatives from the public and private sectors, oversees the activities of TANROADS. The government also established a Road Fund that employs users' charges to finance road maintenance. The local authorities under the Ministry of Regional Administration and Local Government are responsible for the local roads network.

Other Resources

The Tanzanian media were largely controlled by the government before the multiparty era began in the mid-1990s. Since then, the media have developed rapidly, and some 350 publications are registered in the country (BBC 2003). The growth of the broadcast media has been slowed by the lack of capital investment needed to set up television and radio stations; however, many private FM radio stations are operating, mostly in urban areas. The percentage of households with a radio has increased to 52 percent in 2001 from 37 percent 10 years before (NBS 2002). The mainland and Zanzibar have separate media policies. While a 2001 government media bill liberalized the media on the mainland, it did not apply to Zanzibar. Consequently, there are no private broadcasters or newspapers on Zanzibar, though many locals receive mainland broadcasts and read the mainland press (BBC 2003).

The Health Sector

Organization of Health Services

For a period of almost 30 years, health services delivery has been largely a prerogative of the state; a limited number of private, for-profit health services were available only in major towns of the country. After independence, socialism was the guiding principle in the country, and free-market practices dwindled. Health care facilities were redirected toward rural areas, and free medical health services were introduced. However, the government could not afford the funds necessary to carry out essential health care, so it sought external financial aid starting in the late 1970s. By the late 1980s, donor funds made up a larger percentage of the health budget than government funds (GTZ 2001).

In 1977, private, for-profit health services were banned under the Private Hospitals (Regulation) Act and the practice of medicine and dentistry prohibited as a commercial service. This act had negative implications on health services in the country. After a series of major economic and social changes, however, the government adopted a different approach to the role of the private sector. New policies were developed that looked favorably on the role of the private sector. The importance of the private sector in health care delivery was further recognized with an amendment to the 1977 Private Hospitals (Regulation) Act that resulted in the establishment of the Private Hospitals (Regulation) (Amendment) Act, 1991. Following this act, individual qualified medical practitioners and dentists could now manage private hospitals, with the approval of the Ministry of Health. Public-private partnerships are now actively encouraged as part of the Health Sector Reform policy pursued by the MOH.

According to government statistics, in 2000, Tanzania had almost 5,000 health facilities, of which 80 percent were classified as dispensaries (NBS 2002). Approximately 470 were health centers, which were primarily government run and served the rural areas of the country. Over 100 hospitals accounted for about 2 percent of all facilities. National government or parastatal organizations support most (66 percent) health facilities in Tanzania. Fifteen percent are run by nongovernmental organizations (NGOs) (i.e., religious organizations), and almost 20 percent are classified as private (Table 2). Thirteen NGO hospitals operate as Designated District Hospitals (DDHs) in the districts without public hospitals. The role of for-profit private providers is still limited but has been growing rapidly, particularly in the urban areas, since the relegalization of private practice in 1991. The private for-profit sector includes traditional medicine, which is popular, but used as a complement to rather than a substitute for modern health care. According to the government, the distribution of health facilities emphasizes rural areas because almost three-quarters of the population lives there.

Table 2. Distribution of Health Facilities in Tanzania, 2000

Health Facility	Government	Parastatal	NGO/ Religious	Private	Others	Total
Consultancy/referral hospitals	4	2	2	0	—	8
Regional hospitals	17	0	0	0	—	17
District hospitals	55	0	13	0	—	68
Other hospitals	2	6	56	20	2	86
Health centers	409	6	48	16	—	479
Dispensaries	2,450	202	612	663	28	3,955
Specialized clinics	75	0	4	22	—	101
Nursing homes	0	0	0	6	—	6
Laboratories	18	3	9	184	—	214
X-ray units	5	3	2	16	1	27
Total	3,035	222	746	927	31	4,961

Source: NBS 2002.

Note: — = not applicable.

According to information from the Government of Tanzania (GOT) (URT 2003b), the health services framework has been designed to assume a “pyramidal pattern” of referral, consonant with recommendations from health planners. The government’s national Web site describes the structure as follows—

- **Dispensary Services** are the second level of health services. The dispensary provides for between 6,000 and 10,000 people and supervises all the village health posts in its ward.
- **Health Centers** serve 50,000 people, which is the approximate population of one administrative division.

- **District Hospitals** serve an important role in the country's provision of health care services. The national government runs most of the district hospitals, but some rural districts have hospitals run by nonprofit religious organizations.
- **Regional Hospitals** offer similar services to those at district level; however, regional hospitals have specialists in various fields and offer additional services.
- **Referral/Consultant Hospitals** comprise the highest level of hospital services in the country. Currently, the four government-run referral hospitals are the Muhimbili National Hospital, which serves the eastern zone, the Kilimanjaro Christian Medical Centre, which serves the northern zone, Bugando Hospital, which serves the western zone, and Mbeya Hospital, which serves the southern highlands.

As seen in Table 2, NGOs own or run a significant proportion of health facilities that provide services on a nonprofit basis. The largest of this group is the Christian Social Service Commission (CSSC). CSSC is an umbrella organization of Protestant and Catholic churches that facilitates the provision of health and education services for its membership, which primarily serves patients in rural areas of Tanzania, where about 75 percent of the population lives. Other private faith-based groups whose members provide health services regardless of patient denomination include Aga Khan Health Services (three hospitals and three health centers), Hindu Mandal, and Bakwata. In addition, some private corporations (e.g., Brooke Bond Tanzania Limited, Tanzania Tobacco Processors Limited) operate nonprofit health facilities for their employees and employee dependents.

Management and Financing of Health Services³

Table 3 provides a summary of health expenditures for three years.

Table 3. Total Expenditures on the Public Health Sector in Tanzania (TZS Billions)

Item	1997–98		1998–99		1999–2000	
	Budget	Actual	Budget	Actual	Budget	Actual
Recurrent						
MOH	25.75	25.86	37.25	37.15	39.18	35.41
Regions	7.85	8.20	9.25	8.69	9.36	9.01
Local government	13.29	12.76	15.71	16.34	17.60	16.92
Total	46.89	46.82	62.21	62.18	66.14	61.34
Development						
MOH	25.96	5.22	21.21	17.27	17.77	10.19
Regions	3.63	1.15	5.00	0.67	2.57	0.79
Local government	0.20	—	0.18		0.28	
Total	29.79	6.37	26.39	17.94	20.62	10.98
Total budget	76.68	53.19	88.60	80.12	86.76	72.32
Off-budget						
Cost-sharing		0.84		1.04		1.14
Community Health Funds		0.02		0.07		0.09
Donor funds	23.56	46.67	35.55	42.76	52.32	60.04
Total off-budget	23.56	47.53	35.55	43.87	52.32	61.27
Grand total	100.24	100.72	124.15	123.99	139.08	133.59

Whereas recurrent government expenditures have been broadly in line with budgets, development expenditures have consistently failed to meet budgeted figures, an indication, perhaps, that spending on salaries, drugs, and medical supplies takes priority over development budgets, especially when resources are tight. That overall expenditure has remained broadly in line with budgeted figures is largely due to off-budget expenditures being higher than planned, mainly a result of donor funding exceeding original plans.

Key findings of the Public Expenditure Review (PER) Task Team (2001) included—

- The government has generally increased the funds going to health, with the GOT health budget for 2000–2001 set at 117 million Tanzania shillings (TZS), compared to TZS 87 million in the previous year. However, the percentage of total government budget devoted to health is reported to have declined from 15 percent to 12 percent between 1996 and 97 and 1999 and 2000, although the budget for 2000–2001 shows some improvement.
- Actual expenditure was much lower than budgeted.

³ The authors drew heavily on PER Task Team 2001 and GOT/World Bank 2001 for this section.

Country Context

- Fifty percent of the 1997–98 budget was for hospitals.
- Seventy percent of the budget was for personnel emoluments (PE), mainly salaries.
- Whereas 100 percent of the PE budget was released, only 60 percent of other charges (OC) budget was made available. Drugs and medical supplies are part of the OC budget.
- Geographical distribution of funds is not based on need or activity levels.

In spite of a long-standing policy emphasis on primary health care (PHC), the geographic resource allocation has historically been skewed in favor of hospitals and major urban centers rather than primary health care and rural areas. In recent years the allocation of GOT health expenditures within the sector has remained consistent, with approximately 6 to 7 percent being spent on administration, 60 to 62 percent on hospitals, and 32 to 34 percent on primary health care. Tables 4 and 5 provide details.

Table 4. Subsector Breakdown of Recurrent Expenditures (TZS Billions)

Subsector	1997–98			1998–99			1999–2000		
	PE	OC	Total	PE	OC	Total	PE	OC	Total
MOH admin/central	1.96	1.06	3.02	1.97	1.74	3.71	2.61	1.25	3.86
Hospitals	19.45	8.74	28.19	21.68	17.12	38.8	23.93	10.69	34.62
PHC	9.9	5.61	15.51	11.79	7.88	19.67	11.89	7.62	19.51
Total	31.31	15.41	46.72	35.44	26.74	62.18	38.43	19.56	57.99

Note: PE = personnel emoluments; OC = other charges.

Table 5. Subsector Breakdown of Recurrent Expenditures (Percentage)

Subsector	1997–98			1998–99			1999–2000		
	PE	OC	Total	PE	OC	Total	PE	OC	Total
MOH admin/central	6	7	6	6	7	6	7	6	7
Hospitals	62	57	60	61	64	62	62	55	60
PHC	32	36	33	33	29	32	31	39	34
Total	100	100	100	100	100	100	100	100	100

Note: These figures exclude basket fund contributions. PE = personnel emoluments; OC = other charges.

Per Capita Health Expenditures

Nominal per capita health expenditures for 1997 to 2000 were USD 5.32 in 1997–98, USD 5.83 in 1998–99, and USD 5.52 in 1999–2000. Using the World Bank's (1993) minimum health package as a benchmark, a 1998 health financing study (Pavignani 1998) indicated the existence of a funding gap of USD 3.48 per capita in the public health sector. Table 6 provides a summary of the findings.

Table 6. Financing Gap in Public Health Sector (USD)

Item	Requirements (Pavignani 1998)	Actual Expenditure (1999/2000)	Funding Gap
Salaries	3.25	1.59	1.66
OC	2.75	0.95	1.8
Development	3.00	2.98	0.02
Total per capita	9.00	5.52	3.48

Source: SDC 2001.

Note: Pavignani's figure is based on a World Bank figure of USD 12 per capita for a minimum health package (World Bank 1993) from which USD 3 were deducted to take into consideration expenditure on water and sanitation, for example.

External Support to the Health Sector

Donor funding accounts for about 50 percent of public health expenditures. However, it is worth noting that external support to the Tanzanian health sector is generally lower than that of neighboring countries in per capita terms. Tables 7 and 8 provide details.

Table 7. Estimated Health Funding Sources in USD Millions (Percentage)

Funding Source	FY 2000–2001	FY 2001–2002	FY 2002–2003	Total
Government of Tanzania	102.3 (53.3)	121.7 (55.8)	145.1 (59.5)	369.1 (56.4)
User fees	5.5 (2.9)	5.8 (2.7)	6.2 (2.5)	17.5 (2.7)
Donors	84.1 (43.8)	90.7 (41.6)	92.6 (38.0)	267.5 (40.9)
Total	191.9	218.3	243.8	654.0

Source: World Bank 2000.

Notes: Figures may not add up to 100 percent due to rounding; the donor resource flows for FY2001–2002 and FY2002–2003 are at best indicative and may be underestimated.

Table 8. Comparison of External Health Funding, Selected Countries in Southern and Eastern Africa (USD)

Country	Per Capita External Support to Health Sector
Malawi (1998)	4.50
Mozambique (1998)	6.30
Tanzania (1999)	2.99
Zambia (1998)	5.90

Source: PER Task Team 2001.

Spending on Drugs and Medical Supplies

Drug expenditures by the Tanzanian MOH represent between 14 and 19 percent of total health expenditures, with 50 to 60 percent of this amount going to primary health care. Pavignani (1998) estimated that USD 1.75 was required to cover drugs and medical supplies in the public sector. Actual expenditure on these items in 1999–2000 was about USD 0.30, indicating a sizable shortfall in funding for essential drugs in the public sector. Tables 9–11 provide further details.

Table 9. Expenditure of Government Funds on Drugs and Medical Supplies and Services (TZS Billions)

Sector	1997–98 Actual	1998–99 Actual	1999–2000 Actual
Total hospitals	3.7	3.4	5.1
Total preventive	4.6	5.1	4.8
Total government drugs budget	8.3	8.4	10.0
Total government health budget	46.8	62.2	61.3

Table 10. Expenditure of Government Funds on Drugs and Supplies as a Percentage of Total Government Health Budget

Sector	1997–98 Actual	1998–99 Actual	1999–2000 Actual
Total hospitals	7.9	5.4	8.3
Total preventive	9.9	8.1	7.9
Total government drugs budget	17.8	13.6	16.2
Total government health budget	100	100	100

Table 11. Breakdown of Government Drugs Budget (Percentage)

Sector	1997–98 Actual	1998–99 Actual	1999–2000 Actual
Total hospitals	44.5	39.9	51.3
Total preventive	55.5	60.1	48.7
Total government drugs budget	100	100	100

Budget allocations to hospitals for drugs and medical supplies are made on a population basis using a formula developed by the Chief Pharmacist in association with the Medical Stores Director. As a rule of thumb, the following allocations are made: for district hospitals, TZS 5 to 7 million per quarter; for regional hospitals, TZS 10 to 15 million; and for referral hospitals, TZS 25 to 60 million (PER Task Team 2001). After allocations are made, hospitals are informed of budgets available to them in their accounts; then they are able to order supplies against these accounts. MSD makes quarterly reports to each hospital on the status of its account.

PHC drug kits consume about 50 percent of drug and medical supply resources, and the first priority for funds received is supplying kits to health centers and dispensaries. Although most MOH drug allocations are devolved directly to MSD, some funding bypasses this route. However, the PER Task Team report (2001) notes that “it is unclear how the remaining portion of the budget is divided.”

Health Financing—Conclusions

- GOT funds have consistently accounted for about 50 percent of total health sector expenditures.
- A high proportion of donor funding takes place off budget.⁴
- PHC makes up about 33 percent of total recurrent spending by GOT. This figure remained constant over the period reviewed.
- Hospitals, especially certain tertiary institutions, receive a disproportionate share of resources.
- PHC drug kits consume about 50 percent of drug and medical supply resources.
- Spending on drugs and medical supplies takes up between 14 and 19 percent of the total GOT health budget.
- Per capita expenditure on health is about USD 5.5.
- A financing gap of about USD 3.5 per capita was estimated. The gap is particularly acute in “other charges” and indicates a shortfall in the provision of essential drugs and medical supplies in the public health sector.

Cost-Sharing and Social Insurance

Government Health Insurance

In June 1999, the parliament of Tanzania enacted the National Health Insurance Fund Act. The GOT established the fund to provide for contributions to and payment of health care benefits to all government employees in mainland Tanzania. The scheme was originally scheduled to start in January 2000, but implementation was delayed until September 2001. The act provides for a comprehensive outpatient pharmacy benefit for all government employees, their spouses, and up to four dependents. The initial program was expected to cover 233,780 people, or less than 1 percent of the population (World Bank 2000). Provisions of the act specify reimbursement for generic drugs on the National Essential Drugs List (NEDLIT) at a maximum allowable cost based on MSD prices. Provision is also made to establish monitoring mechanisms for identifying unusual patterns of drug utilization and irrational drug use.

⁴ The initiation of basket funding support might have changed this situation.

Community Health Funds

The Community Health Funds (CHF) plan is an alternative to users fees under which villagers prepay for health care, then receive matching funds from the GOT. Under CHF, a participating household voluntarily prepays a certain amount per year defined by the community (TZS 5,000 to 20,000) for health consultations and drugs provided at a publicly operated dispensary or health center and the district hospital outpatient department. One of the appeals of the CHF system is that the local management of the CHF is seen as a way of empowering people to take responsibility for health care and control resources. The scheme was piloted in Igunga District in 1996, and then scaled up in nine other districts by 2002. The enrollment rate for Igunga was far less than anticipated, and the rates vary widely within the other districts. The estimated enrollment rate in other district areas is 10 to 30 percent (Shaw 2002). It is estimated that around 50 percent of CHF funds may be used to purchase drugs and supplies.⁵

Private Health Insurance

Some private, for-profit companies (e.g., Brooke Bond Tanzania Limited, Tanzania Tobacco Processors Limited) provide health benefits to their employees and employees' dependents. Services are similar to those provided at public health facilities. Outpatient and inpatient services are provided without charge to the employee, spouse, and up to four dependents. A company-managed health center usually provides outpatient health care, while inpatient services are outsourced. In the past two years, at least one private health insurance company, Medical Express Tanzania, has started to assist some companies in managing their health services.

Financing generated by hospital cost-sharing and CHF is expected to rise from TZS 2.06 billion in 2000–2001 to TZS 10.95 billion in 2003–2004 (PER Task Team 2001). However, given the lower than expected membership of the CHF, it is not clear if these targets will be met.

Health Sector Reforms

The Ministry of Health appraised health sector performance to develop strategies for improving the quality of health services and increasing equity in health accessibility and utilization. This appraisal is included in the report *Proposals for Health Reforms* (Ministry of Health 1994). The scope of proposed action includes managerial restructuring or decentralizing health services; financial reforms, such as enhancing user charges in government hospitals and introducing health insurance; and introducing community health funds and public-private mix reforms, such as encouraging the private sector to complement public health services. Organizational reforms, such as integrating vertical health programs into general health services, and funding and instituting health research, are also included.

⁵ Rogatian Shirima, National CHF Coordinator.

According to GOT sources (URT 2003b), the Health Sector Reforms Program has the following objectives—

- Improve access, quality, and efficiency of primary health (district-level) services
- Strengthen and reorient secondary and tertiary service delivery in support of primary health care
- Improve capacity for policy development and analysis, development of guidelines for national implementation, performance monitoring and evaluation, and legislation and regulation of service delivery and health professionals
- Implement a human resource development program to ensure adequate supply of qualified health staff for management of primary, secondary, and tertiary services
- Strengthen national support systems for personnel management, drugs and supplies, medical equipment and physical infrastructure management, transport management, and communication
- Increase financial sources and improve financial management
- Promote private sector involvement in the delivery of health services
- Within the sectorwide approach, develop and implement a system for donor involvement, coordination, and monitoring and evaluation

Starting in 2000–2001 the government made a deliberate decision to increase expenditures in core sectors identified in the primary poverty initiative, especially in health, education, rural roads, and HIV/AIDS. In the health-targeted areas, the priorities are providing drugs, essential medical supplies, equipment, and vaccinations; rehabilitating the health infrastructure; strengthening primary health care and maternal and child health programs; and building capacity for HIV/AIDS and sexually transmitted infection activities.

The Pharmaceutical Sector

Pharmaceutical Policy, Laws, and Regulations

The Government of Tanzania's health reform aim to improve health services through partnership between the public sector and private institutions has resulted in a number of legislative reforms and amendments. At the time of the assessment, pharmaceuticals were regulated through the Pharmaceuticals and Poisons Act No. 9 of 1978. The regulatory body overseeing pharmacy practice and medicine is the Pharmacy Board, under the Ministry of Health.

The Board approves the registration of drugs if it considers that availability of the drug is in the public interest and may authorize the sale of unregistered drugs for specified purposes. The board grants licenses for importing, exporting, manufacturing, and selling medicines under

specified conditions. Manufacturing licenses are subject to compliance with Good Manufacturing Practice (GMP).

The National Drug Policy, adopted in 1991, provides broad guidelines to ensure access to appropriate, safe, effective, and affordable medicine. Tanzania was one of the first countries to adopt the essential drugs concept, and the country continues to use it as the vehicle to ensure access to medicines that addresses the most common prevalent conditions in the country.

Since the assessment, Parliament has passed two acts that separate professional matters from the regulatory authority. The Pharmacy Act covers mainly professional norms and standards, educational standards, and registration of pharmacists, technicians, and assistants and generally provides monitoring for good pharmacy practice. A Pharmacy Council will oversee implementation of the Pharmacy Act. It is anticipated that the government will later enact more comprehensive legislation to improve regulation of health products and food. The Tanzania Food, Drugs and Cosmetics Act establishes a food and medicine regulatory authority, the Tanzania Food and Drugs Authority (TFDA).

The proposed legislation is more enabling than Act No. 9, as it—

- Leaves TFDA to create the schedules of medicines, which makes it easier to amend scheduling to suit access and safety needs
- Specifically mentions medicine counterfeits
- Mentions herbal medicine
- Specifically mentions monitoring of adverse drug reactions and regulation of the promotion of medicines
- Specifically mentions psychotropics as a class that needs special control and regulations, whereas in the past they were treated as ordinary medicine
- Establishes collaboration between the National Quality Control Laboratory (NQCL) and the Tanzania Board of Standards
- Regulates and registers mid-level pharmacy employees (technicians and assistants) who are not covered in the current legislation, which may assist in defining their scope of practice and in human resource planning

Ownership of pharmacies is reserved for pharmacists. The sale of pharmaceuticals is reserved for pharmacies in registered premises, conducted or supervised by a pharmacist. Exemptions are granted to dentists, veterinary surgeons, medical practitioners in the treatment of their patients, and staff members of a hospital, dispensary, or similar institution, or by exemption by the Pharmacy Minister.

Rational Drug Use

The essential drugs concept is the vehicle used to ensure access to medicines that address the most common prevalent conditions in the country. The NEDLIT and Standard Treatment Guidelines were revised, and the second edition was published in 1997. Both the Pharmaceuticals and Poisons Act, which is the law that regulates pharmaceuticals, and the NEDLIT are currently under major review to accommodate present-day needs. Mission hospitals do not have their own essential drug lists, but use the NEDLIT as a resource.

Registration

The Pharmaceutical and Poisons Act required that all pharmaceuticals be registered. However, enforcement of this provision was weak until 1999, when new management at the Pharmacy Board began to enforce registration requirements more vigorously than previously. To carry out this work, the Pharmacy Board instituted a registration unit with a staff of seven. Some of the pharmacists have extensive experience in various areas of pharmacy but limited experience in registration issues; however, some unit members have attended training sessions. As of 2001, 4,800 products had been notified, and 1,408 human drugs and 64 veterinary drugs had been registered. Registration of human drugs increased by 123 percent in 2000 compared to 1999. Of the registered drugs, 60 percent are on the NEDLIT. A lot of effort has been put into product registration and much has been achieved within a relatively short time. The government's commitment to support the essential drugs list concept is clear.

A lot of ground remains to be covered, for example in registration, inspection, ensuring a culture of operating within minimum standards of practice, dealing with counterfeits, and regulating and ensuring quality of care in *duka la dawa baridi* (private drug shops). An earlier version of the SIAMED drug registration computerized system was provided by WHO, but it proved cumbersome and a locally developed system is currently used. That system may not be robust enough for future needs. Negotiations with WHO have been entered into to replace the local system with a revised version of SIAMED. Training and support will be provided.

Quality Assurance

National Quality Control Laboratory

The main tasks of the National Quality Control Laboratory are to—

- Assist with national drug registration and drug inspection
- Assist the MSD in controlling the quality of its supplies
- Develop a quality assurance policy
- Supply testing resources for all regulated commodities

The NQCL was opened in March 2000. Staff members include analysts, technicians, and a secretary. Some of the analysts have postgraduate qualifications in pharmaceutical analysis and others are pharmacists. The NQCL refers samples that require tests it is unable to perform to

other laboratories in the country (e.g., the government chemist, the laboratory at the Soikone veterinary school in Morogoro, and the Muhimbili medical school laboratory).

Quality testing is done predominantly on samples submitted by the inspection unit of the Pharmacy Board (48.6 percent), followed by requests from the registration unit (30.8 percent). About 20 percent of tests are done on request by other clients such as the MSD. In 2000, the laboratory received 354 samples, compared to 133 in 1999. Thirteen percent failed quality control tests. Of the total number of samples that failed quality control tests, 22 percent were locally manufactured. Details of the origin of the remaining 78 percent were not available. Table 12 tabulates the breakdown.

Table 12. Tests Conducted by NQCL (2000)

Sample Source	Number Received	Number Failed	Percentage Failed
Inspection	172	20	11.6
Registration	109	8	7.3
External other	73	18	24.7
Total	354	46	13.0

From January to May 2001, the laboratory received 64 samples; it analyzed 46 samples and 13 failed the tests. Of the submitted samples, 18 could not be analyzed properly for a variety of reasons (e.g., lack of reference standards, reagents). Of the tested samples, the reasons for failure were dissolution, counterfeiting, and low active ingredients. A breakdown of the reasons for the failures in 2000 was not available, but anecdotal evidence suggests that counterfeiting, low content of active ingredients, and microbial contamination accounted for the majority.

Drug Inspectorate

The inspection unit is the compliance monitoring and enforcement arm of the Pharmacy Board. Besides staff stationed at the board offices, it has 37 inspectors who are located in regions and some ports of entry. Inspectors have the power to enter any premises where medicines are handled and to seize samples when required. The board intends to extend the inspectorate presence to all 114 districts in the country and to cover all border posts. However, the inspectors' capacity may not be sufficient in terms of both numbers and expertise. They plan to do at least two routine inspections per year, but the number of pharmaceutical outlets is far more than they can cope with. Inspections ideally would include all 15 ports of entry (including Zanzibar), dispensing doctors, traditional outlets, homeopaths, and *duka la dawa baridi*.

This unit's functions include inspecting manufacturing premises for licensing purposes and compliance with GMP, monitoring of compliance with standards in all retail and public sector pharmacies and public and private wholesalers, inspecting narcotics and imported drugs at ports of entry, postmarketing surveillance of drugs, and conducting special inspections on any premises if mishandling is suspected.

The Dar es Salaam ports of entry have inspectors on site 12 hours a day.⁶ They inspected 942 consignments in 2000–2001. The consignments were generally found to conform to identification and labeling requirements approved by the board on the pro forma invoices. The other 13 official ports of entry had not yet been inspected. It is believed that there are several other unofficial entry points (e.g., Zanzibar, along borders with Kenya and Burundi).

Of 103 applications for premise inspections received in 2000, the inspectorate approved 56 (54 percent). One manufacturing plant was approved and one repackaging plant was approved. In 2000, 28 manufacturers were inspected for compliance to GMP (18 in Kenya and 10 local). Ten of the Kenyan facilities were approved. The inspectorate ordered 3 of the 10 local plants to stop production (Afya Laboratories Ltd, Elychem Ltd, and Khanbai Pharmaceuticals). It found three extemporaneous preparation plants to be manufacturing product and ordered them to stop. None of the local manufacturers meet the GMP standards set by the board; they also do not perform stability tests.

For the year 2000 to May 2001, the inspectorate office monitored 102 private pharmacies, 54 wholesalers, 159 Part II shops (*duka la dawa baridi*), 81 veterinary centers, and one public sector warehouse (MSD) for good pharmacy practice in 2000 in the Dar es Salaam, Northern, and Lake Zone areas. The 2001 work plan reflected an intention to train 24 participants from six zonal training centers. This plan shows a commitment to extend inspection functions. The breakdown of the inspections during this period is tabulated in Table 13.

Table 13. Inspection of Premises Jan. 2000–May 2001

Type of Facility	Number of Registered Premises	Number of Premises Inspected	Percentage Coverage
Retail pharmacy	339	102	30
Wholesaler	155	54	35
Manufacturer (domestic)	10	10	100
Manufacturer (Kenya)	—	18	—
Prepackaging units	—	3	—
Government wholesaler/ importer MSD	10	1	10
Hospital stores	—	8	—
Agrovets	—	81	—
<i>Duka la dawa baridi</i>	+/- 1,000 in Dar es Salaam alone; several thousand in other parts of the country	159	*

*The number of Part II shops is unknown, as they are not registered with the board. However, it is estimated that there are more than 4,600 in the country.

Record keeping (e.g., prescriptions dispensed) and the handling of psychotropics were found to be generally weak in pharmacies. Some Part II shops were found to possess Part I poisons and stolen state stock and/or to be practicing laboratory services (e.g., blood smears), administering

⁶ That is, during port operating hours. There is an arrangement to advise the inspectorate if a consignment is expected outside normal operating hours.

injections, doing dressings, and conducting minor surgical procedures. Of these, 46 have already been prosecuted. Recalls are instituted when product quality failures are confirmed by laboratory testing.

Postmarketing surveillance inspections revealed counterfeit products in the market. Four premises were found to have counterfeit ampicillin capsules and Cotexcin tablets; neither had active ingredient. It is believed both were prepared within the country. The ampicillin counterfeit label is similar to that of a locally produced product. The production of high-quality counterfeit labels points to the possible sophistication of the counterfeit industry. It is alleged that the Cotexcin primary and secondary containers were imported from China, the country from which the genuine product is imported. The filling of the capsule shells was done locally. Other counterfeit products that have been found over the last two years are erythromycin capsules from Kenya (filled with starch) and metakeflin (wrong product—capsule filled with paracetamol). Substandard samples of sulfadoxine/pyrimethamine (SP), the antimalarial drug selected to replace chloroquine, have also been found on the market. The discovery of counterfeit and stolen MSD drugs was referred for police investigation. Anecdotal remarks indicate that relations with the Criminal Justice and Police department may need to be strengthened to discourage counterfeiting of products and marketing of stolen goods.

The Market

Private Sector

The last definitive study of this sector was completed using 1993–94 data and published in 1995 (SGC Consulting 1995). At that time, the estimated market size in Tanzania was USD 50.8 million or about USD 2.00 per capita. The government's share was estimated to be 33 percent. Projected future demand for pharmaceuticals and medical supplies was computed based upon a correlation of the 1990 annual drug expenditures per capita with the 1990 gross national product per capita of 12 selected countries. The wholesale pharmaceutical market was projected to reach USD 73.9 million by the year 2000 (Table 14). The projected demand does not take into consideration pharmaceutical requirements for treating HIV infections or donor-supported programs. However, based on SEAM interviews and record reviews, the estimate for actual market size in 2000 appears to be lower than the USD 73.9 million projected in 1993–94.

Table 14. Estimated Size of Tanzania's Market for Pharmaceuticals (USD Millions)

Source	1990-91	1993	2000
Imports*	18.7	27.3	14.9
Essential Drug Programme kits	8.0	9.5	17.5 (total MSD sales)
Domestic production	4.9	7.2	11.8
Total apparent consumption	31.6	44.0	44.2
25 percent markup on imports	4.7	6.8	3.7
Estimated pharmaceuticals market	35.3	50.8	47.9
Estimated million population	24.0	25.8	30.0
Per capita consumption (USD)	\$1.47	\$1.97	\$1.60

Sources: SGC Consulting 1995; 2000 MSD financial report; Pharmacy Board import records; interviews with manufacturers.

*Imports may be underestimated, as the Pharmacy Board does not get figures from all ports of entry.

Given some of the indicators of general and pharmaceutical sector economic activity, there are a number of reasons why the 2000 estimates may be incorrect. For example, the prices of essential generic drugs have dropped between 1993 and 2000. In the case of MSD, the cost of a market basket has decreased by 50 percent, while wholesale prices have dropped by 24 percent. Furthermore, evidence from the government's 1999 demographic health survey of private pharmacies and drug retail outlets found that 75 percent of those surveyed had opened since 1995, which indicates that market activity has increased since the 1993-94 study data (Table 15). If retail activity has increased along with GDP growth, but imports reported by the Pharmacy Board have decreased significantly, at least three factors may explain why the market value has not approached projections. First, Pharmacy Board estimates for import values may be significantly underestimated. Second, unauthorized entry of drugs (smuggling, unregistered local manufacturers) may contribute significantly to the market. Third, available drug supplies may not meet projected country demand.

Table 15. Retail Outlets Opened since 1995

Type	Total	Percentage
Part I full-service pharmacies	32	67
Part II drug shop or <i>duka la dawa baridi</i>	203	76
Unclassified	13	87
Total	248	75
Total surveyed	330	

Source: DHS 1999.

Using the 1995 and 2000 demand figures, an estimated demand by type of pharmaceutical and dose form was projected based on the morbidity pattern reported by the MOH and Standard Treatment Guidelines in use at that time. Estimates for the top seven drugs, which would be used to treat 47.2 percent of total episodes, are presented in Table 16.⁷

⁷ In the new national treatment guidelines, chloroquine has been replaced by SP.

Table 16. Estimated Value and Quantity of Pharmaceuticals Likely to Be Dispensed

Pharmaceutical	1995	1995	2000	2000
	USD Million	Million Units	USD Million	Million Units
Aspirin 300 mg tabs (1000s)	3.65	1.25	4.79	1.64
Chloroquine syrups 50 mg/5 ml, 60 ml	1.92	5	2.52	6.55
Chloroquine 150 mg tablets (1000s)	4.97	0.3	6.51	0.39
Paracetamol 500 mg tabs (1000s)	7.88	1.28	10.32	1.68
Paracetamol syrup 60 ml	2.94	7.28	3.85	9.53
PPF injection, 4 mega (vial)	3.5	7	4.59	9.17
Tetracycline caps (1000s)	1.74	0.13	2.28	0.17
Others	29.8		39.04	
Total	56.4		73.9	

Source: SGC Consulting 1995.

Distribution Structure

Manufacturers, wholesalers, subwholesalers, donors, and the MSD are the principal distributors of pharmaceuticals and medical supplies in Tanzania. The structure is described as follows—

- Foreign manufactures sell products to the MSD, local manufacturers, importers/wholesalers, donors, NGOs/voluntary agencies, and private hospitals.
- Local manufacturers sell products to the MSD, wholesalers, NGOs, and large private institutions (hospitals, retail pharmacies, etc.).
- Donors provide drugs to NGOs and voluntary agencies.
- The MSD distributes products to government health facilities, NGOs/voluntary agencies, and parastatals from seven zonal stores.
- Major importers/wholesalers sell primarily to subwholesalers/stockists, large private health facilities, and retail pharmacies. Sales to the public sector and NGOs/voluntary agencies are generally minimal.
- Subwholesalers sell to smaller pharmacies, private health facilities, drug outlets (*duka la dawa baridi*), and smaller wholesalers.
- Consumers obtain their products from public sector health facilities, private sector facilities, NGOs, pharmacies, and other drug outlets.

The predominant single distributor of pharmaceuticals and medical supplies in Tanzania is the MSD. Since the government deposits funds for its health facilities with the MSD, it has a virtual monopoly for distributing pharmaceuticals and supplies to all public sector health facilities, including District Designated Hospitals managed by church organizations. In addition to

supplying government facilities, MSD has the country's preeminent drug distribution system. The MSD's distribution strength, combined with competitive, if not the lowest, prices, means that it supplies the majority of commodities to mission/faith-based health facilities. Even some of the larger private for-profit corporations (e.g., Brooke Bond Tanzania Ltd., Tanzania Tobacco Processor Ltd.) that provide free health services to their employees and employees' dependents purchase supplies from the MSD. Given the country's reliance on the MSD for drug distribution, both public sector and private sector representatives have expressed concern that any inability of the MSD to meet client requirements could have disastrous effects on Tanzania's health care system.

Manufacturing

The manufacturing sector in Tanzania is small; five major companies share the market (Table 17). In 1993, domestic pharmaceutical production was USD 7.2 million, while the production in 2000 was estimated to be USD 11.8 million, indicating a rise in total market share for domestically produced drugs to 20 percent from 14 percent (SGC Consulting 1995; interviews with manufacturers, April–May 2001). Local companies manufacture products from imported raw materials and, for the most part, manufacture a wide variety of prescription and over-the-counter liquid and solid oral generic products, including paracetamol, antimalarials, and antibiotics. A number of companies also import generic products for wholesale trading.

Table 17. Estimated Market Share of Major Local Manufacturers

Manufacturer	1993 Percentage Share	2000 Percentage Share
Shelys Pharm. Co. Ltd.	49.0	59.6
Interchem Pharma Ltd.	28.0	17
Tanzania Pharm. Industries Ltd.	8.0	9.4
Keko Pharm. Industries Ltd.	12.0	10.6
Mansoor Daya Chemical Ltd.	3.0	3.4

Sources: SGC Consulting 1995 (for 1993 figures); interviews with manufacturer representatives (for 2000 figures). Interchem estimate based upon 1993 market share.

The industry is thought to be working considerably below production capacity; the major constraint is a shortage of working capital. Banks often want to see a strong history of past performance; since most companies lack such a history, this remains an obstacle for locally owned companies. Access to additional capital appears easiest for manufacturers tied in some way to multinational companies. The government recognizes the advantages of stimulating local industry and actively encourages local manufacturing, which was exemplified by its abolishing the import duty for raw materials and packaging. In addition, the government provides investment incentives in the form of an 80 percent reduction in duty for capital goods. Investments are also immediately tax-deductible, and depreciation can be taken over five to eight years.

No local company meets GMP standards, although Shelys, a part of Sumaria Holding Limited, is planning to break ground for a new GMP plant in 2001. The Pharmacy Board is concerned about ensuring that manufacturers meet recognized standards for drug manufacturing. In 2000, the board performed a GMP inspection at each of the 10 registered local manufacturing plants and ordered three facilities to stop production. The board is attempting to assist and offer guidance to pharmaceutical manufacturers in upgrading the level of compliance to GMP guidelines. The Chairman of the Tanzania Pharmaceutical Manufacturers Association commented that each company has set its own timetable to meet minimum GMP standards and the Pharmacy Board is monitoring their progress.

The largest customer for the domestic industry is MSD. In 2000, it purchased USD 5.9 million from the local industry, which is about 50 percent of the manufacturing sector sales. Gross margins among manufacturers were not shared with surveyors, and current catalogs and price lists were not available. Margins have been reported to vary between 15 and 33 percent (SGC Consulting 1995; interviews) depending upon product and purchase quantity. However, considering that MSD awards approximately 50 percent (in value) of its pharmaceutical business to local companies, and that awards are based to a large extent on price, one can assume that at least for high-volume purchasers like MSD, manufacturer pricing is extremely competitive with low margins. A comparison of wholesaler pricing to MSD prices could give some indication of how deeply manufacturers are willing to discount their prices to obtain high-volume business from MSD. Unfortunately, the ability to provide such a price comparison is limited because wholesalers for the most part do not purchase the same package sizes as MSD and they also purchase significantly smaller quantities. Table 18 shows two examples of prices from the same manufacturer to MSD and a wholesaler. Assuming that margins for the wholesaler and MSD are not dramatically different (MSD gross margin for 1999–2000 was about 28 percent), it is evident that local manufacturers are willing to discount their prices deeply to MSD.

Table 18. Manufacturer Sales Price Comparison (TZS)

Pharmaceutical	Wholesaler List Price	MSD Price
Chloroquine 150 mg (1000s)	5750	4150
Aspirin 300 mg (1000s)	1100	794

Sources: Interviews with wholesalers and MSD.

Wholesaling/Distribution

As is the case for most developing countries, the private sector suppliers in Tanzania play a limited role in helping to manage essential health commodities within the public sector. In addition, groups such as NGOs and private companies that provide free or nonprofit health services use wholesalers to a limited extent. The private wholesalers' share of public sector business is minimal—estimated to be less than 2 percent.⁸ Wholesalers provide emergency supplies when there is an interruption in the flow of normal purchasing operations at MSD, and on occasion, will be awarded an open tender contract. As would be expected, the largest

⁸ Wholesaler interviews.

percentage of sales (about 88 percent) goes to private, for-profit clients, including smaller wholesale distributors and health care providers, with a smaller percentage to not-for-profit groups (average of less than 10 percent).⁹

The introduction of revolving drug funds and CHF in the public sector is beginning to make limited funds available that could be used to acquire drugs and supplies from the private sector. These funds are projected to increase over the next several years. If private sector product is available at a competitive price, the role of private sector suppliers could significantly increase.

In 2000, 155 wholesalers were registered with the Pharmacy Board. They are located in 14 of the country's 20 regions, with over 60 percent located in Dar es Salaam and over 20 percent based in the Arusha, Kilimanjaro, Mwanza, and Mbeya regions. The Tanzania Association of Pharmaceutical Industries, which represents wholesalers and pharmacies, reported similar numbers. The number of pharmaceutical distribution companies has risen in recent years when the importation of drugs and supplies was essentially unregulated. It is expected that with the Pharmacy Board drug registration process now in place and a subsequent decrease in parallel imports, the number of wholesalers requesting registration will decrease and smaller operations may not be sustainable. SEAM interviewed six companies that reported combined sales (including margin) of USD 15 million a year (which is comparable with Pharmacy Board import figures of USD 14.9 million, albeit for only six of the largest importers out of the 155 that are licensed) (Table 19).

Table 19. Selected Wholesaler Sales in 2000

Company	USD Millions
Nkrumah	6+
Mimco	3.0
Salama	2.5
JD Pharmacy	2.0
Diocare	1.25
Care	0.4
Total	15.15+

Sources: Company interviews; audited accounts of JD Pharmacy and Diocare.

Wholesalers import 80 to 90 percent of their products from China, Egypt, Europe, India, Kenya, Korea, and Malaysia. It was not possible to determine precisely how a wholesaler selected its generic manufacturer(s), but interviewees told SEAM that they considered cost, service reliability, credit terms, and some historical indication of product quality. Quality assessment was generally assigned to the wholesaler's pharmacist in charge, who reportedly judged quality by the visual inspection of labels and reports from clients. None of the wholesalers provided written quality control guidelines.

⁹ Wholesaler interviews.

The wholesalers did not report any significant shortages of essential medicines. However, some indicated that port clearance procedures (“red tape”) occasionally impeded the flow of drugs from the port to the distributor. Of wholesalers interviewed, the average service level reported was greater than 95 percent. This figure is subject to interpretation because wholesaler service levels were often determined by first reviewing a client’s order, then accepting orders only for products that were expected to be in stock. Also, a cooperative arrangement is in place between most major wholesalers, whereby wholesalers purchase products from one another. This practice reportedly helps keep service at an acceptable level. Although data to determine how well the wholesalers meet their customer’s requirements are lacking, since business is dependent upon maintaining adequate stock, a built-in incentive exists to keep service levels as high as possible.

The wholesaler/importers and to some extent manufacturers are principally responsible for wholesale drug distribution to the private health care sector. The major wholesalers and all but two manufacturers are located in Dar es Salaam. Unlike MSD, which operates its own transportation system for drug distribution, wholesalers/distributors use private carriers, including bus, rail, and freight, to move product to their distant clients. Pharmacies located up-country distribute supplies to smaller drug outlets and private health care facilities in their region. Local customers generally receive free delivery, and others either travel to the distribution center or pay the cost of transportation from the distributor to their health facility.

The wholesale sales and distribution network is similar to that seen with local manufacturers. Wholesalers sell products directly to private and public clients and to subwholesalers/stockists. Each major wholesaler is an exclusive or semi-exclusive agent for one or more manufacturers, but wholesalers do not necessarily stock the complete line of each respective manufacturer. The subwholesalers/stockists are located in Dar es Salaam and up-country. They have a mix of clients similar to those of the major wholesalers. That is, their clients include retailers (pharmacies and *duka la dawa baridi*) and hospitals, dispensaries, and infirmaries. Both major wholesalers and subwholesalers frequently supplement their wholesale operations with ownership of one or more retail pharmacies.

As a group, the major private sector wholesalers reported steady growth in revenue over the past several years, and they project continued double-digit growth. They also report that there is ample, affordable warehouse space in the urban centers to meet a steady increase in demand.

Prices

Margins reported for selected essential drugs varied between 21 and 29 percent in one study (SGC Consulting 1995). In another report, a margin of 15–20 percent was documented (VCF, Inc. 1998). Another indication of gross profit margin, obtained from an audited 2000 financial statement from a major wholesaler, was 33 percent.¹⁰ The margin reported in another audited 1999 statement was 12 percent. The disparity in gross profit might be explained by variability in operating expenses and perhaps irregularities in record keeping. Comparison of undiscounted wholesaler prices (volume discounts of 10 percent or more are not uncommon among wholesalers) to those from MSD revealed that the cost of a market basket of seven frequently dispensed medicines was about 30 percent higher at wholesaler prices (Table 20).

¹⁰ A comparison of cost analyses of two wholesalers and MSD is in Annex D, Table D-4.

Table 20. Wholesale Prices of Selected Pharmaceuticals per Unit (TZS)

Medicine	MSD 1994	MSD 2000	Wholesale 1994	Wholesale 2000
Aspirin 300 mg tabs	1520	944	1400	1100
Chloroquine syrup 50 mg/5 ml	200/60ml	155*	214	250
Chloroquine 150 mg tablets	8610	3256	7855	5750
Paracetamol 500 mg tabs	3200	1800	2705	2150
Paracetamol syrup	210/60ml	128	N/A	200
PPF injection, 4 mega (vial)	260	126	260	200
Tetracycline caps	6970	4585**	6500	5990

Sources: Wholesaler price list; SGC Consulting 1995; MSD.

Note: N/A = not available.

*Year 1999

**Year 1998

These wholesale prices are not indicative of price variability seen for most other drugs, where differences of 100 percent or more have been observed.¹¹ Significant price differences are not unexpected because the operations of MSD and private wholesalers differ to a great extent. For example—

- Wholesalers lack the sizable financial resources that MSD receives from the government to purchase bulk quantities of supplies. Therefore, it is more difficult to achieve the level of discounts that MSD receives.
- In order to satisfy client requirements, wholesalers are required to stock a large variety of generic and brand drugs. MSD needs to stock only generic items listed on the NEDLIT.
- Wholesaler clients frequently demand smaller package sizes (100s vs. 1000s) or unit-doses. These package sizes, even if they were ordered in large quantity, are more expensive than the predominantly large, bulk sizes purchased by MSD.
- Pharmacy Board fees, import taxes, and value-added taxes, which can range between 12 and 20 percent, are not paid by MSD.

Nongovernment Hospital/Health Facility Network

Because the CSSC represents the largest proportion of NGO facilities, perspective on its purchases provides a reasonable basis for estimating total value for the entire group. An estimate of CSSC drug consumption (excluding donations) is contained in a report it commissioned that looked at the feasibility of establishing a church drug and medical supplies system (Njau et al. 1999). The team visited 18 hospitals: 3 DDHs (a DDH is a mission hospital that is given the status of a government district hospital for an area and receives subsidies from MOH), 2 referral

¹¹ Year 2000 wholesaler price lists; MSD prices, 2000.

hospitals, and 13 voluntary hospitals. The consultants who prepared the report used several methodologies to estimate drugs purchased from MSD, local, and overseas suppliers. A number of conflicts were apparent. The consultants considered MSD computerized information to be the most reliable source of data, but they still faced the problem of estimating imports and local purchases. After rationalizing the data sets, the consultants estimated that for 1998, a conservative value for drug purchases for the entire group of NGO hospitals, excluding private, for-profit facilities, was about TZS 2 billion. They estimated that 11 percent was purchased from local pharmacies, 62 percent from MSD, and 27 percent from overseas (Table 21).

Table 21. Estimated Total Drug Purchases for All Church-Run Hospitals (TZS Millions)

Designation	Local	MSD	Import	Total	Percentage
DDH	79.3	450.5	87.2	617	31
Voluntary	125.4	579.8	452.2	1,157.4	57
Referral	24	215.8	0	239.8	12
Total	228.7	1,246.1	539.3	2,014.1	100
Percentage	11	62	27	100	

Interviews with representatives from nongovernmental health providers elicited the following comments related to drug supply issues—

- Adequate stock is not always available at MSD up-country zonal stores. As a result, hospitals may maintain larger drug inventories to prevent stock-outs. Maintaining large drug inventories reduces a hospital's ability to manage its limited resources.
- The capitalization program for hospitals is inadequate, resulting in some patients going without medications or having to purchase medications from private sources at a cost higher than hospital pricing.
- Quality of drugs from MSD is not consistent. One person commented that intravenous solutions were received that contained sediment, and other drugs were poorly packed, resulting in broken tablets.
- There were allegations of receiving short-dated, ineffective, or counterfeited medicine from private pharmacies.
- Pricing from drug wholesalers seemed to vary from one day to another.
- Donated drugs were not shipped with hospital needs in mind. Some drugs received were inappropriate for diseases treated at the hospital. Other drugs were expired or close to expiration.

Duka la Dawa Baridi

The 1978 Pharmaceutical and Poisons Act governs the retail activities of *duka la dawa baridi* (DLDBs), which literally means “Cold Drug Shops”—where “cold” drugs are nonprescription (over-the-counter), and “hot” drugs are prescription. In general, the act allows DLDBs to sell only nonprescription drugs (legally described as Part II poisons), and thus these retail outlets, also known as Part II poison shops, are not legally required to be supervised by a pharmacist.¹²

According to Guidelines for Dealing with Part II Poisons, the Regional Commissioner approves DLDBs for a Pharmacy Board permit after consultation with the Regional Technical Advisory Committee. After the Regional Commissioner approves the permit, and the Regional Trading Officer issues a business license, the owners are able to apply for a permit from the Regional Pharmacist, acting on behalf of the Pharmacy Board, to sell Part II poisons. However, in some areas, Part II poison shops reportedly operate without a Pharmacy Board permit.¹³ Also, the responsibility for inspection of DLDBs lies with the Pharmacy Board; however, even after planned increases in personnel are taken into account, the financial and human resources available to the board will be insufficient for anything other than a limited number of inspections each year. From January 2000 to May 2001, for example, 159 Part II shops were inspected. Essentially, DLDBs are able to operate outside of the regulatory framework.

The 39 DLDBs surveyed during the 2001 SEAM assessment reported that 32 percent of dispensing staff were nurse/midwives, clinical officers, or pharmaceutical assistants, while also reporting that 18 percent had no medical training. The remaining staff were predominantly nurse assistants (42 percent) or nurse auxiliaries (8 percent). Among those actually interviewed, and who provided this information, 41 percent had a nonmedical background. Therefore, it appears that over 60 percent of DLDB staff, many of whom are nurse assistants or auxiliaries, do not have formal training in drug dispensing. Furthermore, although the 1978 act permits DLDBs to dispense only over-the-counter drugs, 72 percent of those surveyed admitted to dispensing prescription drugs.

DLDBs constitute the largest network of formally licensed outlets for basic essential drugs in Tanzania. DLDBs are found in all districts in the country. However, they are not evenly spread throughout each district and are usually found in the larger population and market centers. Although exact numbers are not available, it is estimated that there are more than 4,600 DLDBs in the country, about one for every 7,400 people. This is more than 80 percent higher than the equivalent figure for all public health facilities (Table 22).

¹² “The person who is nominated to be a seller must have a basic knowledge of pharmaceutical science, agriculture science or be a dispenser approved by the PB [Pharmacy Board] in consultation with other relevant authorities such as the TZ [Tanzanian] Veterinary Board, Tanganyika Medical Council, Tanganyika Medical Training Boards, Nurse and Midwives Council, etc.” MOH, PB Guidelines for Dealings in Part II Poisons, May 1998.

¹³ During SEAM field trips in February/March 2002, one Regional Commissioner reported that not all DLDBs in his region had received a Pharmacy Board permit from the Regional Pharmacist.

Table 22. Number of Drug Outlets per Capita

Drug Outlet ^a	Number of Facilities	Facilities per Capita ^b
<i>Duka la dawa baridi</i>	4,627 ^c	7,456
Public facilities	2,450	14,082
Voluntary/religious	612	56,373
Private	663	52,063
Parastatal	202	170,792
Other	28	1,232,143
Private pharmacies	333 ^d	103,604

^aNBS 2002.

^bBased on 34.5 million people per GOT 2002 census.

^cEstimate based upon actual situation in 13 districts visited by SEAM in Feb./March 2002 (pop: 4.3 million; DLDBs: 587).

^dPharmacy Board.

DLDBs buy the drugs they sell from pharmacy shops, wholesalers, or unofficial supply sources. For those located in or close to a major urban center, finding these sources poses few problems compared with those located in distant areas. The latter group represents a significant proportion of DLDBs, and their operators often have to travel hundreds of miles to purchase stock from Pharmacy Board–registered suppliers. Sourcing is made all the more complicated because it is illegal for DLDBs to buy and sell Part I drugs. All of these factors may contribute to the high cost and uncertain quality of the drugs on sale.

For many common medical problems, such as malaria and diarrhea, a variety of factors encourage people to self-diagnose and medicate before visiting a government health facility. These factors could include distance to the health facility; seriousness of the illness; drug availability in the public facility; cash availability; and perceptions of privacy and quality of the health care providers, health facilities, and drugs. Since pharmacies are located almost exclusively in major urban areas (60 percent in Dar es Salaam alone), while approximately 75 percent of the population lives in rural and peri-urban communities, DLDBs are often the most convenient retail outlet from which to buy drugs. Moreover, with out-of-stock rates of 20 to 30 percent in public PHC facilities, as seen in this SEAM assessment, patients will often turn to DLDBs to obtain medicines and supplies prescribed by the government health worker. Given the absence of pharmacy services in rural areas and the extreme shortage in poor urban areas, it is evident that DLDBs play an important role in providing access to essential drugs for a significant proportion of the population.

Public Sector

Medical Stores Department

Prior to July 1994, when MSD was established, Tanzania functioned with a traditional Central Medical Stores (CMS) for procurement, storage, and distribution. Throughout the 1980s, CMS management became increasingly ineffective, and operational and financial sustainability were major issues. By the early 1990s, the CMS had a bank overdraft of TZS 2 billion and uncollected

accounts receivable of TZS 5 billion. Large inventory losses were caused by obsolescence and expiry, and the accounting system failed to provide reliable and up-to-date financial reports. Recognizing the seriousness of the situation, the MOH made reformation of the CMS a cornerstone of its 1992 Pharmaceutical Master Plan. The reforms resulted in the development of an autonomous Medical Stores Department to procure, store, distribute, and sell health commodities to the public sector and authorized private organizations. In assessing MSD's performance, it is important to begin with an acknowledgment that it has made remarkable improvements to the supply of essential drugs and health commodities to the public sector compared with the CMS. It is equally important to recognize that, because of various factors beyond the control of any supplier (e.g., difficulties in predicting demand, vendor inability to supply commodities), it would be difficult for any single distributor to reach a fill rate for essential drugs and supplies that approaches 100 percent.

Procurement

MSD successfully procures millions of dollars of pharmaceuticals and medical supplies from the international and domestic market (Table 23). MSD management purchases drugs at highly favorable prices when compared to international standard pricing. MSD prices were on average 65 percent of the MSH *International Drug Price Indicator Guide* price (1999) for the MSD tender numbers T04 and SEL 04 procurements.¹⁴

Table 23. Value of Purchases Made by Financial Year

	1996–97	1997–98	1998–99	1999–2000
TZS Billions	6.84	8.36	14.03	9.52
USD Millions	10.95	12.67	19.24	11.57

Source: MSD.

Note: Figures for 1998–99 and 1999–2000 include USD 4.15 million and USD 0.93 million of World Bank money for capitalizing hospital revolving drug funds.

Distribution

MSD has a good distribution capacity and record. For example, a survey undertaken by Price Waterhouse in 1998 to determine whether medical kits reached their intended beneficiaries indicated fewer discrepancies with MSD deliveries than with district deliveries. During the period under study, MSD distributed more than 46,000 blue and yellow kits. Of these, less than 1 percent could not be accounted for, which is a noteworthy achievement. When discrepancies did occur, they were attributed to poor record keeping and the possible diversion of kits in transit (Table 24).

¹⁴ For purposes of comparison, the actual C&F (cost & freight) MSD price was discounted by 5 percent to estimate FOB (free on board) price, which is the price used in the MSH guide.

Table 24. Summary of Distribution of Medical Kits from MSD to Districts and from Districts to Health Facilities

Distribution	Yellow	Blue	Total
Dispatched from MSD	41,082	5,476	46,558
Received at districts	40,929	5,470	46,399
Difference (%)	153 (0.4%)	6 (0.1%)	159 (0.3%)
Dispatched from district to sample health facilities	4,138	1,801	5,939
Received at sample health facilities	4,062	1,755	5,817
Difference (%)	76 (1.8%)	46 (2.6%)	122 (2.1%)

Source: Price Waterhouse Coopers Tanzania, 1999.

MSD Workload

Major increases in workload in the last three years have stretched MSD's physical and managerial capacity. There are signs that MSD is working under considerable stress and that service is not meeting customer expectations. The increase in throughput volumes is evidence of this increase in workload. Throughput volumes have more than doubled since 1997-98 (Table 25).

Table 25. Throughput Volumes in Cubic Meters

	1997-98	2000-2001	Percentage Increase
Normal Supplies	8,296	19,305	133
EPI*	1,080	1,219	13
TB	217	170	(22)
Family planning	0	578	New program
Others	1,052	768	(27)
Total throughput	10,645	22,039	107

Source: MSD

*Expanded Programme on Immunization (WHO)

Increases in transport activity are further evidence of the increase in workload (Table 26).

Table 26. Summary of Transport Activity

	1997-98	2000-2001	Percentage Increase
Trucks in central distribution fleet	13	15	15
Truckloads dispatched from central warehouse	267	707	165
Kilometers traveled	502,492	789,395	57
Liters of fuel consumed	194,374	319,251	64
Vehicle utilization	48%	71%	46

Source: MSD.

Note: Vehicle utilization in 1997-98 was adversely affected by el niño rains.

It should be noted that MSD has responded well to this increased workload, with evidence of improved workforce performance. Productivity of warehouse staff, as measured by cubic meters throughput/person/day, increased by 63 percent from 6.4 in 1997 to 10.5 in 2000. From January to March 2001, further increases in productivity were achieved with throughput/person/day rising to 14.1 cubic meters.

Sales per employee also increased during this period, further evidence of increased productivity in response to increased workload (Table 27).

Table 27. MSD Sales (Unadjusted) per Employee, 1995-2001

Financial Year	Number of Staff	Sales (TZS Millions)	Sales/Employee (TZS Millions)
1995-96	234	7,583.1	32.4
1996-97	262	11,849.8	45.2
1997-98	258	13,451.2	52.1
1999-2000	260	14,020.6	51.2
2000-2001	274	18,475.4	67.4

Source: MSD (projected sales for FY 2000-2001).

MSD has responded positively to the challenges it has faced in recent years. However, projections for future funding indicate demand continuing to grow significantly. One must question whether it is reasonable to expect that MSD can continue to absorb an ever-growing demand or whether there is a limit on how much can be realistically expected. This question is important not only in light of future demand projections, but also in relation to MSD's documented weaknesses in certain areas, such as inventory management.

Inventory Management

An international review conducted in 1998 characterized inventory management as “weak” (URT 1998). The research conducted by SEAM in 2001 supports this conclusion. Stock turn (cost of goods sold/average stock) is arguably the single most important measure of MSD’s performance, as it indicates how well MSD manages inventory and inventory investment.

MSD’s stock performance has been sluggish since its inception, and in recent years, there has been little or no indication that the situation is improving (Table 28). Recognizing this, MSD adopted a target of averaging only four months’ stock on hand (stock turn target of about three) by the end of June 2002.¹⁵ To achieve this goal, MSD has implemented organizational and management information system changes. Data are not available to determine whether this target has been achieved.

Table 28. MSD Stock Turns, 1996–2000

	1996–97	1997–98	1998–99	1999–2000
Stock turn	1.27	2	2.2	2.04
Number of days to turn over stock	286	183	166	179

Source: MSD.

There is also evidence that MSD suffers from the classic inventory management problems of under- and overstocking, which indicate a problem in achieving balanced stock levels (Table 29).

Table 29. Number of Months’ Stock on Hand in Central Warehouse (as of March 31, 2001)

Number of Items	Stock on Hand	Percentage of Total
147	< 1 month	24
196	> 12 months	32
101	> 20 months	17
62	> 30 months	10
15	> 100 months	2
Total no. of items: 610		

Source: MSD.

Note: Total number of items excludes kits, special procurement, temporary stock items, and items for disposal.

General stock availability from MSD has been and continues to be a problem. Tables 30 and 31 show that, on average, MSD was able to supply less than 80 percent of items requested, with the situation in the zonal stores generally worse than in Dar es Salaam (Table 30). In stores outside of Dar es Salaam, vital and essential drugs were available less than 70 percent of the time at the end of March 2001 (Table 31). MSD indicated that these figures were representative of the average situation at that time.

¹⁵ MSD Director, Finance and Administration, 2001.

Table 30. MSD Zonal Store Order Fills, April 2000–April 2001

Store	CRINs* Raised	No. of Items Requested	No. of Items Supplied	Percentage of Orders Filled
Dar es Salaam	10,857	61,279	50,301	82
Mwanza	5,405	34,512	22,708	66
Tabora	2,829	17,600	13,841	79
Total	19,091	113,391	86,850	77

Source: MSD.

*Combined Requisition and Issue Notes

Table 31. Percentage Availability at MSD, March 31, 2001

Type of Drug	Dar es Salaam	Mwanza	Iringa	Tabora	Mtwara	Mbeya	Tanga	Moshi	Average
Vital	86.8	67.8	57.9	66.4	69.1	59.2	63.8	69.7	67.6
Essential	79.4	66.1	61.5	72.9	65.1	69.3	66.1	67.4	68.5
Necessary	73.3	39.6	29.2	49.6	28.3	37.5	30.8	32.9	40.2
Total	78.9	56.1	47.9	62.1	61.6	54.3	51.6	54.4	58.4

Source: MSD.

The 2001 SEAM survey also documented availability problems for users by using a tracer list of essential drugs at several public and mission hospital facilities. Although the sample size was small, the results of the survey shown in Table 32 do indicate that drug availability issues in the public sector were more evident than in the mission sector. The figures are broadly consistent with the availability at MSD.

Mission hospitals, like public sector health facilities, purchase drugs and supplies from the MSD. However, unlike facilities in the public sector, when MSD is out of stock, mission hospitals have funds available to procure necessary supplies from the private sector. Because central government drug funding for public sector health facilities is deposited with MSD, these facilities are effectively dependent upon MSD for most, if not all, of their requirements. When MSD is temporarily unable to meet those requirements, procurement from an alternative supplier is time-consuming and burdensome and does not work well in practice. Thus, given the stock availability problems in MSD zonal stores and public sector drug financing policy that for all practical purposes makes it difficult for a public sector hospital to procure supplies from any source other than MSD, it is not a surprise that public sector hospitals experience drug availability problems.

Table 32. Drug Availability at Government and Mission Hospitals, May 2001

Hospital	Number of Items	Number of Items Out of Stock	Percentage of Items Out of Stock	Days Out of Stock	Percentage of Time Out of Stock
Government					
Dodoma Regional	24	6	25	1,988	23
Njombe District Hospital	21	2	10	959	13
Tanga Regional	26	0	0	598	6
Mission					
Nyakaiga Mission	23	1	4	699	8
Mkomaindo District Masasi	24	0	0	480	5
St. Benedicts Mission	22	0	0	0	0
Marangu Lutheran	24	0	0	647	7
Kilema DDH	24	0	0	0	0
Ilembula Lutheran	24	0	0	0	0
Kibosho DDH	23	0	0	0	0
Total	235	9	4	5,371	6

Although current data are not available from MSD, new evidence from a recent report suggests that stock availability continues to be a problem. A CSSC and German Development Bank report (CSSC/KfW 2002) evaluating revolving drug funds for Tanzania church hospitals documented that church hospitals continue to experience problems sourcing all their needs from MSD. The report notes that MSD continues to face high out-of-stock situations, so hospitals are compelled either to purchase from alternative vendors at higher prices or not to provide essential drugs to their patients.¹⁶

MSD's Financial Performance

It could be argued that MSD is overperforming from a financial point of view. For example, the 1998 External Review Team recommended that MSD should aim for a gross margin of 10–11 percent. The actual gross margin in FY 1999 and FY 2000 was 12 and 16 percent, respectively. Similarly, the 1998 review (URT 1998) said that the revolving drug fund (as of end of 1997–98 at TZS 16.4 billion) was too high by 3–4 billion TZS. If that was true then, it is now more than double what it should be. (See Table 33.)

¹⁶ The ongoing MSD supply availability problem has stimulated the Evangelical Lutheran Church in Tanzania (ELCT) to expand its Mission for Essential Medical Supplies (MEMS) program. Under MEMS, a group of hospitals in the Northern zone of Tanzania intend to use an alternate vendor to MSD to meet their needs for a reliable source of quality, reasonably priced drugs and supplies. MSH is providing technical assistance to ELCT for implementation of this program. See section on Strategies to Enhance Access for more information.

Table 33. MSD Revolving Drug Fund, 1994–2001 (TZS Millions)

	6/94	6/95	6/96	6/97	6/98	6/99	6/00	3/01
Fixed assets (net)	742	992	1,334	1,662	2,551	3,211	3,576	3,303
Current assets	8,578	21,196	22,126	23,816	24,079	27,791	32,291	30,689
Current liabilities	339	549	675	584	895	3,569	6,399	3,610
Net working capital	8,240	20,647	21,452	23,233	23,184	24,226	25,892	27,079
Total net assets	8,981	21,640	22,786	24,895	25,735	27,438	29,468	30,381

Source: MSD.

MSD's full total variable cost analysis and gross working capital figures appear in Annex D, Tables D-2 and D-3. Table 34's summary of other financial measures seems to indicate that MSD is not making the best use of its assets. For example, the trend for ratio of sales to total assets (a measure of ability to generate sales from assets or the ability of an organization to make the most from its assets) indicates that MSD is becoming sluggish. After reaching a peak of 0.5 in 1997–98, this ratio declined to 0.39 in FY 1999–2000. MSD's view of this trend is that it reflects the development of transport and storage infrastructure over the last few years. Since this phase has now largely ended, MSD asserts, future increases in sales will not be accompanied by increases in assets, and the ratio sales to assets should improve. Recent data are not available to test this hypothesis.

Another financial measure of interest, the acid test ratio¹⁷ (Table 34), has been between 4 and 5 from FY 1998–99 to FY 1999–2000. This could be considered high by usual commercial standards, where 1.5 would be acceptable and 2 comfortable. These relatively high ratios could be an indication of inefficiency in the working capital structure of MSD caused by keeping surplus funds not needed to run the business, evidenced by MSD's high bank deposits.

¹⁷ The acid test ratio is a measure of a company's ability to cover its liabilities. A ratio of 4, for example, indicates that current assets are four times greater than current liabilities.

Table 34. MSD Financial Measures and Ratios (TZS)

	Financial Year			
	1996-97	1997-98	1998-99	1999-2000
Sales	11,849,802,291	13,451,164,841	15,284,523,457	14,020,609,191
Cost of goods sold (COGS)	11,100,098,933	12,189,240,930	13,421,038,371	11,775,797,970
Gross margin/profit (sales – COGS)	749,703,358	1,261,923,911	1,863,485,086	2,244,811,221
Gross margin/profit as a percentage of sales	6.33%	9.38%	12.19%	16.01%
Acid test (current assets – closing stock/current liabilities)	27	20	5	4
Current assets (CA)	23,858,557,886	24,115,196,210	28,161,274,030	32,802,460,981
Closing stock	6,749,199,708	5,461,760,619	6,735,703,924	4,814,236,512
CA – closing stock	17,109,358,178	18,653,435,591	21,425,570,106	27,988,224,469
Current liabilities	625,902,319	930,366,248	4,077,524,352	6,902,647,820
Stock turn (COGS/avg stock)	1.27	2.00	2.20	2.04
Number of days to turn over stock	286	183	166	179
Average stocks	8,711,329,659	6,105,480,164	6,098,732,272	5,774,970,218
COGS	11,100,098,933	12,189,240,930	13,421,038,371	11,775,797,970
Distribution costs as a percentage of total operating costs	27%	36%	33%	30%
Personnel costs as a percentage of operating costs	45%	37%	37%	37%
Operating costs	1,019,761,959	1,516,410,847	1,948,668,175	2,121,793,575
Distribution costs as a percentage of sales	2.35%	4.05%	4.20%	4.49%
Personnel costs as a percentage of sales	3.90%	4.16%	4.71%	5.55%
Distribution costs	277,889,556	544,487,546	641,957,197	629,169,180
Personnel costs	462,004,790	559,213,064	719,652,890	778,294,357
Return on investment (ROI) (net profit:total assets)	2.1%	1.7%	4.0%	5.5%
<i>From Balance Sheet**</i>				
Fixed assets	1,666,204,378	2,551,372,704	3,156,415,747	3,575,966,543
Current assets	23,858,557,886	24,115,196,210	28,161,274,030	32,802,460,981
Total assets	25,524,762,264	26,666,568,914	31,317,689,777	36,378,427,524
<i>From Op. Statement</i>				
Net result	534,115,743	443,032,717	1,256,224,047	2,015,917,277
Ratio of sales:total assets*	0.46	0.50	0.49	0.39

Source: MSD.

*A measure of how hard an organization is able to work its assets (i.e., how well it generates sales from assets).

** See Annex D, Table D-6.

Non-MSD Distribution Costs: MOH Distribution Costs from District to Health Facility

MSD is responsible for distributing primary health drugs and supply kits down to the district level, while the cost of distributing the kits to health facilities rests with the district health authorities. Table 34 provides details of these costs from FY 1996–97 to 1999–2000. Details of the costs by district are located in Annex D, Table D-5. MSD distribution costs for 1999–2000 were USD 784,500 or about TZS 629 million (Table 34). Combining this information with the MOH costs (Table 35) gives total public health distribution costs of USD 1.43 million.¹⁸

Table 35. MOH Summary of Distribution Costs for 1999–2000 (USD)

Item	Km/Liter	Unit Cost	No. of Units	Total Cost
Fuel	7.5	0.78	250,256	196,223
Daily subsistence allowance (DSA)		22.73	1,272	28,909
1/2 DSA (extra duty)		11.36	7,560	85,909
Maintenance		0.18	1,876,920	332,727
Total district distribution cost				643,768

Source: Mike Dahlgard, Senior Financial Adviser, Health Sector Programme Support (Danida), Ministry of Health, Tanzania.

Notes: DSA at USD 22.73/day is paid for each night out; DSA at USD 11.36/day is paid for each route regardless of whether there is an overnight stay; one person (the driver) goes with the kits and supplies being distributed.

Number of districts with distribution activities: 81

Number of regions with distribution activities: 16

Drug and Medical Supply Demand Forecasts

Different sources provide different projections for drug expenditures. Table 36 combines projections from a GOT and World Bank report (2001) and an expenditure review conducted by the PER Task Team (2001).

¹⁸ This figure excludes the costs of MSD customers traveling to MSD stores to buy drugs and supplies.

Table 36. Actual Demand and Projections for 2001–2004 (TZS Billions)

Financial Year	Drugs	Essential Medical Supplies	Essential Hospital Equipment & Reagents	Total	Source
1997–98				12.1	MSD actual
1998–99				15.65	MSD actual
1999–2000				13.56	MSD actual
2000–2001	11.6	3.6	4.3	19.5	GOT/WB projection
2000–2001				18.10	MSD actual
2002–2003	25.5	7.8	9.2	42.5	GOT/WB projection
2002–2003				20.74	PER projection*
2003–2004				29.17	PER projection

Source: GOT/WB 2001; PER Task Team 2001.

*Based on PER Task Team demand projected to reach \$29.17 million by 2003–2004.

Regardless of source, all projections indicate an increase in demand for pharmaceuticals and medical supplies. Other sources also indicate an increase in funding for drugs and medical supplies. These include, for example—

- Expected financing generated by hospital cost-sharing and the CHF is expected to rise from TZS 2.96 billion in 2000–2001 to TZS 10.95 billion in 2003–2004. Up to 50 percent of this funding is expected to be spent on drugs.
- National Health Insurance Fund (NHIF) annual expenditures on drugs are difficult to estimate, but they are expected to approach TZS 220 million.
- MSD's own projections show a 40 percent growth in throughput volumes between 1999–2000 and 2002–2003.
- Looking at the longer term, MSD projected throughput is expected to triple in size by 2010 (Gutteridge and Benwell 2000).
- Based on these volume projections, by 2010, MSD's throughput can be expected to rise to 40,000–50,000 cubic meters. This compares to 22,000 cubic meters in 2000–2001.
- The planned change from a kit to an indent system can be expected to provide a serious challenge to MSD's logistics and stock management capacity. At present, 50 percent of MSD's business is with prepackaged kits. For MSD these are four stock items (local and international blue and yellow kits). Replacing this with an indent system will mean that MSD will have to pick and pack all PHC-level orders on an individual basis (for more than 3,000 health facilities). This change has major implications for warehousing systems, picking and packing operations, and inventory management.

Primary Health Kits and Indent System

The Ministry of Health is instituting a policy of replacing essential drug kits with an indent system in order to tailor drug orders to fit the needs of each particular area and to reduce waste. The MOH introduced a pilot project in the Morogoro region in 1999, where health facilities placed their orders with MSD through the District Medical Officer. The assessment team was informed that compared to the kit costs, the indent system reduced the value of consumed supplies by 24 percent. It was not possible to verify this information, however, and anecdotal evidence suggests that the budget for the indent system was higher than the cost of the kits previously supplied to the pilot districts. Moreover, stock-outs at MSD are reported to have delayed the delivery of some indent orders. Given the conflicting evidence available, therefore, it is not possible to judge whether the indent system is working effectively. Nevertheless, the MOH plans to scale up the system into 10 more regions. This experience will provide valuable evidence of the costs and benefits of the indent system.

The scaling up of the indent system can be expected to put a severe strain on MSD operations. Inventory management, warehousing, and picking and packing operations will all need to be reengineered. The kits represent four prepacked stock items requiring only simple block stacking in the warehouse. The replacement of the kits with an indent system will mean that instead of distributing more than 3,000 prepacked kits every month, MSD will have to pick, pack, and deliver items according to customized orders, which will significantly change the size and nature of MSD's inventory, storage, and distribution operations. This can be expected to strain MSD's physical and management systems as well as increase operating costs.

MSD's Ability to Handle Future Demands

The key questions to ask regarding MSD's ability to handle future demands are (1) can MSD meet current demand satisfactorily and (2) can MSD meet expected future demand. In considering these questions, MSD's capacity to absorb the effects of the indent system must also be assessed.

It is useful to look at the implications for MSD of continuing to be the sole supplier for publicly funded health facilities. The growth in value of sales/employee, previously presented in Table 27, gives some indication of the increase in productivity achieved in recent years. Per the GOT/World Bank projections for expenditure on drugs, medical supplies, equipment, and reagents, sales in the coming years could rise to more than TZS 40 billion. The Swiss Development Corporation projects a 50 percent increase to approximately TZS 29 billion by 2003–2004. At 2000–2001 staffing levels of 274, this implies sales/employee of TZS 106 to 146 million, which is 55 percent higher than the most recently available figure. Although organizational and informational system improvements may take MSD some way toward achieving this target, there must nevertheless be room for doubt as to whether MSD would achieve everything expected. In fact, based on the available evidence, it is arguable that demand has already outstripped MSD's ability to supply.

MSD Summary

MSD is the sole supplier for the public sector and primary supplier to faith-based and other nongovernment, noncommercial groups providing health services in Tanzania. On balance, MSD is a financially strong organization that procures drugs at extremely favorable prices, has a very good distribution capacity, and has shown a record of improved workforce performance. However, problems with stock availability have been evident in recent years and projections of significantly increased demand, together with the implementation of the indent system, are likely to put further pressure on MSD's physical and managerial capacity as well as prevent any easing of availability problems.

To its credit, MSD has been taking steps to resolve drug and medical supply availability issues within its organization. A new Director General was appointed, and organizational changes as well as modification of management information systems have taken place or are in process. These steps should serve to improve drug availability. However, even with increased efficiencies, a number of factors seem to indicate that MSD is likely to continue to exhibit some degree of difficulty in dependably meeting all the requirements of its clients. To the extent that this is a reasonable evaluation of the situation, the government may want to consider options for alleviating the pressure on MSD by making it possible for hospitals to buy drugs and medical supplies from other approved suppliers.

Access to Essential Medicines, Vaccines, and Related Health Commodities

The measures of access to essential medicines and medical supplies presented in this report are based on indicators reflecting important dimensions of access that were identified at the joint WHO-MSH meeting on defining and measuring access, held December 11–13, 2000, in Ferney-Voltaire, France.

Geographic Accessibility

1. Percentage of households more than 20 kilometers away from a health facility and/or pharmacy

The total number of health facilities in Tanzania in 2001 was 4,961. According to the government's household survey of 2000–2001 (NBS 2002), over 90 percent of those living in urban areas are less than 6 kilometers from a dispensary or health center, while, at the other end of the spectrum, less than half of the households in Dodoma are that distance. Obviously, people who live in rural areas are far more likely to be far from a hospital (Table 37). Not enough households for a significant sample answered the question about the average distance to a traditional birth attendant, but from the data that were received, it appeared that most were less than 2 kilometers, even in rural areas. Overall, the average distance decreased by 0.5 kilometers for health centers and increased 1.6 kilometers for hospitals since the last HBS in 1991–92.

The household survey asked respondents if they had been ill or injured in the four weeks previous, and overall, about 27 percent said they had. Only about 19 percent of people living in Dar es Salaam compared with 28 percent of rural dwellers reported being ill. Persons over 65 years had the highest level of reporting, at almost 55 percent, while the 15 to 24 age group had the lowest level of almost 21 percent. Of those who did not seek care during the four-week period prior to the interview for the study, 44 percent reported that they did not need it. However, of the others that did not seek care, 10 percent reported that the services were too far, while 33 percent said they were too expensive. This finding suggests that cost and not the physical distribution of services in general is the more significant barrier to care for most Tanzanians.

Table 37. Average Distance to Health Facilities, Percentage Reported (2000–2001)

Average Distance to Dispensary/Health Center (km)	Other			Mainland Tanzania
	Dar es Salaam	Urban Areas	Rural Areas	
<2	85.6	70.3	27.7	37.9
2–5	12.5	27.4	41.6	37.5
6–9	1.7	1.4	19.9	15.9
10–19	0.2	0.4	9.0	7.1
20+	0.0	0.5	1.9	1.5
Mean distance	0.7	1.3	4.7	3.9
Average Distance to Hospital (km)				
<2	51.6	37.3	5.1	13.3
2–5	36.4	41.0	13.1	19.1
6–9	9.4	8.6	14.9	13.5
10–19	1.5	2.7	25.0	20.0
20–39	0.1	4.9	20.2	16.4
40+	0.9	5.4	21.6	17.7
Mean distance	2.8	7.4	25.7	21.3

Source: NBS 2002.

Note: Table shows distances as recorded by interviewers, which were integers (e.g., “1.9” is “2”).

2. Average number of operating hours per day, by type of facility

The complementary indicator to physical access to services is whether the facility is operating when people need it. The results from the survey for this study are presented in Table 38. The operating hours of the public hospitals were the longest, followed by those of NGO hospitals. Every facility was open at least one weekend day, except for public dispensaries and health centers.

Table 38. Facility Operating Hours

	Public Dispensary/ Health Center (N = 17)	Public Hospital (N = 4)	Private Dispensary/ Health Center (N = 17)	NGO Hospital (N = 8)	Duka la Dawa Baridi (N = 38)
Average number of operating hours per day when open	15.6	20.6	17.3	17.8	12.2
Average number of operating hours— weekday when open	15.5	20.6	17.3	17.9	12.3
Average number of operating hours— weekend when open	20.4	20.6	17.3	17.4	11.7
Facilities open on Saturday or Sunday (%)	10 (59)	4 (100)	17 (100)	8 (100)	38 (100)

Availability of Medicines and Information

1. Percentage of a set of unexpired tracer items in stock

The amount of inventory is a key indicator of the functioning of a supply system. Two indicators are used together to measure inventory status: one evaluates the presence of tracer items at the time of data collection, and the other evaluates the tendency to be out-of-stock over time. Table 39 lists the percentage of facilities that had the 27 tracer items in stock at the time of assessment.

Table 39. Percentage of Facilities with Tracer Items Available (N = 27)

Item	All	Dispensaries	Health Centers	NGO Hospitals	MSD Zonal Stores	MSD Dar es Salaam	Regional Hospitals	Mission Clinic/ Hospitals
Amoxicillin 250 mg tablets	81.3	77.8	66.7	100	100	100	66.7	100
Benzylpenicillin sodium 5 MU vial	87.5	75.0	83.3	100	100	100	100	100
Chloroquine 300 (150 mg base) tablets	90.1	100	83.3	83.3	100	100	100	100
Ciprofloxacin 500 mg tablets	70.4	0	75.0	100	100	100	66.7	100
Condoms	69.7	100	83.3	33.3	100	100	66.7	0
Co-trimoxazole 480 mg tablets	84.4	77.8	66.7	100	100	100	100	100
Depo-Provera vial	67.7	88.9	83.3	33.3	75.0	100	100	0
Dextrose 5 percent 500 ml bottle	43.8	12.5	0	83.3	75.0	100	66.7	100
Doxycycline 100 mg tablets	94.0	88.9	100	100	100	100	100	100
Erythromycin 250 mg tablets	60.7	0	25.0	100	100	100	100	0
Examination gloves size 7.5	90.3	100	83.3	75.0	100	100	100	100
Ferrous sulfate 200 mg + folic acid 0.25 mg	97.0	100	100	100	100	100	100	100
Gentamicin 40 mg/ml ampoule	59.3	0	0	100	100	100	66.7	100
Hydrochlorothiazide 25 mg/50 mg tablets	25.9	0	25.0	33.3	100	100	0	0
Ketamine 50 mg/ml vial	50.0	0	0	83.3	100	100	100	100
Mebendazole 100 mg tablets	94.0	88.9	100	100	100	100	100	100
Metronidazole 200/250 mg tablets	87.9	88.9	66.7	100	100	100	100	100

Table Continues

Table 39. Percentage of Facilities with Tracer Items Available (N = 27), continued

Item	All	Dispensaries	Health Centers	NGO Hospitals	MSD Zonal Stores	MSD Dar es Salaam	Regional Hospitals	Mission Clinic/Hospitals
Needle 22G + syringe 2 ml	94.0	88.9	100	100	100	100	100	100
ORS sachets	97.0	100	100	100	100	100	100	100
Oxytetracycline eye ointment 1-percent tube 5 mg	87.9	100	100	66.7	100	100	66.7	100
Paracetamol 500 mg tablets	97.9	88.9	66.7	100	100	100	100	100
Polio vaccine vial	84.4	88.9	80.0	83.3	100	100	66.7	100
Praziquantel 600 mg tablets	43.8	0	33.3	83.3	66.7	100	100	0
Propranolol 40 mg tablets	45.5	0	0	100	100	100	100	100
Quinine dihydrochloride 300 mg/ml ampoule	54.6	11.1	0	100	100	100	100	100
Rifampicin 150 mg + isoniazid 100 mg tablets	50.0	0	0	80.0	66.7	100	100	100
Sulfadoxine/pyrimethamine 500/25 mg tablets	48.5	0	0	100	100	100	66.7	100

2. Percentage of time out of stock for a set of tracer items

To calculate this indicator, it is necessary to verify, by means of registers or other records, the incidence of any stock-outs and the length of time of any stock-out for the 12 months prior to the study. This indicator expresses the proportion of days out of stock for the year. Together with the first indicator, it allows for the determination of the probability of the occurrence of a stock-out over a longer period. Survey results are shown in Tables 40 and 41.

Table 40. Percentage of Time Tracer Items Out of Stock for FY 2000–2001 (N = 27)

Item	All	Dispensaries	Health Centers	NGO Hospitals	MSD Zonal Stores	MSD Dar es Salaam	Regional Hospitals	Mission Clinic/ Hospitals
Amoxicillin 250 mg tablets	21	28	31	8	0	0	23	1
Benzylopicillin sodium 5 MU vial	13	16	23	2	2	0	7	2
Chloroquine 300 (150 mg base) tablets	10	8	12	14	3	0	0	2
Ciprofloxacin 500 mg tablets	46	80	98	1	45	0	30	0
Condoms	34	1	17	83	27	0	33	100
Co-trimoxazole 480 mg tablets	25	37	33	5	23	0	13	7
Depo-Provera vial	35	12	28	67	25	9	21	100
Dextrose 5 percent 500 ml bottle	50	75	100	8	21	0	33	9
Doxycycline 100 mg tablets	13	16	22	0	14	4	1	0
Erythromycin 250 mg tablets	39	67	97	1	1	0	9	100
Examination gloves size 7.5	22	26	30	34	3	0	0	13
Ferrous sulfate 200 mg + folic acid 0.25 mg	12	18	8	0	19	0	1	0
Gentamicin 40 mg/ml ampoule	41	80	100	6	23	0	2	0
Hydrochlorothiazide 25 mg/ 50 mg tablets	75	67	100	67	39	6	100	100
Ketamine 50 mg/ml vial	44	67	100	17	8	0	1	0
Mebendazole 100 mg tablets	13	23	20	0	5	0	0	2
Metronidazole 200/250 mg tablets	15	21	28	4	0	0	6	0
Needle 22G + syringe 2 ml	21	36	21	6	18	5	1	0
ORS sachets	10	8	11	7	9	0	0	12
Oxytetracycline eye ointment 1-percent tube 5 mg	88	12	13	33	64	38	48	9
Paracetamol 500 mg tablets	19	28	37	2	10	0	3	2
Polio vaccine vial	19	12	27	17	0	10	46	0
Praziquantel 600 mg tablets	57	89	82	17	14	0	12	100
Propranolol 40 mg tablets	56	78	100	0	41	54	11	12

Table Continues

Table 40. Percentage of Time Tracer Items Out of Stock for FY 2000–2001, continued

Item	All	Dispensaries	Health Centers	NGO Hospitals	MSD Zonal Stores	MSD Dar es Salaam	Regional Hospitals	Mission Clinic/Hospitals
Quinine dihydrochloride 300 mg/ml ampoule	52	88	100	2	24	0	13	1
Rifampicin 150 mg + isoniazid 100 mg tablets	50	83	100	20	33	1	43	19
Sulfadoxine/pyrimethamine 500/25 mg tablets	48	78	99	2	20	16	4	0

Table 41. Percentage of Time Tracer Items Out of Stock at MSD Facilities

City	1997–98	2000–2001
Dar es Salaam	13.0	8.0
Tabora	14.0	14.4
Mwanza	15.0	27.8

Source: URT 1998; SEAM assessment.

Note: Tracer items in 1998 and 2001 were not the same.

Bearing in mind that the tracer items reported on in Table 41 were not identical for the two studies, the comparison indicates that while availability has improved somewhat at MSD's central warehouse, the situation has at best remained static or deteriorated at the zonal level.

3. Percentage of medicines prescribed that are also dispensed

The treatment of a patient is compromised when he or she is not able to obtain the medications needed. Ideally, all prescribed medicines should be dispensed. However, the correct interpretation of the indicator still requires an understanding of the health system in which medicines are prescribed and dispensed. If the system uses (or should use) a list of medicines to guide the prescribing, dispensing, and stock management of medicines, and if medicines are available free of charge to patients, there should be high correlation between what is prescribed and what is dispensed. Lack of stock is a common reason for lack of dispensing under these conditions, although sometimes prescribers will adapt their prescriptions to match what items are in stock. When the patient is obliged to cover the entire or even partial cost of treatment, the prescribed medications may not be dispensed because the patient cannot afford them.

To calculate this indicator, information that links prescriptions with dispensing is needed. This information may be obtained from a single record maintained at the dispensary or by matching a patient record with a dispensing record.

Patient encounters were reviewed in each of the clinical facilities visited, for a total of 1,473 patients. The results are presented in Table 42. The significantly lower percentage of prescribed drugs actually dispensed in public facilities versus NGO and private facilities is not surprising given the public sector drug availability issues illustrated previously in Tables 31 and 39. Also, public health centers/dispensaries use a kit system with contents and quantities that have not been adjusted for several years. Because quantities are often too small, this frequently results in drugs with high demand becoming unavailable soon after the kit is received. Another contributing factor may be the funding mechanism for public sector facilities (all funds for drugs are deposited with MSD), which can be a barrier for public sector purchase of supplies from alternative wholesalers/suppliers that are available to the NGO/private sector. Finally, of note is the percentage of drugs prescribed/dispensed at private dispensary/health centers, which was minimal (only 6 percent). In this case, the low percentage is more likely caused by a reliance on private sector pharmacies to provide prescription services rather than the clinic's inability to procure drugs.

Table 42. Percentage of Prescribed Medicines Actually Dispensed

Indicator	Private Dispensary/ Health Centers (N = 12)	Private Hospitals (N = 2)	Public Dispensaries (N = 13)	Public Health Centers (N = 6)	Public Regional Hospitals (N = 2)	NGO/ Mission Hospitals (N = 6)
Total drugs prescribed	813	139	691	358	148	397
Percentage prescribed that were dispensed	6	100	78	75	52	98

4. *Percentage of facilities with a reliable or “valid” source of information about medications*

The assumption underlying this indicator is that the possibility of rational prescribing increases if prescribers have access to valid information about medicines. Although participants at the MSH-WHO meeting in Ferney-Voltaire did not specify the criteria to define “valid,” types of information about drugs can be classified according to origin and purpose. Traditional pharmacopoeias, for example, offer information about product formulation and little or no therapeutic information. Modern pharmacopoeias contain a lot more therapeutic information in addition to the pharmacologic information (e.g., *Martindale: The Extra Pharmacopoeia*). Pharmacologic texts (e.g., *Goodman and Gilman’s The Pharmacological Basis of Therapeutics*, *Remington’s Pharmaceutical Sciences*) and medical compendia contain minimal information about product formulation and a lot of information about factors related to adequate or appropriate prescribing. The pharmaceutical industry generally finances medication dictionaries that contain the information published in the package inserts that are distributed with the medications; these publications are rarely subject to critical review by a legal or professional authority.

The Drug Information Unit is the arm of the Tanzanian Pharmacy Board that provides both health care workers and the public with drug information. The unit also works closely with WHO

and other drug information centers in monitoring trends. It monitors and provides information on adverse drug reactions, poisoning, and rational drug use and manages information related to the board's activities (e.g., dissemination of information on counterfeit drugs).

The unit issues a drug bulletin four times a year. Two thousand copies are printed and distributed to hospitals, private and public providers (e.g., community pharmacists, doctors, nurses), and other drug information centers. The unit has also issued an adverse drug reaction reporting form. The form accommodates reports on drugs found to be of doubtful efficacy. The unit screens and monitors all advertisements on drugs and has issued guidelines to this effect. In 2000, 15 advertisements were submitted for approval and 14 were approved. The unit is also responsible for compiling the national formulary that supports the NEDLIT. The unit advises the public on counterfeits found in the market and explains recall procedures through the media.

The unit plans to establish satellite centers at referral hospitals and would like to create a Web site to disseminate information. It invites articles from health professionals for publication and information sharing. At this stage, most of the information disseminated is targeted at providers, but user-friendly public information in Kiswahili is also planned.

SEAM survey data show that, except for the NGO facilities, most other health facilities did not have a copy of the NEDLIT (Table 43).

Table 43. Sources of Information Available by Type of Facility (Percentage)

Source	Private Pharmacies (N = 13)	Private Dispensaries/ Health Clinics (N = 17)	Public Dispensaries/ Health Clinics (N = 18)	NGO Hospitals/ Clinics (N = 8)
NEDLIT	46	41	56	100
Standard treatment guidelines	46	—	56	100
Pharmacopoeia	39	—	—	—
National formulary	31	—	—	—
Other drug list	—	—	—	25

Note: NEDLIT = Tanzanian National Essential Drug List ; — = not available.

5. *Percentage of the population that has access to a reliable or “valid” source of information about medicines*

This indicator complements the previous one because it also focuses on the availability of information. The methodology of the present study did not permit data collection for this indicator, nor was any study found that addressed this question directly for Tanzania.

Affordability

1. *Average percentage difference between the most and least expensive prices for a set of tracer items*

This indicator describes the market from the perspective of the patient as purchaser. The interpretation of this indicator depends on the context of the market. It is possible that in a context of little or no competition, the difference between prices is less than what might be observed in a context that promotes competition. A larger difference might be expected in a market that is highly competitive when generics compete with brand-name products. Most of the facilities SEAM visited as part of the assessment had only one product available for each tracer drug, so it was not possible to compare prices within facilities (Table 44).

Table 44. Average Cheapest Selling Price by Type of Facility (TZS)

Generic Name	Duka la Dawu Baridi	Private Dispensaries	Private Health Centers	Private Hospitals	Private Pharmacies	District Hospitals	Public Health Centers	Regional Hospitals	NGO Hospitals
Amoxicillin 250 mg capsule/tablet	19.70	19.15	16.75	17.00	15.83	17.00	20.84	17.00	18.17
Benzylpenicillin sodium 5 MU vial	300.00	330.18	392.50	285.00	274.50	285.00	182.83	285.00	274.17
Chloroquine 300 mg tablet	5.52	17.75	3.50	5.75	5.07	5.00	3.50	5.00	5.10
Ciprofloxacin 500 mg tablet/capsule	106.67	49.29	35.00	300.00	41.25	18.50	19.60	30.00	22.13
Condoms piece	29.07	36.48	N/A	N/A	71.03	N/A	N/A	N/A	N/A
Co-trimoxazole 480 mg tablet	7.50	8.87	7.70	6.45	6.99	6.40	6.20	6.40	5.75
Depo-Provera vial/vaccine	250.00	858.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dextrose 5% 500 ml bottles	311.10	430.00	180.00	350.00	409.81	330.00	403.33	330.00	335.00
Doxycycline 100 mg tablet/capsule	26.75	16.58	29.25	12.32	27.84	8.50	11.07	8.50	14.20
Erythromycin 250 mg tablet/capsule	34.50	26.00	32.00	28.60	27.13	32.00	32.44	32.00	30.98
Examination gloves size 7.5 pair	177.26	180.73	185.00	1217.50	124.44	170.00	119.00	170.00	86.00
Ferrous sulfate 200 mg/ folic acid 0.25 mg tablet	2.77	2.82	1.90	N/A	25.67	1.90	1.60	1.90	1.45
Gentamicin 40 mg/ml ampoule	77.50	148.75	42.50	115.00	112.50	70.00	70.00	70.00	68.33
Hydrochlorothiazide 25 mg/50 mg tablet	N/A	N/A	N/A	N/A	N/A	N/A	2.89	4.60	1.00
Ketamine 10 mg/ml vial		950.00			900.00	480.00	660.00	66.00	658.00
Mebendazole 100 mg tablet	7.03	4.57	2.55	3.11	8.57	2.55	2.49	14.03	3.25
Metromidazole 200 mg/250 mg tablet	4.48	5.24	3.20	4.00	3.24	2.80	2.53	2.80	2.90
Needle 22 G + syringe 2 ml pair	38.10	54.73	32.00	40.00	33.30	30.00	30.00	30.00	33.00
ORS sachet	95.00	104.70	60.00	80.00	88.33	60.00	55.00	60.00	65.00
Oxytetracycline eye ointment 0.1% 5 g tube	148.54	198.33	110.00	220.00	180.00	110.00	105.00	110.00	130.00
Paracetamol 500 mg tablet	5.70	3.25	2.18	2.31	2.21	2.36	2.36	2.36	2.36
Polio vaccine vial/vaccine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Praziquantel 600 mg tablet	211.43	269.00	92.00	N/A	135.36	92.00	92.00	92.00	78.87
Propranolol 40 mg tablet	N/A	24.40	N/A	N/A	19.25	2.80	3.04	2.80	3.90
Quinine dihydrochloride 300 mg/ml ampoule	170.00	217.08	30.10	220.00	169.40	130.00	140.00	76.10	130.37
Rifampicin 150 mg + isoniazid 100 mg capsules/tablets	N/A	40.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfadoxine 500 mg + pyrimethamine 25 mg tablet	65.46	35.79	19.00	60.00	69.15	18.00	19.00	11.00	19.67

Note: N/A = Not available.

2. *Average percentage difference between international prices and public sector prices for a set of tracer items*

This well-known indicator is used to evaluate how efficient tender systems are for procurement. The assumption is that resources are always limited, so greater efficiencies should be sought. The motives for reducing expenditures and minimizing costs include being able to use the money saved to provide services to more people or to expand existing services. Procurement is a particularly complex area of drug management. Prudent procurement involves several factors, including the availability of up-to-date information about prices, a reliable supply of products, processes that make optimum use of resources (human and financial), and a system that both the buyer and the purchaser trust.

As Table 45 indicates, MSD management purchases drugs at highly favorable prices as compared to international standard pricing. MSD prices for the T04 and SEL 04 procurements averaged 65 percent of median international tender prices listed in the *International Drug Price Indicator Guide*, published by MSH (2000). For purposes of comparison, the actual cost and freight (C&F) MSD price was discounted by 5 percent to estimate the free-on-board (FOB) price, which is the price used in the *Guide*.

Table 45. MSD Prices versus International Price

Product	Pack Size	MSD C&F Cost Price	C&F Unit Cost Price	MSD FOB Cost Price/ Unit	MSH Median Unit Cost	Percentage of Average International Price	International or Local	Tender T04/ SEL 04
Sulfadoxine/pyrimethamine 500/25 mg	500	9.0500	0.0181	0.0172	0.0272	63	Local	T04
Chloroquine 300 (150 mg base) tablets	1000	4.0700	0.0041	0.0039	0.0083	47	Int.	SEL 04
Quinine dihydrochloride 300mg/ml ampoule	Amp	0.1150	0.1150	0.1093	0.0744	147	Int.	T04
Benzylpenicillin sodium 5 MU vial	Vial	0.3065	0.3065	0.2912	0.308	95		
Co-trimoxazole 480 mg tablets	1000	6.0500	0.0061	0.0057	0.0109	53	Local	SEL 04
Amoxicillin 250 mg tablets	1000	14.9000	0.0149	0.0142	0.0208	68	Local	SEL 04
Doxycycline 100 mg tablets	1000	8.3900	0.0084	0.0080	0.0123	65	Local	T04
Metronidazole 200/250 mg tablets	1000	2.8100	0.0028	0.0027	0.047	6	Local	SEL 04
Propranolol 40 mg tablets	500	1.2100	0.0024	0.0023	0.0044	52	Local	T04
ORS sachets	Sachet	0.0580	0.0580	0.0551	0.062	89	Local	T04
Dextrose 5% 500 ml bottle	500	0.2370	0.0005	0.0005	0.0012	38	Int.	T04
Ferrous sulfate 200 mg + folic acid 0.25 mg	1000	1.9500	0.0020	0.0019	0.0023	84	Local	T04
Praziquantel 600 mg tablets	100	9.7500	0.0975	0.0926	0.1145	81	Local	T04
Mebendazole 100 mg tablets	1000	2.350	0.0024	0.0022	0.0057	39		T04
Paracetamol 500 mg tablets	1000	2.250	0.002	0.0021	0.0300	7	Local	SEL 04
Ketamine 50 mg/ml vial	10	1.106	0.1106	0.1051	0.0608	173	Int.	T04
Ciprofloxacin 500 mg tablets	100	1.813	0.018	0.0172	0.0694	25	Int.	T04
Gentamicin 40 mg/ml ampoule	2	0.047	0.0235	0.0223	0.0531	42	Int.	T04
Average						65		

Source: MSD and 2001 SEAM Assessment.

3. *Number of days that a salaried worker needs to work in order to pay for a standard treatment of a tracer condition*

This indicator aims to capture the concept of affordability from the perspective of the patient. It is a variation of one that was introduced at the MSH-WHO Ferney-Voltaire conference. The original indicator was based on the salary of the lowest-paid government worker. The reason for using the civil servant for this index is the high probability of the existence of reliable published information about the salaries of civil servants. With this type of information, one can create an index of relative values that can be compared both over time in the same country and with those obtained in other countries. The lowest government salary in Tanzania is TZS 40,000 (or USD 45) per month. However, this sum is still significantly higher than most Tanzanians' incomes, so the calculations in Table 46 are based on per capita monthly income in 2000 of TZS 17,900 (NBS 2002), which was deemed closer to the average citizen's situation.

Table 46. Approximate Price (TZS) and Number of Hours of Work Required to Purchase a Course of Therapy for Four Common Diseases

Diagnosis/Treatment	Dispensing Facility					
	Private Pharmacies (N = 9)	Private Dispensaries (N = 17)	Public Hospitals (N = 4)	Private Hospitals (N = 1)	Mission/ NGO Hospitals (N = 5)	Duka la Dawa Baridi (N = 40)
Malaria						
SP 250mg - 3 tablets	200–300 2–3 hrs	300–900 3–9 hrs	200–600 2–6 hrs	500 5 hrs	150–500 1.5–5 hrs	300–1,000 5–10 hrs
ARI						
Amoxicillin 250mg - ii TID x 5 days	600–1,200 6–12 hrs	900–1,400 9–14 hrs	500–900 5–9 hrs	1,000 10 hrs	600–1,500 6–15 hrs	800–1,500 8–15 hrs
Co-trimoxazole - ii BID x 5 days	200–450 2–4.5 hrs	300–800 3–8 hrs	200–500 2–5 hrs	400 4 hrs	300–500 3–5 hrs	400–800 4–8 hrs
Roundworms						
Mebendazole 100mg Q 12 H x 3 days	50–300 0.5–3 hrs	50–300 0.5–3 hrs	50–100 0.5–1 hr	N/A	200–600 2–6 hrs	100–840 1–8 hrs
Diarrhea						
ORS - 1 sachet	100–200 1–2 hrs	100–350 1–3.5 hrs	50–100 0.5–1 hr	50–100 0.5–1 hr	50–150 0.5–1.5 hrs	50–300 0.5–3 hrs

Note: Average markup over MSD price in church hospitals is 268 percent. However, MSD prices are very low by international standards.

4. *Percentage of the population covered by a risk-sharing, prepayment health insurance scheme*

The number of public and private risk-sharing schemes available to Tanzanians is growing. However, the number of people covered remains very small relative to the total population.

The Community Health Fund, a government fund-matching prepayment scheme started in 1996, has not had the popularity or acceptance in the community that was expected. Many fewer than the initial target of 30 percent have actually enrolled in the program and there are signs of declining membership.¹⁹ In 1999, the Tanzanian government passed the National Health Insurance Fund Act to provide health insurance for government employees and their dependents. The initial rollout of the program was expected to cover less than 1 percent of the population.

The third government program providing some medical benefits is the National Social Security Fund (NSSF). The NSSF was established in 1997, and its coverage includes workplace injuries. The NSSF plans to offer broader medical benefits to its 400,000 members and their families, although implementation has not yet started.

In terms of the private sector, Tanzania has two private insurers, AAR and MedEx. AAR provides coverage for both individuals and companies and covers about 7,000 people. MedEx covers about 30,000 individuals through service contracts it has negotiated with more than 150 providers across the country.

In addition to AAR and MedEx, a number of the larger private employers provide health coverage to staff and families. Companies providing health coverage include Brooke Bond, Coca-Cola, Mufindi Tea, TTCL, TANESCO, Kilombero Sugar, and Williamson Diamonds.²⁰

Acceptability/Satisfaction

The acceptability/satisfaction dimension of access approximates the criteria of responsiveness used to describe the performance of health services in the *World Health Report* (WHO 2000). Responsiveness refers to how aspects of the health system relate to the expectations of the public. This concept has two components: one focuses on respect for human dignity, confidentiality, and patient autonomy and the other addresses issues of client orientation such as punctuality, cleanliness, space, access to social support, and possibility of provider choice.

The information for the following indicators was generally not available. However, some approximation to the indicators was achieved.

¹⁹ For example, membership in the pilot district of Igunga has dropped from 29 percent to 18 percent (Barker et al. 2003, 12).

²⁰ See Barker et al. 2003 for further details.

1. *Number of medicines on the national essential drugs list (NEDLIT) that are among the best-selling medicines in the private sector*

This information was not available for Tanzania.

2. *Satisfaction with the results of the last visit to a public health facility*

In the government's household survey (NBS 2002), 69 percent of those who reported being ill in the previous four weeks had consulted a health care provider, including 67 percent of those who lived in rural areas (Table 47). Of those people, 54 percent used a government service. Utilization of government health services is lowest in Dar es Salaam, where citizens tend to use more of the available private services. Users of health care are most likely to report dissatisfaction with government providers, with waiting times and lack of drugs as the most common complaints. Criticisms about modern private care include the high cost, whereas ineffective treatment is the most common complaint about traditional healers.

Table 47. Percentage of People Reporting Sources of Care by Location (2000–2001)

Source of Care	Dar es Salaam	Other Urban Areas	Rural Areas	Mainland Tanzania
Government				
Public dispensary/hospital	40.0	37.9	42.3	41.6
Regional hospital	2.9	12.2	1.7	3.1
Community health center	6.6	8.3	10.9	10.4
Private modern				
Private dispensary/hospital	47.4	31.8	19.3	22.3
Private doctor/dentist	1.9	5.1	7.6	7.0
Missionary hospital/dispensary	1.2	6.6	10.1	9.2
Other				
Traditional healer	2.6	5.5	17.2	15.0
Pharmacy/chemist	4.1	3.1	2.3	2.5
Other	0.7	0.8	1.9	1.7
Consulted multiple providers	6.9	10.3	11.4	11.0
Consulted any government source	49.5	57.7	53.8	54.1

Source: NBS 2002.

The Tanzanian National Bureau of Statistics contracted a national demographic and health survey (DHS) in September and October of 1999. The 1999 DHS survey included questions about satisfaction with facilities and services in the public, church, and NGO sector. Respondents were asked to rate the quality of the local health facilities (Table 48) and the quality of health facility staff training (Table 49). In both cases, about 60 percent responded "Good" or "Very good," indicating a general level of satisfaction.

Table 48. Survey of Quality of Health Facilities

	Count (N = 4,084)	Percentage of Total
Very poor	27	0.7
Poor	236	5.8
Neither	1,432	35.1
Good	2,084	51.0
Very good	305	7.5

Source: DHS 1999.

Table 49. Survey of Training Level of Staff

	Count (N = 4,136)	Percentage of Total
Very poor	12	0.3
Poor	143	3.5
Neither	1,202	29.1
Good	2,398	58.0
Very good	381	9.2

Source: DHS 1999.

Quality of Products and Services

1. Percentage of tracer medicines that failed quality testing

As discussed in an earlier section of this report, the Tanzanian Pharmacy Board has a drug inspectorate unit supported by a national laboratory to sample and test for quality assurance. However, the resources available limit the number of inspections and tests, although the goal of the government is to increase those capabilities.

For the purposes of this study, SEAM took 110 samples of 10 different drugs (Table 50) from three categories of facilities (public, NGO/voluntary, and private pharmacies) in the following districts: Njombe, Moshi Rural, Masasi, Dodoma Urban, Kinondoni, Temeke, Tanga, Karagwe, and the MSD.

Table 50. Drugs Sampled for Quality Testing

Drug	Number of Samples
Amoxicillin	12
Co-trimoxazole	9
Doxycycline	15
Sulfadoxine-pyrimethamine	12
Paracetamol	30
Mebendazole	16
Erythromycin	7
Hydrochlorothiazide	1
Rifampicin/isoniazid	2
Metronidazole	3
Total	110

Of these 110 samples, 6.5 percent of the samples from public facilities were found to be substandard; none from NGO/philanthropic facilities and 8.7 percent from private pharmacies were found to be substandard. (Table 51.)

Table 51. Quality of Drug Products, 2001

Number of drugs sampled	10
Number of samples tested	110
Percentage of samples that were substandard*	
Public facilities	6.5
NGO/philanthropic facilities	0.0
Private retail outlets	8.7

*Drugs were not evenly represented in the samples.

A further measure of the quality of drugs in the marketplace is the percentage registered with the Pharmacy Board. Only 26 percent of the drugs surveyed by SEAM in the 39 DLDBs were registered with the Pharmacy Board, while a further 24 percent were notified. The remaining 50 percent were therefore neither registered nor notified. The quality of notified and unregistered drugs cannot be assured, since they have not passed through the registration process, which would include almost three-quarters of drugs surveyed from DLDBs.

2. Existence of a national essential drugs list and standard treatment guidelines published within the past five years

The National Essential Drugs List was revised and the second edition was published in 1997. At the time of the assessment, NEDLIT was again under review. The proposed changes include a total of 70 additions and one deletion. Major proposed changes are antimalarial drugs and the

introduction of antiretrovirals. Two sulfonamide/pyrimethamine combination drugs have already been introduced to replace chloroquine for malaria. The proposed list includes—

- Five new antimalarial drugs (three artemisin derivatives and mefloquine at referral hospital level and amodiaquine at dispensary level) in addition to the five currently available.
- Eleven antiretrovirals have been proposed. The addition of amino acids (nutrients) and loperamide oral (antidiarrheal) has also been proposed for HIV/AIDS patients.

Other therapeutic categories in which substantial additions are proposed include—

- Combination anti-infective anti-inflammatory eye preparations: four combination drugs of corticosteroids and anti-infective agents and sodium chromoglycolate at referral level
- Three cough mixtures where none existed at dispensary level
- Three antihistamine drugs (three at the district level) in addition to the one currently available

Of the proposed additions, 48.6 percent are intended for use at referral hospitals. They account for 59 percent of the proposed additions if drugs intended for managing HIV/AIDS (antiretrovirals and loperamide) are excluded. The reasons for including more drugs at referral hospitals may be associated with the availability of funds through the hospital capitalization project and the availability of new specialties and emerging resistance patterns. The overall proposed additions, however, represent only a 16 percent increase (Table 52). All proposed changes are subject to approval by the National Therapeutics Committee.

Table 52. Proposed NEDLIT Revision

Level of Care	Number of Additions
Dispensary	6
Health Center	2
District Hospital	19
Referral Hospital	31
Total	58*

*Does not include the eleven antiretrovirals and loperamide intended for HIV/AIDS patients

3. Percentage of facilities with a copy of the NEDLIT

Of the 65 facilities surveyed, 34 (52 percent) reported having the list of national essential medicines available (Table 53). All of the NGO facilities surveyed had the NEDLIT on hand.

Table 53. Facilities with an Essential Drugs List Available

Type of Facility	N	NEDLIT	Percentage
Private pharmacies	13	4	30.7
District/regional hospitals	4	4	100.0
District medical stores	5	1	20.0
Private facilities	17	7	41.2
Public facilities	18	10	55.6
NGO facilities	8	8	100.0
Total	65	34	52.3

In addition to the NEDLIT, SEAM assessed the availability of the national Standard Treatment Guidelines. Standard Treatment Guidelines were available in all NGO/mission facilities surveyed and in three out of four public hospitals. However, they were available in only slightly more than half of public primary health care facilities (Table 54).

Table 54. Facilities with Standard Treatment Guidelines Available

Type of Facility	N	Standard Treatment Guidelines
District/regional hospitals	4	3
Public facilities	18	10
NGO facilities	8	8
Total	30	18

4. Percentage of treatments that conform to standard treatment guidelines

It was not possible to calculate this indicator, as diagnosis was not provided in the dispensing records examined. However, it was possible to perform an analysis of the prescription orders. Patient encounters were reviewed in each of the clinical facilities visited for a total of 1,473 patients. The results for the prescribing indicators that were calculated are presented in Table 55. Not unexpectedly, drugs per encounter and percentage of drugs prescribed/dispensed were generally lower in public facilities as compared to their private sector equivalent. In large part, as discussed previously, nonavailability from the public sector sole supplier, MSD, is likely to be a major causative factor. It is encouraging to observe that the majority of drugs across all facilities are being prescribed generically. Since generics are almost always less expensive than branded drugs, prescribing generics should positively affect affordability. Finally, based upon the relatively high percentage of antibiotics prescribed, except at public regional and NGO/mission hospitals, one might express concern about rational use for this drug class. However, without diagnostic data, no firm conclusions can be drawn.

Table 55. Selected Prescribing Indicators

Indicator	Private Dispensary/ Health Center (N = 12)	Private Hospital (N = 2)	Public Dispensary (N = 13)	Public Health Center (N = 6)	Public Regional Hospital (N = 2)	NGO/ Mission Hospital (N = 6)
Total drugs prescribed	813	139	691	358	148	397
Total patients	430	72	467	216	72	216
Average drugs/encounter	1.89	1.93	1.48	1.66	2.06	1.84
Percentage prescribed by generic name	68	58	84	65	65	70
Percentage prescribed dispensed	6	100	78	75	52	98
Percentage of prescribed drugs that are antibiotics	35	39	36	58	22	17
Percentage of encounters with at least one antibiotic	56	58	19	51	43	17
Percentage of encounters with more than one antibiotic	9	14	2	6	3	15

Table 56 reports on 45 simulated patients who went to pharmacies and drug shops to obtain information about the quality of the services provided. During the simulation, a person (the data collector or another person trained by the data collector) entered the chosen pharmacy, described the condition of a six-year-old child who had flulike symptoms and fever, and asked the person at the counter (salesperson or pharmacist) for guidance on what to do. The attendant provided information on how to treat the fever in a quarter (24.4 percent) of the encounters and recommended antibiotics almost 18 percent of the time. In terms of rational drug use, antibiotics should not be used for nonbacterial infections and should not be dispensed without a physician's prescription.

Table 56. Quality of Dispenser Services Based on Simulated Encounters

Quality Indicator	Percentage of Simulated Client Encounters (N = 45)
An antibiotic was recommended	17.8
An antibiotic was sold	17.8
Attendant provided instruction on taking medication	86.7
Attendant gave information on possible problems with medication	8.9
Attendant provided information on care and how to treat fever	24.4

5. *Percentage of patients who know how to take their medicines*

To gain an understanding of what patients know about the medicines they are prescribed, exit interviews were conducted with 269 persons as they exited the 21 public health facilities, five NGO facilities, and one private facility. Patients were asked about the medicines they were prescribed and what they were told about the purpose of the medicine, how much to take, and how long to take it. Patients were told the name of the medication 64 percent of the time and were told its purpose 81 percent of the time. Seventy-seven percent of patients knew how long they were supposed to take the drug.

To learn about information that is offered in retail drug outlets (pharmacies), simulated patients were asked to recall what they were told by the person who attended them. In 42 percent of the cases, the patients were told how to take the medicines that were sold to them, but only 5.3 and 15.8 percent were informed about potential adverse reactions and other precautions, respectively. Only 36.8 percent of the patients were instructed to take the fictional six-year-old child to a physician (Table 57).

Table 57. Information Provided by Pharmacy Staff to 45 Simulated Patients

Survey Question	All (N = 45)		Private Pharmacy (N = 12)		Duka la Dawa Baridi (N = 32)		Unknown (N = 1)	
	Yes	%	Yes	%	Yes	%	Yes	%
Did the staff explain how to take the medication?	39	86.7	10	83.3	28	87.5	1	100
Did the staff warn you of any problems that the medicine might cause?	4	8.9	2	16.7	2	6.3	0	0
Did the staff give you any suggestions or information about how to treat a child with fever?	11	24.4	5	41.7	6	18.8	0	0

Strategy Formulation Principles

In April and May 2001, MSH's Center for Pharmaceutical Management, under the aegis of SEAM and in partnership with the Tanzanian MOH, conducted an assessment of the public and private pharmaceutical sectors in Tanzania. The assessment included (1) determining the status of public and private sector access—geographical, availability, quality, affordability, acceptability—to essential public health medicines and health commodities; (2) identifying opportunities for private sector participation in improving access to public health commodities; and (3) determining the feasibility of implementing public-private sector strategies to improve access.

The assessment revealed access gaps in drug availability, primarily in the public sector, and issues related to quality and affordability of products and services, especially in the private retail sector serving rural areas. The assessment made the following key findings: (1) geographical access to drugs does not appear to be a problem and is not perceived as a problem by the public;²¹ (2) availability of drugs is a problem at MSD, especially, but not exclusively, at zonal stores outside of Dar es Salaam Zone; (3) availability issues exist in public sector primary health care facilities and also in many hospitals;²² (4) availability does not seem to be a significant problem at mission health facilities; and (5) with respect to quality of drugs and services, SEAM data from districts surveyed revealed that the public cannot be assured of drug quality for a significant proportion of drugs in the Tanzanian market.²³

These findings pose major challenges to the MOH, namely to seek the ways and means of improving the availability of drugs in the public sector, especially in hospitals and primary health care facilities, and the quality of products and services in the private sector. To address these challenges, strategies were developed and approved by the MOH for implementation. The strategies included (1) establishing a tiered pharmaceutical product quality assurance program; (2) establishing a network of ADDOs in rural and peri-urban areas of the country to provide an increased range of products similar to those approved for primary health care facilities; and (3) establishing an alternative, private sector supply system to augment the MSD supply system for the public sector, other MSD clients, and possibly rural retail drug outlets by providing quality, competitively priced health commodities. The strategies for establishing a network of ADDOs and drug quality assurance are currently being implemented. An MOH-directed alternative supplier program is in its earliest stage of development.

²¹ Data presented in the NBS 2001 Household Budget Survey corroborate this conclusion.

²² Districts surveyed included Dar es Salaam-Temeke, Kinondoni, Masasi, Njombe, Karagwe, Kilimanjaro Rural, Tanga Urban, and Dodoma Urban.

²³ Results obtained from pharmacies and *duka la dawa baridi* in study districts revealed that between 42 percent and 50 percent of drugs lacked Pharmacy Board registration or notification. In addition, 21–23 percent of drugs were classified as Pharmacy Board-notified drugs and thus quality was unknown.

Integrated National Product Quality Assessment Program for Tanzania

Background

Substandard drugs circulating in the market are a problem in many countries. Based on studies in 10 countries, WHO reported that 10–20 percent of marketed drugs did not comply with accepted quality standards. According to the SEAM survey in Tanzania, about 46 percent of the drugs circulating in the market are not registered with the Pharmacy Board, while a further 23 percent were notified but not registered. Evidence from this survey suggests that the public cannot be assured of the quality of approximately 70 percent of drugs on the Tanzanian market. In addition, 10 percent of samples tested during the SEAM assessment failed the assay test.

Not only do these pharmaceutical products pose threats to the health of the general public through ineffective treatment, they also waste scarce resources and undermine the confidence of the public in the health care system. More seriously, they can cause injury and even death.²⁴ This situation is further complicated by the fact that prescribers and users of pharmaceutical products are not able to assess the safety and quality of medicines for themselves before use.

For these reasons, effective regulation of the pharmaceutical market is essential to ensure that countries come as close as possible to the ideal of assuring that each and every product used by a consumer meets legal standards. However, even industrialized countries with strong regulatory systems do not attain this ideal. In developing countries, the situation is even more problematic; WHO estimates that fewer than one in three developing countries have well-functioning drug regulation systems.

A comprehensive strategy for assuring product quality comprises a range of components, including review and analysis of documentation, visual inspection, product testing, monitoring of products and manufacturers, effective enforcement of regulations, and drug defect and adverse reaction reporting. The primary focus of the proposed SEAM intervention will be on product examination and testing at ports of entry and surveillance/testing of products circulating in the market.

Control of Imports

After drugs enter the supply chain in any market, it is difficult to monitor quality and to recall batches should a quality problem be identified. If timely and reliable data are available to regulators about products before they enter the market, then substandard products can be denied entry at ports of entry (POE). In order to provide such data, regulators need to determine quickly if the product—

- Has market approval

²⁴ For example, contaminated glycerol caused the deaths of more than 400 children in Argentina, Bangladesh, Haiti, and Nigeria between 1990 and 1996. Further, counterfeit meningitis vaccine is estimated to have led to about 2,500 deaths in Niger in 1995.

- Is properly labeled and packaged
- Contains the correct (labeled) active ingredients in the legally required amounts (that meet pharmacopoeial standards)

To determine the last requires that the regulator have analytical resources close to the major POE.

Market Surveillance

Market surveillance requires the routine sampling of products in the marketplace, including distributors and retail outlets. Degradation during storage and transportation is of particular importance in tropical countries. Products being sold by retailers and distributors operating in the “gray” market also should be routinely tested. Such a surveillance program would also test suspected substandard and counterfeit products and follow up on reports of drug problems and adverse reactions.

Laboratory Resources

The scope of testing and laboratory resources required by a country depends largely upon the relative reliance on domestically manufactured and imported drugs. With the former, regulatory emphasis is placed upon inspection and adherence to GMP. Greater dependence on imports, however, places a greater emphasis on testing samples in high-throughput laboratories. Access to such laboratories is also vital for market surveillance and monitoring. The focus of the proposed SEAM program is on imported drugs and routine market surveillance, although the potential for requiring domestic manufacturers to adopt simple thin-layer chromatography (TLC) techniques for screening incoming material and as part of their product release procedures should not be overlooked.

Project Objective

The objective of MSH/SEAM’s pharmaceutical product quality support to the Pharmacy Board is to assist in developing an appropriate comprehensive national quality assurance program. The program will contribute to the development of a system capable of better ensuring that both imported and locally manufactured drug products meet approved quality standards. MSH/SEAM will provide technical and financial assistance for development and implementation. After this program is initiated, MSH/SEAM technical support will continue until 2005, but the Government of Tanzania is expected to provide funding for continuing and expanding this product quality program from 2003 onward.

Three-Tier Testing Program

Primary Screening

Primary screening facilities should be available to test a significant percentage of imported finished dosage forms at POE. Secondary level or legal reference methods (LRM) laboratory techniques such as high-performance liquid chromatography (HPLC) and gas-liquid chromatography (GLC) are not commonly found at POE, even in developed countries. Furthermore, using these techniques for routine market surveillance could quickly overburden existing secondary capacity. For monitoring quality at POE and on the market, secondary level methods are too slow and expensive. Primary screening using TLC—with its rapid setup, high throughput, and relatively low cost—is recommended for this work. Products failing TLC tests at POE could be denied entry, and market samples passing primary TLC tests may not require further testing.

Secondary Screening

Products that marginally pass or that fail primary TLC testing or products that are marketed legitimately (having passed required tests), and therefore have legal protection, require secondary screening to take action against the product or the company. Traditional LRM techniques using HPLC, for example, are generally more complex and costly than TLC techniques and can be performed only on a fraction of the product batches found on the market. However, instrumented TLC techniques²⁵ can process many samples at low cost; these could potentially replace methods such as HPLC or GLC in many instances.

Tertiary Screening

The highest level, or tertiary, testing facilities may be required to investigate epidemiological aberrations associated with a particular product. Tertiary techniques test for attributes beyond those that are addressed by secondary techniques, such as HPLC. Employing techniques such as mass spectrometry, tertiary testing methods require expensive equipment and highly trained personnel normally found only in the research-based drug industry, universities, and research institutes.

Thin-Layer Chromatography

TLC is proposed as a component of both primary and secondary screening strategies. Primary TLC would be semi-quantitative and rely on visual detection at POE and other noncentral sites. Secondary TLC would be quantitative, based upon instrumented detection using densitometry, and would be housed in a lab facility. In terms of method availability, the German Pharma Health Fund (GPHF) kit²⁶ and Alan Kenyon (ASK)²⁷ have available methods for more than

²⁵ Instrumented TLC techniques permit the quantitative measurement of active pharmaceutical ingredients and make use of equipment such as scanning densitometers and video systems, automatic spotters, and heated/cooled chambers.

²⁶ See http://www.gphf.org/web_en/projekte/minilab/index.htm.

90 essential drugs using inexpensive solvents that are suitable for both field (visual detection) and laboratory (instrumented detection) testing. Incorporating these methods could increase the list of drugs that could be tested using TLC. Many additional methods, which could be adapted to the existing GPHF and ASK solvent inventories, are also available.

TLC has a number of advantages over HPLC, including—

- Lower capital equipment costs
- Higher throughput
- Less solvent usage and lower solvent costs
- Lower maintenance costs
- Easier compliance with ISO and GMP standards
- Simple space requirements for primary testing

Disadvantages associated with TLC include—

- Inability to detect more than three or four compounds at a time, whereas HPLC and GLC can detect hundreds in a single sample
- Need for methods to be validated against existing LRM that use HPLC and/or GLC

Situation in Tanzania

Using data collected during the SEAM assessment, the situation in Tanzania can be summarized as follows—

- Eighty percent of pharmaceutical products are imported (value).
- Fifteen official POEs exist.
- Six POEs are approved for drug imports.
- Two POEs have Pharmacy Board inspectors.
- NQCL tested 354 samples in 2000.
- Thirteen percent (46) of samples failed these tests.
- SEAM: 10 percent of samples failed assay tests.
- SEAM: 48 percent of drugs surveyed were neither notified nor registered.
- Fifty percent of those were imported.
- Local production is not GMP compliant.
- A general perception of quality problems exists.

In these circumstances, developing TLC capacity as part of a three-tier testing strategy would offer Tanzania the potential for significantly increasing the number of samples tested each year and thereby improving and/or assuring the overall quality of drugs on the market. To improve

²⁷ See <http://www.pharmweb.net/pwmirror/library/pharmwebvlib.html>.

and help assure the quality of drugs on the market, the product quality-testing component of the Tanzanian quality assurance system might include—

- Primary screening capacity using TLC (visual detection), which offers a technically sound way for increasing capacity to assure drug quality
- Secondary testing capacity using TLC (instrumented detection), which would further increase capacity

MSH/SEAM Assistance

If the Government of Tanzania is interested in developing and implementing such a tiered testing program, SEAM could provide support in—

- Developing an overall plan for assuring drug product quality in Tanzania
- Establishing a modern TLC capacity for secondary testing at the NQCL
- Establishing primary TLC testing at major POEs (e.g., Arusha) using TLC kits
- Developing capacity to field-test categories of drugs in the marketplace using TLC (a cyclical strategy might be followed for this program)
- Developing organizational, management, and information systems necessary to implement and support primary testing capacity including—
 - Collection, processing, and management of samples
 - Decision-making systems
 - Information systems, including a drug product defect reporting program
 - Enforcement of regulations

MSH/SEAM would consider covering costs associated with—

- Capital costs for establishing primary TLC testing capacity
- Management and information system development to support program objectives
- Pilot phase operating costs (first year of implementation)
- Training
- Technical assistance
- Advocacy: government, industry, importers, public

However, the viability of the system would depend not only on MSH/SEAM technical and financial assistance, but also crucially on the following—

- Testing as part of an overall drug product quality assurance strategy
- Commitment and ability by GOT to meet annual operating costs from the second year of the program

- Political will within Tanzania to enforce regulations

Expected Outcomes

Should the project be implemented, the expected outcomes would include—

- Overall drug product quality assurance strategy
- Increase in number of drug samples tested
- Reduction of substandard and counterfeit products entering and circulating in the country from both imports and local manufacture
- Model quality assurance program that could be showcased to, and replicated by, other countries

Accredited Drug Dispensing Outlets Program

Rationale for the ADDO System

Part II poisons shops, popularly known as *duka la dawa baridi* (DLDBs), constitute the largest network of formally licensed outlets for basic essential drugs in Tanzania. DLDBs are found in all districts. Although exact numbers are not available, more than 4,600 DLDBs are estimated to exist, about one for every 7,400 persons. This figure is over 50 percent higher than the equivalent figure for all public health facilities and 11 percent higher than all public, voluntary, and religious facilities combined (see Table 22).

For a variety of reasons, DLDBs are often the most convenient retail outlet from which to buy drugs. Moreover, with drugs not always available in public primary health care facilities, patients will often turn to DLDBs to obtain medicines and supplies prescribed by the government health worker. Given the minimal pharmacy services in rural and poor urban areas, it is obvious that DLDBs play an important role that could be enhanced in providing access to essential drugs for a significant proportion of the population.

Available data, however, reveal a number of major problems with DLDBs—

- Insufficient number of qualified staff
- No assurance of drug quality
- High drug prices charged to patients
- Insufficient variety of drugs legally available to meet consumer needs
- Stocking of drugs unauthorized by the Pharmacy Board

Each of these problems is exacerbated by inadequate enforcement of regulations, difficulty in finding reliable and legal sources of drugs and supplies, and a limited list of authorized drugs.

The Accredited Drug Dispensing Outlet (ADDO) program is designed to address each of the problems associated with Part II shops.

Conceptual Overview of the ADDO System

The adopted strategy for improving the quality of products and services in DLDBs through ADDOs seeks to combine changing the behavior of shop owners and dispensing staff by providing education, incentives, and regulatory coercion with efforts affecting client demand and expectation with regard to quality products and services.

Figure 2 depicts the proposed components of the ADDO system in Tanzania. The core of the system begins with clients with illness who make decisions to seek or access care. These decisions appear to be based on cultural beliefs about what type of treatment is needed for a particular illness or condition (traditional, spiritual, modern, etc.), distance to care providers, seriousness of the illness, wealth or availability of cash, failure of previous treatments, drug availability in public facilities, perceived quality of local care providers, and provider referrals (Robles et al. 1998; NBS 2002).

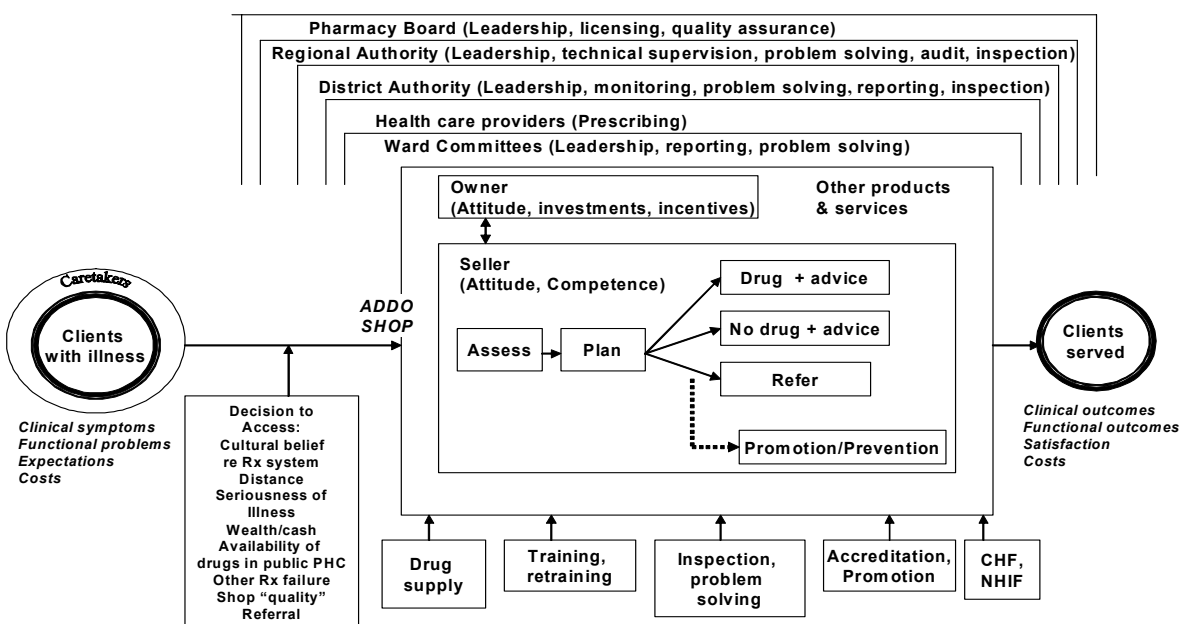


Figure 2. ADDO System Framework

When clients have chosen to go to an ADDO shop, an interaction with the seller begins. The intent is for the dispenser to listen to the client's request or description of symptoms and advise him or her appropriately. Advice might include recommending and providing a drug or drugs together with appropriate dispensing information, recommending home care if a drug is not warranted, promoting an associated product or service connected to the client's complaint (such as an insecticide-treated bednet for those with presumptive malaria), or referring to an alternate

provider for care beyond the scope of shop services. Sellers would need to begin with adequate qualification; acquire and maintain the knowledge, skills, and competence needed; and have a client-centered attitude that meets with the ethics and responsibilities of their new role.

These interactions would occur in the context of an ADDO shop that may also provide other products and services and is generally owned by a different individual. Owners of shops are business people and would need to be willing to invest in raising the standards of drug-related services and products. This will require identifying what will serve as incentives and potential returns on these investments. Owner's attitudes toward sellers and clients would also have to meet ethical standards of client service.

In order for ADDO shops to continue to provide good services, they need more broadly available systems of support. The source and supply of adequate quality drugs at reasonable wholesale prices is an issue that will need addressing, for example. Developing an ADDO purchasing group or facilitating access to a prime vendor may help in this regard. Training and refresher training of sellers to upgrade skills will be offered at the outset and options for sustaining it will be explored.

In thinking about inspection and supervision, it is assumed that—

- Regulation will be necessary in order to ensure that established standards are adhered to.
- Pharmacy Board staffing levels will be insufficient to perform this task without assistance.

In light of these assumptions, mechanisms need to be found to augment the resources available to the Pharmacy Board for routinely inspecting and reporting on the activities of ADDOs and other retail drug outlets. Therefore, it is anticipated that a new system of inspection and improvement that engages ward and divisional level leaders, District Medical Officers (DMOs) and other local government bodies, the Regional Pharmacist, and the Pharmacy Board in appropriate roles will be instituted. Such a system would draw upon human and financial resources already available and would fit well with the major local government reforms that are taking place in Tanzania in which financing and responsibility for many areas, including public health, are being decentralized.

The inspection system will contribute to the overall accreditation, licensing, and operation of ADDOs in communities. Since this requires a significant change from the current system of part II poisons shop licensing and regulation, a program of promotion within districts will be carried out to inform and educate consumers as well as political and government leaders.

The ADDO “microsystem” is embedded in divisions and wards. For the system to function well, divisional and ward leadership must be willing to serve as advocates for ADDOs as a new concept and, working through village and ward committees, to inspect and report problems, help improve shops, and report to higher levels. Similarly, the DMO as the leading health authority in the district must be willing to serve as an advocate with district leaders and the Council Health Service Board to work with the new system, to monitor ADDO operations and drug lists, to help solve problems, and to report to regional and national levels.

Major Program Elements

Development and Approval of ADDO Standards

Minimum but enforceable standards will be developed and approved to cover the following areas—buildings, drug list, drug quality, personnel, record keeping, and shop location. In developing these standards, care will be taken to strike a balance between achieving program objectives and avoiding setting objectives so high or making them so prescriptive that they become unreasonable, thereby deterring DLDB owners from participating in the program.

Training and Continuing Education

All staff wishing to work in an ADDO will need accreditation, which they will achieve by successfully completing an ADDO dispenser's course to be offered by a Pharmacy Board-approved institution such as the School of Pharmacy.

Incentives to ADDO Owners

Incentives will be needed if owners of DLDBs and others interested in operating an ADDO are expected to participate in an accreditation scheme. The most powerful incentives probably are those that stimulate the growth and development of their business. Discussions with groups of DLDB owners suggest that the following will be the key incentives from their point of view—

- Instituting a broader, legally approved drug list
- Marketing and advocacy
- Linking ADDOs to health financing initiatives such as the CHF
- Improving access to wholesale suppliers
- Reducing the burden of taxes and license fees

Regulation and Sanctions

Close regulation and monitoring of the ADDOs will be important to ensure that established service and product standards are maintained following accreditation. It will also be necessary to find ways of improving regulation of nonaccredited outlets, which are likely to continue to exist at least until an ADDO system is implemented throughout all four pilot districts. However, the Pharmacy Board has resources to cover only a small proportion of the drug outlets in existence. The approach to regulation for the ADDO program involves making local government responsible for performing routine inspections and reporting on ADDOs and DLDBs in their area of jurisdiction.²⁸ This work will be done in partnership with, and on behalf of, the Pharmacy Board, which will retain overall responsibility for regulation. The role of local government will be formulated to fit with its responsibilities under local government reform, which has

²⁸ It is interesting to note that the current Pharmacy Board Guidelines for Dealings in Part II Poisons state that one function of the Regional Technical Advisory Committee (RTAC) is “to make sure that all the licensed part II premises are inspected on a quarterly basis and the reports submitted to PB immediately.” Although clearly it is not done, theoretically at least, the RTAC should be requiring someone to perform quarterly inspections.

decentralized funding and decision-making authority for various areas, including delivery of public health services.

To guard against abuse of their position, inspectors will not have decision-making powers. Rather, they will report to an appropriate local committee, such as the village/ward health committees and ward development committees who will, in turn, be answerable to district bodies. Sanctions will be taken against errant ADDOs and Part II poisons shops. Local, district, and national authorities will take appropriate action and possibly levy penalties in accordance with regulations to be promulgated by the Pharmacy Board. The regulatory system will have an appeals procedure to allow owners to seek redress against overly severe or otherwise unusual punishments. Finally, as a complement to formal regulation, channels will be developed for hearing and processing consumer complaints against drug retailers. This will cover ADDOs and DLDBs.

Advocacy and Marketing

For the ADDO program to succeed, it will be essential to conduct an effective communications and marketing strategy to convince consumers, shop owners and sellers, local government, and community leaders to participate in the program in their respective capacities.

The Future of DLDBs

In the short term DLDBs will certainly continue to exist in the pilot districts, if for no other reason than they are operating under licenses and permits that are yet to expire and that cannot be withdrawn without good reason.

Whether DLDBs continue to exist in the medium term will largely depend on four factors—

- The success of the ADDO program in persuading existing DLDBs to become accredited
- The success in advocating for customers to buy drugs only from accredited shops, so undermining the market for DLDBs that they become unprofitable and close
- The vigor with which local licensing authorities insist on all drug shops being accredited
- The vigor with which local inspection is undertaken and supervised by district/regional authorities

It is difficult to know at present how the situation will develop in practice.

MSH/SEAM Assistance

Should Tanzania agree to proceed with the ADDO proposal, MSH/SEAM would be willing and able to assist with implementation. MSH/SEAM would consider covering costs associated with the provision of technical assistance and financing to cover the following—

- Selection of pilot districts and ADDO shops
- Advocacy
- Development and implementation of ADDO standards
- Development and implementation of a regulatory system for ADDOs
- Development and implementation of an ADDO marketing plan
- Development and implementation of training program for dispensers, owners, and inspectors
- Assessment, development, and implementation of a range of commercial incentives for ADDO owners

Expected Outcomes

Should the project be implemented, the expected outcomes would include—

- Network of accredited, commercially successful, and effectively regulated drug shops in selected districts providing a range of products and services meeting acceptable, defined minimum standards
- Model for managing nonpharmacy retail drug shops that could be showcased to, and replicated by, other countries

Additional Prime Vendor Supply System for Public Health Facilities

Background

MSD is the sole supplier for the public sector and primary supplier to faith-based and other nongovernment, noncommercial groups providing health services in Tanzania. MSD on balance is a financially strong organization that procures drugs at extremely favorable prices, has a very good distribution capacity, and has shown a record of improved workforce performance. However, problems with stock availability have been evident in recent years, and projections of significantly increased demand, at least for the next several years, are likely to put further pressure on MSD's physical and managerial capacity. The government may want to consider options for alleviating the pressure on MSD by making it possible for hospitals to effectively buy

drugs and medical supplies from other approved suppliers. The development of an additional supplier system that would augment the services of MSD and stand ready to cost-effectively fill any supply gaps that might develop seems essential to ensure success of MOH health care objectives.

Program Description

Additional vendor supply systems where drugs and supplies for public health systems are obtained from private sector suppliers are not a new idea and, over the years, the approaches taken have varied by country. For example, in Thailand, government hospitals in some areas formed group-purchasing cooperatives and agreed on a standard list of items from the national essential drugs list. The group then conducts tenders to establish the suppliers and prices for each item. The individual hospitals then purchase directly from the contracted supplier. In Zimbabwe, a system was implemented where high-cost, slow-moving specialty supplies are ordered from a government-selected supplier and delivered directly to the hospital.

In Tanzania, it is envisaged that availability issues can be addressed by developing a system whereby public and publicly funded mission health care facilities obtain supplies by accessing one or more private suppliers/prime vendors that has been selected by the MOH via a transparent selection process based upon a vendor's ability to deliver quality drugs at a competitive price.

The alternative supply system would include the following features—

- **Nationwide Service:** The supply system would need to be available to all regions of the country. Design and implementation would not be dependent upon public sector warehouses and logistics services. The new system will entail the selection and approval of vendors (see Vendor Selection below) who would supplement the services of MSD. The system will supply to public health facilities essential drugs and supplies contained in the MOH NEDLIT. Initially, one or more vendors would provide services in selected pilot region(s) (for example, one region where location of hospitals would not present major logistical issues and a more remote region where such issues would need to be confronted). Upon successful implementation, services would be expanded to other regions of the country. The approved alternative vendor(s)/prime vendor(s), provided with estimated annual requirements for hospitals in the region(s) served, will be responsible for maintaining a sufficient inventory of drugs and supplies to meet possible MSD shortfalls. When a facility has an out-of-stock situation, supplies could be ordered from the alternative vendor, who will arrange to have the required items delivered either to the hospital or to a location convenient to the hospital.
- **Supplement to MSD:** It is important to stress that any new, approved suppliers are not a replacement for MSD. Instead, they would supplement the efforts of MSD and ensure that public sector requirements can be satisfied. This capacity will be important given the evidence of growing pressure on MSD. In addition, the new system will provide a safety net to the government should there be either a major stock rupture at the MSD and/or an unexpected spike in demand due to natural or other disasters.

- **Competition:** Both the public health system and MSD will benefit from the introduction of competition. The new system will provide an opportunity to improve cost and supply efficiency. Public health facilities will gain new options for improving drug availability without compromising quality or price. Secondary to competitive pressure, MSD is expected to be motivated toward improving its services for both the public and mission health facilities.
- **Essential Drug List:** The government will continue to control drug selection, prices (negotiated with the prime vendor), and equitable access to essential drugs. Drugs on the NEDLIT will continue to be supplied in line with MOH policy.
- **Convenience:** Since prime vendors will be required to deliver competitively priced products nationwide, a new dimension of convenience will be afforded public hospitals. Private suppliers might offer new types of services, including direct delivery and electronic ordering.
- **Drug Quality:** Only TFDA- or Pharmacy Board–registered drugs can be sold. Suppliers could be required to participate in drug quality assurance activities and report results to the TFDA or Pharmacy Board.
- **Pricing:** Drug prices will be competitive with those from MSD. Private wholesalers have indicated that drug costs could be comparable to those of MSD. The 2001 SEAM survey revealed that in at least some instances, when the private sector competes with MSD for NGO contracts, the private sector has been awarded contracts. An important aspect of the prime vendor program will be to have vendor price lists distributed to all potential client facilities on at least a semi-annual basis.
- **Vendor Selection:** Selection and final approval of vendors would be made in line with procedures described in the Procurement Act and government regulations.
- **Clients:** In addition to the public sector, the prime vendor would also be approved to sell to the same range of clients as those served by MSD. In addition, NHIF-accredited institutions, CHF, and ADDOS currently being developed by the TFDA/Pharmacy Board may utilize prime vendor services.
- **Public Sector Funding:** Although no government law or regulation prohibits the public sector from procuring supplies in the private sector, or for that matter, requires that MSD receive all hospital funds earmarked for drugs and supplies, the current funding mechanism for the public sector effectively prevents private sector procurement. Therefore, if an additional supplier program were approved, that funding mechanism would require modification to permit at least a portion of funds to be deposited with the region and district for respective public sector hospitals. Adherence to recently adopted local government reforms and associated financial accountability and procurement standards, such as an integrated financial management system with external auditing, would help ensure that funds were used properly.

- **Monitoring and Supervision:** The MOH, perhaps in conjunction with other ministries, will manage contracts entered into between the MOH and the appointed/approved prime vendor(s). A system is recommended for monitoring and supervising vendor performance with respect to terms of the contract. In particular, the system will monitor vendor performance related to adherence to agreed prices, product quality, shelf life, delivery performance, and customer satisfaction.

Implementation Plan

Development of an alternative supplier/prime vendor program will initially require extensive planning and preparation on the part of government and private sector participants. It is projected that the planning and preparation phase will last 12 months. When pilot program implementation is completed, public sector hospitals in selected regions will be provided the option of procuring, to the limit of funds made available to the region or district, from an alternate supplier to MSD. It is anticipated that after a 12- to 18-month period of experience and evaluation, the alternate supplier program would be phased into all regions.

Conclusions

On the one hand, mission sector health facilities that are not reliant on public funding do not appear to exhibit drug availability problems. It can be assumed that their ability to procure supplies from the private sector where multiple vendors are available to meet facility requirements all but eliminates drug availability issues. On the other hand, drug availability issues in public sector primary health care facilities and in hospitals are well documented.

For the near future, MSD will remain the backbone for supplying the country's public sector health commodities. However, evidence that it may not be able to fully satisfy public sector demand is compelling. Out-of-stock rates at MSD zonal stores appear to indicate a stressed condition. Workload has doubled over the past five years and there is every indication that workload will continue to increase. MSD is actively taking steps to improve its operational capacity but even in the best of all worlds, there is scant evidence, if any, that a single vendor can or should be expected to reliably provide 100 percent of country requirements. One approach that could alleviate supply availability problems is the implementation of an alternative supply system such as the prime vendor system described previously. In essence, the system would provide quality, low-cost medications to public and approved private sector facilities with convenience at least comparable to that of MSD. Such a system is predicated on availability of funds in the regions/districts to procure needed supplies. Since all funds are currently deposited with MSD, the current hospital funding mechanism for drugs and supplies would require modification.

It is recognized that implementation of an alternative supplier program will require extensive cooperation from both the public and private sectors, and a thorough evaluation is required by government officials to determine feasibility of such a program. It is hoped that this report will provide officials with the background information they need to justify an additional supply system and to understand how such a system can help resolve an issue of primary importance.

Innovative Supply System to Improve Access to Quality Drugs and Medical Supplies—Mission for Essential Medical Supplies

Background

The Christian Social Services Commission has documented member hospital concerns with the service provided by MSD. For this reason a number of hospitals have investigated the potential for establishing an alternative source of supply for themselves.

It was against this background that the African Medical and Research Foundation (AMREF) Laboratory Programme, in conjunction with the Evangelical Lutheran Church in Tanzania, developed a project (AMREF/ELCT Project) aimed at strengthening laboratory services and availability of laboratory supplies for church health facilities in northern Tanzania. The project started in February 1998 and involved providing clinical and laboratory equipment, as well as refresher training in good diagnostic practices for clinical and laboratory staff, in order to establish basic standards of health care delivery. The project also developed a central procurement system and quality assurance for all essential laboratory supplies, called the Mission for Essential Medical Supplies, which has been established in Arusha.

While implementing the project, it became clear that the church health facilities procure drugs from a variety of sources, including private pharmacies, where prices are high and quality cannot be assured. In recognition of the importance of the management and supply of good-quality drugs, the ELCT appointed a Consultant Pharmacist to look into the problem of drug supplies. ELCT, MEMS, and MSH have since held discussions on plans to expand MEMS and develop a supply system to ensure access to quality drugs and medical supplies together with the relevant educational and supporting systems.

Goal

The ultimate goal of this project is to improve the health status of communities by creating access to a medical supply system that combines a reliable source of quality drugs and medical supplies at the best price together with a medical supplies management and educational service for hospitals.

Strategy

It is proposed that MEMS provide a medical supply system that supplements the current system for public and voluntary agency health institutions. This new system will emphasize service, education and advice, quality, and reliability and will offer competitive prices for products of quality comparable to those in the public sector.

The first step in achieving this strategy will be for MEMS to pilot an alternative supply system for a limited number of church hospitals in the northern part of Tanzania. This system will primarily use the services of one private sector medical wholesaler who will be selected based on quality, services, and price. Unlike a traditional supply system where hospitals place their orders directly with the vendor, MEMS will act as an intermediary to review the appropriateness of

hospital purchase orders, monitor vendor services, and ensure the quality of products. MEMS will also assist participating hospitals with assessing their requirements and provide technical advice and continuing education. Experience gained and lessons learned in successfully implementing this initial step will be shared with interested government bodies, churches, and other health agencies that may wish to establish similar alternative supply systems in other parts of the country.

Outputs

- **Coordinating organization:** MEMS will be developed as the coordinating organization for selected wholesalers. In addition to essential laboratory supplies, MEMS will provide a full range of essential drugs and medical consumables for hospitals and health institutions in the Northern Zone of Tanzania. MEMS will operate on a not-for-profit basis.
 - The current product line of MEMS will be expanded to include all drugs and medical supplies required by the hospitals. However, unlike the procedure used for laboratory supplies, which MEMS warehouses, the wholesalers will warehouse drugs and the other supplies.
 - The drugs available through MEMS will primarily be in accordance with the NEDLIT but may also include drugs and supplies deemed necessary by participants in the program. Only drugs registered by the Pharmacy Board will be stocked.
 - One of the focuses for MEMS will always be to assure that the full range of listed items is available.
 - The prices will be kept as low as possible and are expected to be comparable to those of MSD.
- **Quality assurance:** Quality assurance will be established for all services. Ensuring quality of all supplies is a high priority for MEMS.
 - Quality assurance will start with careful selection of manufacturers and wholesalers for all items.
 - Quality testing systems will be established, ranging from visual inspection to qualitative and semi-quantitative testing of laboratory reagents and drugs. A Minilab from GPHF has been received for quality testing of essential drugs. MEMS could serve as a site for market surveillance for drug quality and any batch of drug found to be substandard will be reported to the Pharmacy Board for further investigation and remedial action.

Service provision: MEMS intends to provide several unique services, in addition to providing medical supplies.

- MEMS will provide an advisory and educational service for customers.
- Outreach pharmacy and laboratory services will be provided to participating hospitals.
- Health facilities can have an account at MEMS. Bank transfers will be accepted and, in contrast to MSD, can be refunded.
- **Improved communication system**
 - Communication systems will be developed at the health facilities coordinated by MEMS using the most appropriate technology available, such as HF radio for health facilities that cannot be reached by e-mail.
 - MEMS will establish an online stock-keeping and ordering system. Customers will be able to order goods in advance, knowing that they are available, that will then be set aside for collection.
- **Education**
 - Education and training concerning inventory control, procurement, storage, distribution, and proper use of supplies will be provided to health facilities. MEMS will also develop a central drug information center and an adverse drug reaction and drug problem reporting program.
 - MEMS also stocks essential medical books, manuals, and posters, including standard operating procedures for the preparation of laboratory reagents.

MSH/SEAM Assistance

Should ELCT wish to proceed with the MEMS proposal, MSH/SEAM would be willing and able to assist with the implementation of the prime vendor part of the plan. MSH/SEAM would consider covering costs associated with the provision of technical assistance and financing for the following—

- Prequalification of interested suppliers
- Development, issuance, and evaluation of final request for proposal
- Advocacy to hospitals
- Quantification of needs
- Development and implementation of communication and information systems
- Development and implementation of training programs

Expected Outcomes

Should the project be implemented the expected outcomes would include—

- Contracting of a prime vendor to supply needs of hospitals participating in MEMS
- Development and implementation of a communications and management information system for MEMS, participating hospitals, and prime vendor

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Tracer Conditions and Items

Measures of access reflect access to essential health commodities required for the treatment or prevention of key public health problems of a particular population. This requires the identification of “tracer” conditions and “tracer” items. Suggested tracer conditions are pneumonia for children under five years and adults, malaria, tuberculosis, HIV/AIDS, sexually transmitted infections, diabetes, hypertension, and measles. Items (e.g., chloroquine, mefloquine) should reflect not only local standard treatments but also internationally recognized treatments. The SEAM research team and local collaborators jointly identified both conditions and items. Typically, tracer items are listed on a national drug formulary or essential drug list.

List of Indicator (Tracer) Items for Tanzania

Amoxicillin 250 mg tablets
Benzylpenicillin sodium 5 MU vial
Chloroquine 300 (150 mg base) tablets
Ciprofloxacin 500 mg tablets
Condoms
Co-trimoxazole 480 mg tablets
Depo-Provera vial
Dextrose 5 percent 500 ml bottle
Doxycycline 100 mg tablets
Erythromycin 250 mg tablets
Examination gloves size 7.5
Ferrous sulfate 200 mg + folic acid 0.25 mg tablets
Gentamicin 40 mg/ml ampoule
Hydrochlorothiazide 25 mg/50 mg tablets
Ketamine 50 mg/ml vial
Mebendazole 100 mg tablets
Metronidazole 200/250 mg tablets
Needle 22 G + syringe 2 ml
Oral rehydration salts (ORS) sachets
Oxytetracycline eye ointment 1 percent tube 5 mg

Paracetamol 500 mg tablets

Polio vaccine vial

Praziquantel 600 mg tablets

Propranolol 40 mg tablets

Quinine dihydrochloride 300 mg/ml ampoule

Rifampicin 150 mg + isoniazid 100 mg tablets

Sulfadoxine/pyrimethamine 500/25 mg tablets

Sample Selection

The Ministry of Health sponsored the assessment of the pharmaceutical sector in Tanzania to evaluate the situation of the sector and the viability of potential strategies for improving consumer access to essential medicines. Sampling issues for surveys were addressed and resolved in collaboration with local counterparts. Key issues considered included the existing information about the distribution of facilities and population, in particular the information's level of detail.

SEAM surveyed a sample of 104 facilities, including public, voluntary agency, and private hospitals; pharmacies; zonal medical stores; health centers; dispensaries; and *duka la dawa baridi* or drugstores. The survey was conducted in six districts: Dodoma Urban, Njombe, Tanga Urban, Karagwe, Kilimanjaro Rural, and Masasi. Within each subsector, a representative sample included each relevant type of facility, focusing on outpatient care.

The pharmaceutical sector assessment was based on two distinct sets of data collection efforts. A team of consultants worked with local counterparts to conduct interviews, carry out site visits, and review documents (e.g., policy documents, legislation and regulation relevant to pharmaceuticals and public sector procurement, study reports, and financial reports). Although objective, quantitative data was sought, findings may be primarily qualitative, leading to an understanding of the pharmaceutical situation in both public and private sectors and the viability of potential strategies for improving consumer access to essential medicines.

The other data collection effort was a survey of public and private sector health care facilities (approximately 20 to 24 facilities in each subsector):

- Public (MOH hospitals, health centers, and dispensaries)
- Private not-for-profit (NGO/mission hospitals and clinics)
- Private for profit (hospital outpatient departments)
- Private drug outlets (pharmacies and *duka la dawa baridi* or drugstores)

The following tasks were performed at each type of facility:

1. Public sector facilities (20–24) and private not-for-profit hospitals and clinics (20–24) that also provide medicines to outpatients
 - Inspect/determine availability of a set of tracer essential medicines
 - Obtain prices charged for medicines (if relevant)
 - If possible, obtain prices paid by facility to its suppliers
 - Review inventory control record/bin card for tracer set of essential medicines
 - Conduct interviews of relevant staff to fill in facility survey form
 - Conduct patient/client exit interviews (minimum of 10 patients)
 - Review medical records/prescriber logs to collect prescribing data (30 consultations)
 - Obtain/purchase 20 units of a designated tracer essential medicine (for testing purposes)

2. Private for-profit hospitals and clinics
 - Inspect/determine availability of a set of tracer essential medicines
 - Obtain prices charged for medicines (if relevant)
 - If possible, obtain prices paid by facility to its suppliers
 - Review inventory control record/bin card for tracer set of essential medicines
 - If possible, review medical records/prescriber logs to collect prescribing data (30 consultations)
 - Conduct interviews with relevant staff to fill in facility survey form
 - Purchase 20 units of a designated tracer essential medicine (for testing purposes)

3. Private drug outlets (pharmacies and other types of drug outlets)
 - Obtain a list of medicinal product names (brand or the manufacturer if generic) that are available for sale
 - Determine availability of a set of tracer essential medicines
 - Obtain prices for a set of tracer essential medicines; if possible, obtain prices paid by pharmacy or drug outlet to its suppliers
 - Conduct questionnaire-based interview of drug outlet attendant
 - Observe and record simulated patient/mystery client scenario
 - Purchase 20 units of a designated tracer essential medicine (for testing purposes)

Questionnaires and Data Collection Forms

Questionnaires

1. Public Health Facility Survey
2. Mission Clinic/Hospital or NGO Clinic/Hospital Survey
3. Private Health Facility Survey
4. Private Pharmacy Survey
5. Drug Outlet Survey (for shops that sell medicines but do not have a responsible pharmacist)

Forms

1. Simulated client data collection form (upper respiratory tract infection)
2. Simulated malaria patient data collection form
3. Price comparison form A
4. Price comparison form B
5. Stock-out data form
6. Prescribing and dispensing analysis
7. Patient exit interview for public health facilities and NGO/mission facilities

Table A-1. Number of Services Sampled According to Type of Facility and District

District	Type of Facility								Total
	Public			Private			NGO/Religious		
	Regional Hospital	District Medical Stores	Dispensary/Health Center	Duka la Dawa Baridi	Private Dispensary/Health Center	Pharmacy	Hospital/Clinic Dispensary		
Tanga Urban	1	1	1	1	1	2	1	8	
Dodoma Municipality	1	0	2	2	1	2	0	8	
Masasi	1	0	3	3	3	0	1	11	
Njombe	1	1	3	3	4	0	1	13	
Kagera	0	0	0	0	0	1	0	1	
Temeke	0	0	0	24	0	8	0	32	
Dodoma Urban	0	1	2	0	2	0	0	5	
Karagwe	0	1	3	2	3	0	2	11	
Moshi Rural	0	1	3	4	3	0	3	14	
Tanga Municipality	0	0	1	0	0	0	0	1	
Total	4	5	18	39	17	13	8	104	

Note: NGO = nongovernmental organization

Annex B: Tanzanian Team

Field Staff

Msami Amani
Karanja Brown
Detriech Chusi
Peter Deogratus
Juliana Geho
Angelo Katambazi
Regina Kimambo
Sophia Komba
Samson Lusumo
Mlwande Madihi
Morgan Mlay
Mwashamu Mrisho
Sarah Mushi
John Mwambigija
Teddy Ngeleja
George Nyamarasa
Mazyala Rehehani
Penina Sangiwa

Team Leaders

Rose Jonathan
Nelly Katenga
Mildred Kinyawa
George Mlavuasi
Sosse Senya
Billy Singano

Annex C: List of Key Persons Interviewed

R. Aaron, Drug Registration, Pharmacy Board
Mr. Akida, Pharmacy Board
Jogesh Asar, Care Ltd.
Naaznin Bandali, Aga Khan Hospital
G. P. Beghi, Tanzania Tobacco Processors Ltd.
Harish Bhat, Managing Director, Soft Tech
Sharmila Bhat, General Manager, Soft Tech
Leonard Bureta, Area Manager – Tabora, Medical Stores Department (MSD)
Dr. N. Chukilizo, Head of Drug Registration, Pharmacy Board
Rob Cunnane, Public Health and Nutrition Officer, USAID
Mike Dahlgren, Danida/MOH Health Sector Programme Support, Financial Adviser
Mansoor Daya, Danssor Daya Chemical Ltd
Dr. Don de Savigny, Tanzania Essential Health Interventions (TEHIP)
Harish Dhutia, Bytrade Tanzania Ltd.
Salum Diwani, Bytrade Tanzania Ltd.
Dr. Jay Drosin, Director General, MSD
Yahya Faraji, Transport Manager, MSD
Dr. W. Flipse, Christian Social Service Commission (CSSC)
Dr. Catherine Goodman, London School of Hygiene and Tropical Medicine
M. S. Gulamhusein, Salama Pharmaceutical Limited
Celestine Haule, Sales Manager, MSD
Dr. Simon Haule, CSSC
Murtaza Jacksi, Pharmed Ltd.
Elisabeth Jespersen, Acting Ambassador, Royal Danish Embassy
Dr. Patrick Kachur, U.S. Centers for Disease Control and Prevention
Dr. Norman Kelly, Brooke Bond Tanzania Ltd.
Dr. Frederick Kigadye, CSSC
O. Kowero, Head of Drug Inspection, Pharmacy Board
Dr. Ramadhani Madabida, Pharmaceutical Investments Ltd.
Dr. Emmanuel Malangalila, World Bank
Dr. S. Maleto, Msafiri Pharmaceuticals Enterprises Ltd.
Dr. Max Mapunda, Ministry of Health (MOH)
Kibo Marealle, Kekio Pharmaceutical Industries Ltd.
A. Masele, Department of Pharmacology, Muhimbili Medical Centre
Sylvester Matandiko, Area Manager – Mwanza, MSD
L. R. Mhangwa, Drug Registration, Pharmacy Board
Ben Mkasa, Director of Distribution and Sales, MSD
Dr. Geoffrey Mmbaga, Brooke Bond Tanzania Ltd.
Herman Mngongo, Inventory Controller, MSD
E. Masha, Head, Drug Quality Control Laboratory, Pharmacy Board
Mr. Moyo, Tanzanian Telecommunications Commission
Dr. Lucian Msambichaka, University of Dar es Salaam
Christopher Msemu, Director of Procurement, MSD

J. Muhume, Chief Pharmacist, MOH
Missanga Muja, Procurement Manager, MSD
Mr. Mungisha, Pharmacy Board
Dickson Mwamwembe, Warehouse Manager, MSD
Dr. Eli Nangawe, CSSC
Lucy Nderimo, Quality Control Manager, MSD
M. Ndomondo-Sigonda, Registrar, Pharmacy Board
Dr. Njau, Health Sector Reform Manager/Coordinator, MOH
Jayne Nyimbo, Personnel Manager, MSD
Chris Opperman, Medical Express Tanzania Ltd.
Dr. Kiran Pattni, J.D. Pharmacy
Paul Phillips, Country Representative, Crown Agents
Mehboob Poptani, Kas Medics Ltd.
P. Pradeep, Mimco International Ltd.
Ashraff Pradham, Tropi Pharma Ltd.
Hussein Raha, ISP
Dr. Graham Reid, TEHIP
Peter Sanyiwa, Acacia Pharmacy
Dipen Shah, Shelys Pharmaceuticals Ltd.
Shamin Pride, Tanzania (microfinancing organization)
W. Shango, Head of Drug Information, Pharmacy Board
R. Shirima, Chairman, Board of Trustees, MSD
Dr. Yonah Simonet, Tanzania Telecommunications Company Ltd.
Nimpha Siriwa, Secretary to Area Manager – Tabora, MSD
Paul Smithson, Chief Health Adviser, Department for International Development (U.K.)
Kahwegere Stanley, Nkrumah Pharmaceutical Ltd
Dr. Helen Tata, WHO/EDM
Dr. Gabriel Upunda, Chief Medical Officer, MOH
David Walsh, Director of Finance, MSD
Marsh Yambi, CSSC
Lu Yue, Tanzasino United Pharmaceuticals Ltd.

Annex D: Additional Data Tables

Table D-I. Tanzania Household Budget Survey Summary 2000–2001

Indicators	Tanzania Mainland
Urbanization, household size and household structure	
Weighted sample % urban	19
Mean household size	4.9
Percentage of households reporting connection to the electricity grid	
Urban	39
Rural	2
Total	10
Distribution of households by main energy source for cooking	
Firewood	79
Charcoal	—
Percentage of households using a toilet of any type	93
Mean distance to selected facilities (Km)	
Mean distance to a bank	30.5
Mean distance to firewood (rural households only)	3.1
Mean distance to a shop (rural households only)	1.8
Distribution of educational level of adults (aged 15+ ; %)	
No education/pre-school	25
Primary 1–4	12
Primary 5–8	54
Form 1–6	5
Diploma/university degree	0
Percentage of adults literate in any language by place of residence	
Urban	—
Rural	—
Total	71
Measures of illness and treatment	
Percentage of individuals reporting illness/injury in the four weeks before the survey	27
Percentage of individuals who were ill in the previous four weeks who consulted any healthcare provider	69
Percentage of individuals who consulted a government provider, of those who consulted anyone	54
Distance to health facilities by place of residence	
Percentage of households within 6km of a dispensary/health centre - Total	75
Mean distance to a hospital/health centre (km) - Total	3.9
Mean distance to a hospital (km) - Total	21.3

Indicators	Tanzania Mainland
Distribution of households by source of drinking water and place of residence (%)	
Piped - Total	39
Other protected - Total	16
Unprotected - Total	44
Percentage of households within 1 km of drinking water in the dry season	55
Distribution of main activities of adults in last seven days (age 15–60; %)	
Farming/livestock/fishing	62
Government employee	2
Self-employed with employees	2
Self-employed without employees	6
Distribution of main activities of household heads in the last seven days (%)	
Farming/livestock/fishing	70
Government employee	4
Self-employed with employees	3
Self-employed without employees	9
Percentage of children age 5–14 years reported as working (at all)	62
Distribution of household's main source of cash income (%)	
Sales of food crops	41
Sales of cash crops	17
Business income	13
Wages or salaries in cash	9
Other casual cash earning	6
Cash remittances	4
Percentage of households below the food and basic needs poverty lines and food share of household expenditure	
Food poverty line	19
Basic needs poverty line	36
Percentage of consumption expenditure on food - Total	65
Per capita household monthly income	
Mean per capita household monthly income (TZS) - Total	17,922
Median per capita household monthly income (TZS) - Total	8,323

Table D-2. MSD Total Variable Cost Analysis: 1996–2000 (USD)

		Financial Year			
		1996/7	1997/8	1998/9	1999/2000
A Cost of Goods Sold (COGS)	Ex. Rates	625	660	730	802
Opening stock brought forward		17,077,535	10,226,060	7,481,864	8,398,633
Opening goods in transit b/f		5,126,373	3,623,710	-	-
Overseas purchases		6,206,544	7,105,239	7,879,299	5,083,452
Local purchases		4,738,710	5,557,747	7,205,916	5,861,422
Donor capitalization purchases		-	-	4,146,471	928,039
Clearing and forwarding		224,671	281,991	458,544	161,044
Inward transport expenses		153,562	179,422	170,802	71,659
Inspection, letter of credit		71,365	174,352	179,932	125,820
Marine insurance		99,504	170,163	89,148	55,761
		33,698,264	27,318,683	27,611,976	20,685,829
Less: closing stock carried forward		10,798,720	8,275,395	9,226,992	6,002,789
Less: Closing goods in transit c/f		3,826,638	-	-	-
Less: inventory exception provision (revaluation)		1,312,748	574,742	-	-
Cost of Goods Sold		17,760,158	18,468,547	18,384,984	14,683,040
B Average Stocks	Average Stocks	13,938,127	9,250,728	8,354,428	7,200,711
C Operating Cost	(Note: only available for 1999/2000)				345,634
D Stock Write-Offs		18,959,684	20,380,553	20,937,703	17,482,056
C Operating Costs	DISTRIBUTION				
	Central level				
	Fuel & oil, Dar es Salaam	113,224	117,467	148,577	186,293

Access to Essential Medicines: Tanzania, 2001

		Financial Year			
		1996/7	1997/8	1998/9	1999/2000
	Vehicle repair & maintenance	36,259	116,861	166,326	126,523
	Workshop consumables	8,669	10,704	13,701	17,009
	Travel & per diem, Dar es Salaam	53,134	42,532	41,084	59,017
	Air freight - drugs/medical supplies	-	191,297	2,294	1,707
	Air freight - vaccines	-	22,710	20,950	20,662
	Hired vehicles/ships	1,542	102,624	80,688	62,579
	Other central distribution costs	2,160	35,090	24,353	14,422
	Total Central Level	214,988	639,285	497,973	488,211
Zonal level	Fuel & oil, zonal stores	77,916	81,412	97,153	93,078
	Vehicle repair & maintenance, zones	70,082	56,660	107,570	51,168
	Travel & per diem, zones	20,778	19,283	33,224	32,922
	Other zonal distribution costs	1,573	5,974	7,251	9,041
	Total Zonal Level	170,350	163,329	245,197	186,209
Packing Costs	Packing material	-	-	118,345	62,402
	Strapping & sealing	-	-	14,348	32,079
	Plastic tapes, labels, misc.	-	-	776	80
	Vaccine cold boxes	-	-	-	6,234
	Packing contractors (local kits)	-	-	2,753	9,284
	Total Packing Costs	59,286	22,367	136,223	110,079
	Total Distribution Costs	444,623	824,981	879,393	784,500
PERSONNEL					
	Salaries permanent staff	513,541	549,189	606,505	619,185
	Staff gratuity	74,918	103,414	110,820	108,144
	National Pension Fund (NPF)	38,608	45,903	55,447	53,312
	Temporary staff	5,839	12,711	10,988	14,815
	Lunch allowance (note: overtime)	21,506	27,663	41,968	47,065

Annex D: Additional Data Tables

	Financial Year			
	1996/7	1997/8	1998/9	1999/2000
Leave travel	26,226	13,200	34,517	32,329
Medical	32,161	68,802	80,813	66,967
Staff welfare	4,563	3,147	5,098	3,802
Staff incentive	12,779	13,735	17,342	17,827
Other personnel costs	9,068	9,529	22,328	6,995
Total Personnel Costs	739,208	847,293	985,826	970,442
TRAINING AND RECRUITMENT				
Overseas training	(6,116)	10,837	25,767	6,872
Local training	7,330	12,934	13,279	16,490
Recruiting costs	1,167	1,891	1,881	4,929
Total Training and Recruitment	2,382	25,662	40,928	28,291
SALES AND MARKETING				
Catalogues	5,888	8,182	4,932	6,069
Travel	438	-	26	-
Advertising & publicity	9,797	15,247	29,526	14,193
Representation & promotion	89	1,165	2,704	1,440
Other marketing costs	5,083	2,946	2,753	106
Total Sales and Marketing Costs	21,295	27,539	39,941	21,808
SERVICES AND UTILITIES				
Electricity	27,527	57,793	73,986	75,121
Water	1,976	2,108	2,342	2,657
Telephone & fax	42,913	69,869	63,879	72,486
Postage & courier	10,728	17,615	16,682	13,862

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	Financial Year			
	1996/7	1997/8	1998/9	1999/2000
E-mail & Internet	-	-	574	2,997
Rent	5,445	40,835	58,391	97,638
Security	23,663	18,048	63,322	68,492
Fuel for generators	1,473	17,979	13,625	21,833
Fuel for incinerator	-	-	-	7,781
Incinerator maintenance	-	-	-	9,432
Storage pallets	-	-	59,637	18,065
EPI materials/equipment	-	24,733	16,939	13,060
Total Services and Utilities	113,725	248,980	369,377	403,424
OFFICE AND GENERAL				
Stationery & office supplies	45,260	52,622	42,331	31,947
Computer supplies and services	23,738	26,931	27,588	30,105
Professional services - other	5,199	10,062	16,182	13,898
Office general	4,867	11,372	8,391	3,883
Insurance	94,431	60,735	75,534	34,746
Bank charges	13,710	16,202	14,345	10,682
Office equipment	3,273	3,743	4,881	1,292
Per diems	12,161	8,691	9,323	28,777
Travel	12,700	15,129	9,947	21,722
Office vehicles and fuel	19,754	39,548	35,379	33,562
Building repair and maintenance	26,864	24,371	59,095	74,833
Approach road repair and maintenance	-	-	-	89,704
Office vehicle repair and maintenance	28,130	19,145	23,978	31,225
Equipment repairs and maintenance	20,299	34,587	26,969	30,787
Total Office and General	310,387	323,137	353,944	437,163

Annex D: Additional Data Tables

		Financial Year			
		1996/7	1997/8	1998/9	1999/2000
Total Operating Costs		1,631,619	2,297,592	2,669,408	2,645,628
D	General Expenses				
	BOARD OF TRUSTEES (BOT)				
	Board meetings			12,578	13,479
	Board trustees travel			4,710	6,723
	Total BOT	5,777	4,338	17,288	20,202
	DEPRECIATION				
	Buildings			56,226	68,013
	Vehicles			250,768	266,101
	Furniture, fixtures, equipment			104,178	155,830
	Total Depreciation	329,770	363,903	411,173	489,945
Total General Expenses		335,546	368,241	428,461	510,147
E	Shortage Costs				
	Lost sales	0	0	0	3,129,288
	Emergency purchases	0	0	0	0
Total Shortage Costs		0	0	0	3,129,288
F	Other Extraordinary Costs			254,269	42,048
G	Total Variable Costs	38,687,007	41,514,932	42,674,826	38,837,842

Table D-3. MSD Gross Working Capital (Cash + Avg Inv + Sales + Other Income)

	1996/7	1997/8	1998/9	1999/2000
Cash (revenue reserves)	10,605,875,059	10,669,578,314	11,567,406,312	13,492,828,562
Avg. Inventory	8,711,329,659	6,105,480,164	6,098,732,272	5,774,970,218
Sales	11,849,802,291	13,451,164,841	15,284,523,457	14,020,609,191
Other income	490,924,761	361,570,476	452,109,767	542,405,484
Total financial income	348,725,267	440,118,789	21,835,365,495	20,337,984,893
Exchange differences	143,566,740	145,743,519	583,588,261	859,706,871
Gain/(Loss) on disposal of assets	30,674,000	(6,874,367)	12,715,788	-
Gross Working Capital	32,180,897,777	31,166,781,736	55,834,441,352	55,028,505,219
Net Working Capital (Gross Working Capital – Accounts Payable)				
Creditors (from balance sheets)	26,673,559	137,967,391	136,308,934	199,153,593
Capitalization creditor (balance sheets)			2,158,405,416	-
Net Working Capital	32,154,224,218	31,028,814,345	53,539,727,002	54,829,351,626
Current Liabilities as a % of Net Working Capital	2%	3%	8%	13%
Current liabilities (includes creditors)	625,902,319	930,366,248	4,077,524,352	6,902,647,820

Annex D: Additional Data Tables

Table D-4. Comparison of Cost Analysis: JD Pharmacy, Diocare and MSD

		JD Pharmacy FY Ended 12/99	Diocare FY Ended 12/00	MSD FY 1999/00
	Sales	1,402,854,718	820,193,831	
Gross Margin/Profit	Gross Profit	165,536,858	277,438,088	2,244,811,221
Gross Margin/Profit as a % of Sales		11.80%	33.83%	16.01%
Net Result	Before Tax	43,255,066	94,879,230	1,982,194,393
Net Result as a % of Sales		3.08%	11.57%	14.14%
Acid Test (Current Assets – Closing Stock/Current Liabilities)		0.6	0.4	4
	Current Assets (CA)	294,366,526	255,972,490	32,802,460,981
	Stock	159,754,100	148,451,350	4,814,236,512
	CA – Stocks	134,612,426	107,521,140	27,988,224,469
	Current Liabilities	232,517,427	282,250,803	6,902,647,820
Stock Turn (COGS/Avg Stock)		12.23	2.33	2.04
Number of days to turn over stock		30	157	179
	Average Stocks	101,204,094	233,159,791	5,774,970,218
	COGS	1,237,317,860	542,755,743	11,775,797,970
Distribution Costs as a % of Total Operating Costs		na	na	30%

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	JD Pharmacy FY Ended 12/99	Diocare FY Ended 12/00	MSD FY 1999/00
Personnel Costs as a % of Op. Costs	na	na	37%
Operating Costs			2,121,793,575
Distribution Costs as a % of Sales	na	na	4.49%
Personnel Costs as a % of Sales	na	na	5.55%
Sales	1,402,854,718	820,193,831	14,020,609,191
Distribution Costs	na	na	629,169,180
Personnel Costs	na	na	778,294,357
Return on Investment (ROI) (Net profit: Total Assets)	48.1%	24.3%	5.5%
Fixed Assets			3,575,966,543
Current Assets			32,802,460,981
Total Assets	89,865,105	389,899,947	36,378,427,524
Net Result	Before Tax	43,255,066	94,879,230
			2,015,917,277
Ratio of Sales: Total Assets	15.61	2.10	0.39
(Note: Is a measure of how hard an organization is able to work its assets, i.e., how well does it generate sales from assets.)			

Table D-5. District Level (Non-MSD) Cost Analysis

Total Number of Districts	Distribution Districts	District	Km/Month	Number of Routes	Nights Out
1	1	Arumeru	1,307	8	
2	2	Arusha Municipal	314	2	
3	3	Arusha RHQ	2,202	4	5
4	4	Babati	1,286	5	
5		Hanang			
6	5	Karatu	1,752	4	
7	6	Kiteto	1,486	2	
8	7	Mbulu	591	4	
9	8	Monduli	1,844	7	2
10	9	Ngorogoro	2,653	5	3
11	10	Simanjero	806	2	
12	11	Bagamoyo	2,839	7	3
13	12	Coast RHQ	1,039	6	1
14	13	Kibaha	345	3	
15	14	Kisarawe	152	1	
16	15	Mafia	241	2	
17	16	Mkuranga	276	1	
18	17	Rufji	1,830	6	1
19		Dodoma Municipal			
20		Dodoma RHQ			
21	18	Dodoma Rural	4,675	13	6
22		Kondoa			
23		Kongwa			
24	19	Mpwapwa	1,753	6	3
25		Iringa Municipal			
26	20	Iringa RHQ	2,946	5	2
27	21	Iringa Rural	2,757	9	5
28	22	Ludewa	1,739	7	4
29	23	Makete	2,240	6	3
30	24	Mufindi	2,229	8	
31	25	Njombe	2,431	12	
32	26	Hai	1,805	10	
33	27	Kilimanjaro RHQ	732	4	
34		Moshi Municipal		1	
35		Moshi Rural			
36	28	Mwanga	1,367	12	
37	29	Rombo	420	4	
38	30	Same	980	5	

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Total Number of Districts	Distribution Districts	District	Km/Month	Number of Routes	Nights Out
39	31	Kasulu	3,746	11	
40	32	Kibondo	1,554	9	
41	33	Kigoma RHQ	596	1	1
42	34	Kigoma Rural & Urban	2,127	8	
43	35	Kilwa	2,717	11	1
44		Lindi RHQ			
45	36	Lindi Rural	2,042	7	2
46	37	Liwale	983	4	
47	38	Nachingwea	920	2	
48	39	Ruangwa	660	3	
49	40	Bunda	594	3	
50		Mara RHQ			
51	41	Musoma Rural & Urban	478	2	
52	42	Serengeti	1,860	7	
53	43	Tarime	2,247	9	
54	44	Chunya	1,409	4	1
55	45	Ileje	2,231	13	1
56	46	Kyela	579	6	2
57	47	Mbarali	1,350	6	
58		Mbeya Municipal			
59		Mbeya RHQ			
60	48	Mbeya Rural & Urban	1,918	11	
61	49	Mbozi	891	3	1
62	50	Rungwe	2,486	12	
63	51	Kilombero	979	4	4
64	52	Kilosa	4,216	13	2
65		Morogoro Municipal			
66		Morogoro RHQ			
67	53	Morogoro Rural	2,732	9	1
68	54	Ulanga	1,517	5	3
69	55	Tandahimba	938	5	
70	56	Masasi	361	2	
71	57	Mtwara RHQ	1,005	3	
72	58	Mtwara Rural & Urban	1,352	9	1
73	59	Newala	938	4	
74	60	Geita	2,336	10	2
75	61	Kwimba	1,079	6	
76	62	Magu	1,823	10	
77	63	Missungwi	1,093	6	

Annex D: Additional Data Tables

Total Number of Districts	Distribution Districts	District	Km/Month	Number of Routes	Nights Out
78	64	Mwanza Municipal	432	6	
79	65	Mwanza RHQ	1,020	3	1
80	66	Sengerema	1,636	10	
81	67	Ukerewe	901	7	
82	68	Mpanda	2,553	9	3
83	69	Nkansi	483	8	3
84	70	Rukwa RHQ	754	2	1
85	71	Sumbawanga Rural & Urban	3,742	13	
86	72	Mbinga	2,113	10	6
87	73	Ruvuma RHQ	760	2	1
88	74	Songea Rural & Urban	4,118	12	7
89	75	Tunduru	2,323	12	
90	76	Bariadi	2,062	9	
91	77	Bukombe	500	2	
92	78	Kahama	1,226	7	
93	79	Maswa	1,787	7	
94	80	Meatu	782	5	
95	81	Shinyanga RHQ	1,512	5	
96	82	Shinyanga Rural & Urban	2,467	10	
97	83	Iramba	2,219	9	
98	84	Manyoni	1,456	7	2
99		Singida RHQ			
100	85	Singida Rural & Urban	1,564	10	2
101	86	Igunga	3,243	9	3
102	87	Nzega	1,775	8	
103	88	Sikonge	2,683	7	4
104		Tabora Municipal			
105		Tabora RHQ			
106	89	Tabora Rural	1,914	5	1
107	90	Urambo	653	2	
108	91	Handeni	1,911	7	4
109	92	Korogwe	1,764	9	1
110	93	Lushoto	2,248	7	2
111	94	Muheza	1,639	8	3
112	95	Pangani	1,493	4	2
113	96	Tanga Municipal	871	4	
114	97	Tanga RHQ	1,012	6	
		Total per month	156,410	630	106

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Total Number of Districts	Distribution Districts	District	Km/Month	Number of Routes	Nights Out
		Total annual	1,876,920	7,560	1,272
		Number of districts with distribution activities	81		
		Number of regions with distribution activities	16		
		Annual average for all districts & regions	19,350		
		Annual total for districts	1,529,976		
		Annual total for regions	346,944		
		Average annual/district	18,889		
		Average annual/region	21,684		

District Level Distribution Costs (Non-MSD)

Item	Km/Liter	Unit Cost	Number of Units	Total Cost
Fuel	7.5	690	250,256	172,676,640
Daily Subsistence Allowance (DSA)		20,000	1,272	25,440,000
1/2 DSA (Extra Duty)		10,000	7,560	75,600,000
Maintenance		156	1,876,920	292,799,520
Total District Distribution Cost				566,516,160

Notes on Cost Items

1. DSA at 20,000 TZS/day is paid for each night out.

2. DSA at 10,000 TZS/day is paid for each route regardless of whether there is an overnight stay or not.

3. One person (the driver) goes with the kits and supplies being distributed.

Source: Mike Dahlgaard, Senior Financial Adviser, Health Sector Programme Support (Danida), Ministry of Health, Tanzania.

Table D-6. MSD BALANCE SHEETS 1996–2000 (TZS)

(as at end of FY, June 30)

	1996/7	1997/8	1998/9	1999/2000
Fixed Assets				
Buildings	963,736,589	1,864,758,494	2,219,864,989	2,521,327,188
Vehicles	573,152,886	471,754,744	489,415,833	668,761,809
Fixtures, fittings, and equipment	129,314,903	214,859,466	447,134,925	385,877,546
Total fixed assets	1,666,204,378	2,551,372,704	3,156,415,747	3,575,966,543
Current Assets				
Stocks medical	6,749,199,708	5,461,760,619	6,735,703,924	4,814,236,512
Stock other	3,380,500	52,553,513	40,533,909	31,947,116
Goods in transit	2,391,648,795	2,212,879,959	1,287,599,097	313,802,530
Debtors	350,887,671	2,474,873,833	736,484,164	656,861,307
Prepayments and deposits	42,276,786	35,663,298	55,491,071	56,871,664
Deferred customer credit*	4,616,516,000	5,176,336,000	5,252,020,000	4,691,144,617
Cash and bank	9,704,648,426	8,701,128,988	14,053,441,865	22,237,597,235
Total current assets	23,858,557,886	24,115,196,210	28,161,274,030	32,802,460,981
Current liabilities				
Creditors	26,673,559	137,967,391	136,308,934	199,153,593
Capitalization creditor			2,158,405,416	-
Customer deposits	491,258,783	723,976,636	1,538,324,472	6,431,700,828
Accruals and provisions	107,969,977	68,422,221	244,485,530	271,793,399
Total current liabilities	625,902,319	930,366,248	4,077,524,352	6,902,647,820
Net current assets	23,232,655,567	23,184,829,962	24,083,749,678	25,899,813,161
Net assets	24,898,859,945	25,736,202,666	27,240,165,425	29,475,779,704
Financed by:				
Capital	5,000,000	5,000,000	5,000,000	5,000,000
Capital fund (fixed assets)	1,021,909,475	1,740,388,995	2,346,527,756	2,656,719,786
Revenue reserves	10,605,875,059	10,669,578,314	11,567,406,312	13,492,828,562
New working capital	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000
Donor grants	11,266,075,411	11,321,235,357	11,321,231,357	11,321,231,357
Total financed by:	24,898,859,945	25,736,202,666	27,240,165,425	29,475,779,705

*Deferred customer credit is the MOH revolving credit.

Table D-7. MSD BALANCE SHEETS 1996–2000 (USD)

(as at end of FY, June 30)

	1996/7	1997/8	1998/9	1999/2000
Exchange rate as of June 30:	625	660	730	802
Fixed assets				
Buildings	2,983,614	3,363,432	3,453,873	—
Vehicles	754,808	741,539	916,112	—
Fixtures, fittings, and equipment	343,775	677,477	528,599	—
Total fixed assets	4,082,196	4,782,448	4,898,584	—
Current assets				
Stocks medical	8,738,817	10,205,612	6,594,845	—
Stock other	84,086	61,415	43,763	—
Goods in transit	3,540,608	1,950,908	429,866	—
Debtors	3,959,798	1,115,885	899,810	—
Prepayments and deposits	57,061	84,077	77,906	—
Deferred customer credit	8,282,138	7,957,606	6,426,226	—
Cash and bank	13,921,806	21,293,094	30,462,462	—
Total current assets	38,584,314	42,668,597	44,934,878	—
Current liabilities				
Creditors	220,748	206,529	272,813	—
Capitalization creditor*	-	3,270,311	-	—
Customer deposits	1,158,363	2,330,795	8,810,549	—
Accruals and provisions	109,476	370,433	372,320	—
Total current liabilities	1,488,586	6,178,067	9,455,682	—
Net current assets	37,095,728	36,490,530	35,479,196	-
Net assets	41,177,924	41,272,978	40,377,780	-
Financed by:				
Capital	8,000	7,576	6,849	—
Capital fund (fixed assets)	2,784,622	3,555,345	3,639,342	—
Revenue reserves	17,071,325	17,526,373	18,483,327	—
New working capital	3,200,000	3,030,303	2,739,726	—
Donor grants	18,113,977	17,153,381	15,508,536	—
Total financed by:	41,177,924	41,272,978	40,377,780	—

*Deferred customer credit is the MOH revolving credit.