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DRUG SECTOR OVERVIEW

Republic of YEMEN

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LIST OF ABBREVIATIONS

ADG	Assistant Director General
BNF	British National Formulary
CHW	Community Health Worker
CIF	Cost in Freight
CMS	Central Medical Store
CSA	Contractual Service Agreement (WHO contract)
DAP	Action Programme on Essential Drugs, WHO
DG	Director General
DGPMS	Director General of Pharmacy and Medical Supplies
DPMS	Department of Pharmacy and Medical Supplies
DRA	Drug Regulatory Authority
EDL	Essential Drugs List
EDP	Essential Drugs Programme
EMRO	Eastern Mediterranean Regional Office, WHO
EPI	Expanded Programme on Immunization
FP	Family Planning
GM	General Manager
GMP	Good Manufacturing Practices
GP	General Practice
GTZ	German bilateral aid agency
HED	Health Education Department
HC	Health Centre
HQ	Head Quarters
HU	Health Unit
HW	Health Worker
ICS	Inventory Control System
IDC	International Development and Cooperation
IEC	Information, Education and Communication
INRUD	International Network for Rational Use of Drugs
IV	Intra Venous
MCH	Mother & Child Care
MO	Ministry of
MOF	Ministry of Finance
MOH	Ministry of Health
MOPH	Ministry of Public Health (as MOH)
MSF	Médecins sans Frontières (NGO)
NDP	National Drug Policy
NGO	Non Governmental Organization
NLED	National List of Essential Drugs
NPC	National Programme Coordinator
OPD	Outpatient Department
ORS	Oral Rehydration Salts
OTC	Over The Counter
PDRY	People's Democratic Republic of Yemen (before unification)
PHC	Primary Health Care
PHCW	Primary Health Care Worker
PlanOp	Plan of Operation
PTS	Prophylactic, Diagnostic and Therapeutic Substances (EMRO unit)
QC	Quality Control
RA	Regional Adviser (EMRO)
ROY	Republic of Yemen
RUD	Rational Use of Drugs

SBDMA	Supreme Board of Drugs and Medical Appliances
SSA	Special Services Agreement (WHO contract)
STC	Short-term Consultant
STD	Sexually transmitted disease
SWEDIS	Swedish Drug Information System
TST	Training and Supervision Team
WR	WHO representative
YAR	Yemen Arab Republic (before Unification)
YEDCO	Yemen Drug Corporation (local manufacturer)
YR	Yemeni Riyal

DRUG SECTOR OVERVIEW

1. INTRODUCTION

The former Yemen Arab Republic (YAR) and the People's Democratic Republic of Yemen (PDRY) united on 22nd May 1990 to form the Republic of Yemen (ROY).

In both countries essential drugs programmes had been running before unity; since 1984 in the PDRY supported by WHO, and since 1987 in the YAR supported by WHO in collaboration with the Dutch Government.

The problems of joining two different systems, along with the Gulf War, budget constraints, currency instability, and a provisional government awaiting elections, have led to a degree of paralysis in the public sector.

There was no successful procurement of drugs in 1989 and 1990. This has starved the public sector of drugs for the last two years. The 1991 procurement was only partly successful. It lost 20% of its value as it was not completed until January 1992. To avoid this difficulty the 1992 procurement was being channelled through WHO. However the foreign currency was not available, and local tender in Riyals is the most likely outcome.

At the same time the private sector has increased dramatically, with many new pharmacies opening throughout the country. The regulation of the private sector is such that the volume of smuggled goods in pharmacies is high (perhaps 50 % of stock). This leads to great problems of quality assurance.

It is this situation that has to be addressed by the action plan for the years 1993-96.

1.1 Estimation of Size of Pharmaceutical Sector

	CIF	Retail
Private sector (in millions of dollars US)		
YEDCO manufacture (figures from YEDCO DG for 1992)	15	19.5 *
Legal imports via SBDMA of 27 agents for 1991: (figures from SBDMA report for 1991)	25.7	41.1 +
Legal Imports from Aden:	15	24
National Drug Corporation of Aden imports:	est. 3	4.5
Smuggled goods @ 30% therefore:	est. 29.4	44.6
Total private sector	**88.1**	**133.7**
(* Yedco add 30% for wholesale and retail) (+ add 60% for costs wholesale and retail, this is ex factory plus 21% taxes plus 10% for wholesaler profit and plus 20$ for retailer profit.)		
Public Sector		
German Donation (1992)		2
Dutch Donation (1992)		3.5
Tender for 1991 arrived 1992		
MOPH		12
Military		2
Al Thawra Hospital		3
Ministry of Interior		0.5
EPI Supplies (Unicef health project officer):		1
Total Public Sector		24
TOTAL DRUG SECTOR		**157.7**

(This does not include Family Planning, Medical Equipment, TB drugs).

With the assumption that 60% of the population has no access to health care (Unicef report 1992, The situation of children and women in the Republic of Yemen), then this represents an annual cost of $32.8 per person (assuming a population of 12 million). It means that if average family size is six people then average family expenditure on medicine is $197.

2. NATIONAL DRUG POLICY

There are many elements of a national drug policy in action. For example there is an Essential Drugs List (EDL) which is largely used for registration. There are import policies, registration procedures, pricing recommendations, quality control laboratories, drug lists for health units and health centres. However there are no guidelines on generic prescribing and the EDL and treatment schedules are not widely available. Also there has not yet been a formal national drug policy accepted in Yemen.

There was a workshop at the end of December 1992 to draw up the outline of a National Drug Policy. This outline was submitted to the planning department of the MOH to incorporate into their National Health Policy, which they plan to submit to the Ministerial Council for approval before the election process starts (mid February 1993).

There is a plan for a final drafting and advocacy workshop of a complete National Drug Policy during June 1993. A first draft was made at the December workshop. This draft is currently being reviewed and will be submitted to the proposed June Workshop.

2.1 Essential Drugs List

There is currently an essential drugs list from the Taiz workshop of 1991. This is in effect the unification of the EDLs of the YAR and the PDRY. This list is EDL ROY Ist edition 1991 and contains 347 preparations. However this has never been finalized, copied or distributed. The list being used by the SBDMA is the old YAR 1989 list with PDRY additions. It has 269 substances from the 1989 list from the YAR (not 471 as quoted in the evaluation report), with an extra 45 substances from the PDRY EDL (making 314 substances), in 101 preparations (making 370 preparations). The WHO RA/PTS is now in possession of all these lists, and is in the process of rationalizing them.

The EDL for Health Units being used for the Dutch Emergency Relief Programme, is different in the old YAR to the old PDRY. The reason for this is that many health workers in HUs in the old PDRY are Medical Assistants with three years of training, whereas in former YAR the health workers have one year of training. However many Health Units in the former PDRY are actually staffed by "Practical Nurses" who have also only had one year of training. Therefore an improved information system is needed to know staffing of health units all over the country. For the lists see Appendix A. The Health Centre list is now the same and is included in Appendix B.

The content of the lists for health facilities meets with some objections from the PHC division. In particular the lack of paediatric syrups is noted. The lack of cotrimoxazole at health centre level also seems an oversight. Future lists for Health Units in Yemen can address these problems.

For the last two years these lists have been largely theoretical, as there has been a gross drug shortage. Therefore anything that could be found was used.

3. QUALITY ASSURANCE

3.1 Legislation

Drug legislation and health legislation are scarce. The following have some bearing and show the range of relevant legislation.

** **The National Political, Economic, Financial and Administrative Reform Programme 15/12/91:** "The human being's right to life axiomatically implies the right to medical services; that is the protection of his body from sickness and disease and from environmental calamities". It states that the achievement of self sufficiency of medical supplies and drugs is a long term aim. Also it refers to:

- The observance of the national list of essential drugs and the initiation of its implementation in 1992.
- Allocation of funds necessary to meet the requirements of hospitals, health centres and units, and the implementation of a strict system of drug disbursement based on:
  - provision of drugs and medical supplies to the emergency services of hospitals, health centres and units;
  - provision of drugs to in-patients and the end of free drugs to out patients;
  - organization by means of a health card the free issue of drugs to limited income patients suffering from chronic and incurable diseases;
  - preclusion of employees of the SBDMA from similar employment in the private sector.

** **Government Decree no 255 of 14/8/91**, "export drug order" states that "only drugs on the essential drugs list and drugs prescribed for inpatients and chronic outpatient cases will be issued free of charge. Non essential drugs and supplies will have to be purchased by patients from pharmacies".

The Public Health Law has been in draft form since 1990. It states among other objectives that the government should "make health development an integral part of total national development", and should "guarantee full physical, mental and social fitness of every citizen as a right protected by society for which the government has to make all necessary provisions".

** **Medical Practice Law (Law no 32 of 1992)** allows for private practice of all practitioners. It does not address medical ethics and medical conduct.

** **Supreme Board Law** is in draft form and proposes to legislate for the SBDMA being responsible for the organization, supervision, registration, licensing, inspection, and control of importation and pricing of all drugs and medical supplies, throughout the country. At the moment the SBDMA has no authority in Aden. It is also charged with the supervision of local drug production. It also prohibits government officials from engaging in wholesale importation and trade of drugs and medical supplies. This board is to be directed by the Supreme Council of Drugs chaired by the Minister of Health.

** **Decentralization Law**: (Law of local administration) passed in 1991 commits the government to a decentralization of planning, budgeting and financial control to governorate level. The main enactment of this so far is that governorate and specialist hospitals have been given a budget of 150,000 YR a month each to procure emergency drugs and medical supplies. It is planned that after the elections in April 1993 governorate level elections will take place.

Legislation within the ROY is therefore incomplete at this time, and needs considerable attention.

3.2 Registration

The registration process is the responsibility of the SBDMA. They register preparations, companies and agents. One year ago there were 545 generic names and 758 pharmaceutical formulations registered (SBDMA 16/12/91). As of November 1992, 35 agents, and 3889 products were registered. There is now a list available of trade names and generic names of these products. It is said that in any one year 1140 to 1160 products are imported. Having been registered, each of these needs a licence.

The registration system itself demands European quality documentation, perhaps precluding the generic inexpensive producers. Company information, certification of origin, certification of analysis, methods of analysis and twelve samples are needed before registration.

There are two pharmacists trained to use the Swedis system for registration of drugs. A Swedis/DRA 3.2 (drug info system 07-55) programme was brought from Aden. However there is a secret password to open the system which is unknown. A local programmer has started a system using DBase 3 plus. At this stage not much progress has been made.

There is no system of deregistration of products. WHO consultant, Dr Leo Offerhaus, in 1990, was unable to give technical advice on the list as it only included trade names. Now information on generic names is available and has been submitted to WHO in December 1992.

In Aden importers need a licence from the Aden branch of the Ministry of Trade, adequate stores checked by the inspection department of pharmaceutical services, and a requirement that the drug be on the EDL. There is no registration law as such.

3.3 Smuggled Drugs

The delays and difficulties for agents in gaining registration and licence, and the possibility of tax evasion, make smuggling a more attractive alternative.

Estimates of the volume of smuggled goods in pharmacies varies. In Shebwa Governorate, Behan District, the district council (local heads of department) and police checked private pharmacies: they found that 70% of drugs were smuggled, 20% had no price printed on drugs, and the remaining 10% were imported legally by agent but their price had changed. Pharmacists and agents spoken to in Sana'a estimated that between 50 and 80% of drugs were smuggled. Smuggled goods are outside any system of quality assurance.

3.4 Inspection

There are three organizations for inspection.

Firstly, the SBDMA has an inspection department consisting of three people placed in Sana'a. Hudeidah and Taiz. They are responsible for inspecting imports for correct packaging and labelling and licensing. Any products of which they are suspicious can be sent to the QC laboratory for inspection.

Secondly, the directorate of pharmaceutical services and medical supplies has two inspectors under the department of pharmaceutical services. These two pharmacists have the job of inspecting all the pharmacies and drug stores (currently more than 1300 stores in ROY), as well as CMS stores in Sana'a. If they find something wrong they can refer the drug to the QC laboratory or bring in the police to prosecute. Very few preparations have been passed to the QC laboratory, prosecutions often fail. No systematic sampling from CMS stores is done.

Thirdly there is an inspectorate department in Aden under the department of medical supplies. This department oversees the QC laboratory in Aden. They systematically look at CMS supplies and refer often to the QC laboratory.

3.5 Good Manufacturing Practices (GMP)

There is one drug manufacturer in Yemen called YEDCO. It is 51% public owned and has a share capital of 64 million Riyals. This year it is manufacturing 15 million dollars worth of drugs and importing 15 million dollars more. 58 different drugs are manufactured. They are currently not producing generic drugs although they are quite willing to do so. Most of the drugs are from the EDL, but not all. They produce 2 million sachets of ORS using materials from UNICEF. They sell one million and give one million to UNICEF. Manufacturing was established in 1983, although they have been importing since 1964. They have ten branches for distribution, 12 public pharmacies and their own distribution system. They are about to open an IV fluid plant to produce 6 million litres a year.

The GMP code operating in Yemen is that of Jordan. The SBDMA have the power to close manufacturers not adhering to it. No regular inspection currently occurs.

Four other manufacturers (and perhaps many more) are due to start production within a year or two (two in Sana'a, one in Taiz and one in Aden).

3.6 Quality Control

The Quality Control Laboratory in Sana'a has been operational since 25th May 1991. The staff comprises six pharmacists, and four pharmacy assistants. They have the capability of physico-chemical inspection. To date they cannot perform microbiological or pyrogen tests. There is a plan to send pharmacists to Tunis to learn these techniques. The microbiological equipment has already been purchased, but not yet set up.

The majority of the work of the QC laboratory in Sana'a is checking new drugs for registration. In theory they check drugs sent from CMS inspectors from the pharmaceutical directorate, as well as imported drugs for the private sector checked by SBDMA inspectors. In practice the two pharmaceutical department inspectors do not systematically check CMS supplies, and there is in effect little contact between CMS and the QC laboratory. The laboratory is under the control of the SBDMA. The record keeping makes it difficult to trace the number of preparations tested.

The QC laboratory in Aden is under the Inspection Department of the Pharmacy division. It has three pharmacists and two assistants. They also can only do physico-chemical testing. The record keeping here as well makes it difficult to follow the workload.

The inspection department checks all drugs entering the CMS at Aden and sends those of suspicious quality to the laboratory. This system provides good contact between CMS and the QC laboratory in Aden.

4. FINANCE

4.1 Ministry of Health Budget Preparation

The Ministries of Health, Finance, Planning, and the Civil Service, all take part in the budget process.

This starts in April, with letters from the other three Ministries to the MOH. In these letters the overall limitations which must apply, as well as goals to be achieved, are stated.

The MOH sends memoranda to Governorate Medical Directors, large health facilities and HQ directed programmes, with budget forms to be filled in. No training or directives are included in this process on how to fill in these forms.

The forms are to be completed by June. If they are not completed by the Governorates, the Finance department of the MOH does them.

The budget is finalized in October to December with high level meetings between the four ministries.

It is then discussed by the Council of Ministers and the President's Council before being submitted to the Legislature in December/January. The budget is published at the end of January. Copies are not sent to the governorates and four to five copies are sent to senior MOH officials. Therefore many Governorates assume that the budget passed is the same as the one they submitted.

4.1.1 Hard Currency

Any item needing hard currency is controlled directly by the MOF.

Even with an allocation made, separate justification to spend must be sought before cheques will be signed. This justification to spend can take anything from three weeks to three months to obtain.

4.1.2 Decentralization

Budgetary decentralization has not proceeded very far and a number of laws need to be passed before it does.

4.1.3 Consequence for Procurement

The budgetary process agrees a certain budget for the procurement of drugs, but this still needs authorization by the MOF. It then needs justification to spend by the MOF, and also an allocation of foreign currency by the Central Bank. This complicated process has resulted in a failure of procurement in 1989, 1990, and 1992.

4.1.4 Consequence for Clearance

The demurrage costs that result due to slow clearance need authorization by the MOF which leads to delay and higher demurrage costs and further delays. At the moment clearance is awaited of seven containers that arrived on 8 and 9 August 1992 (five months before the visit reported here).

4.2 The Finances of the Supreme Board for Drugs and Medical Appliances (SBDMA)

The SBDMA now has 50 people working for it. This is an increase of 38 over the last two years. They have a budget allocation from the MOH which increases by 10 to 15% a year in spite of a 48% inflation rate.

Since the 1970s the SBDMA has levied a one percent charge on the import of drugs in the private sector. Originally this levy was taken with an idea of compensating agents for unforeseen fluctuations of currency. However as early as 1978 it was realized that this was not practical. The 1% continued to be levied.

The money is kept in a Central Bank Account which is earning about 5% interest. The current balance is in excess of YR 60 million.

Decisions on how to spend the money are made by the Board. Checks on its expenditure are made by the Board accounts department, and the regulations of the MOF.

Expenditure is as follows:

The senior staff of the SBDMA who do not have a private practice receive a compensation of perhaps 200% of their salary.

The staff of the QC laboratory receive a 100% bonus on their salary as well as overtime if they work in the afternoon (currently three people).

All staff of the SBDMA receive a compensation of 50% of their salary.

Members of the Board and members of the Technical Committee receive compensation for attendance at meetings.

The QC laboratory receives some money for essential equipment, such as furnishing.

The publication of SBDMA reports and the essential drugs list is covered by these funds.

Any new project such as opening branches of the SBDMA in Aden and Mukhalla, and starting an information centre, will come from these funds.

The MOF is currently laying claim to the capital fund and the SBDMA considering different options to spend it; e.g. by building a manufacturing plant.

4.3 Charging for Drugs in Public Health Facilities

Until now, medicines have been theoretically provided free of charge in health units, health centres and district hospitals. But with present shortages of pharmaceuticals and equipment, in practice the patient has had to buy almost everything from the nearest pharmacy. This includes both in-patients and out-patients.

It is now government policy to charge for medicines in certain circumstances to raise money (The National Political, Economic, Financial and Administrative Reform Programme 15/12/91: see legislation section 3.1). However this has not yet been enacted as it is seen as impolitic before elections. The precise intentions as to who should pay for what is not yet clear. There is some talk of out patient pharmacies being privatized, and some talk about them becoming cooperatives. Much should be clarified in the coming year.

There is one problem in legislation, however, because legally all money collected has to go to central funds in the MOF. This therefore is not seen to contribute to the local supply of medicine. There are various organizations interested in initiating cost recovery schemes, but

they will not do so until the law allows funds raised locally to be used locally. These organizations include: UNICEF, who has already sent a Bamako Initiative consultant to visit earlier this year; the Dutch Urban Primary Health Care Project in Hudeidah; the Dutch PHC project in Dhamaar; the German GTZ project in Amran; the Swedish, Radda Barnen PHC project in Taiz; and the ICD organization based in Sana'a.

Certain hospitals such as Al Thawra in Sana'a and the hospital in Hudeidah have been charging fees for some time.

4.4 Pricing

There are official prices set by the SBDMA for all legally imported products. The system is complicated. With an unstable currency and three levels of exchange rate, price fixing is very difficult and leads to many problems. The official rates of exchange are 12 Riyals to the dollar for tourist transactions, and 18 Riyals to the dollar for commercial transactions. The official purchases through the central bank are negotiated at these rates. The agreed budget for 1992 was $ 50 million for drugs. This was comprised of drugs on the essential drugs list and was distributed as follows:

Public Health	US$ 12.0m
MO Defence	US$ 4.5m
MO Interior	US$ 0.5m
Revolution Hospital	US$ 2.0m
Raw materials YEDCO	US$ 12.0m
Private	US$ 13.0m
National Drug Corporation of Aden	US$ 5.0m
Reserves for emergency	US$ 1.0m

However to date the Central Bank has released only $800,000 for YEDCO and $2 million to the National Drug Corporation of Aden (18 November 1992). It has now been decided that no foreign currency will be released for 1992. Therefore the Prime Minister has asked the MOF to release the money in Riyals so that drugs can be bought on the local market. This comes to 70 million YR for the public sector (8 December 1992).

All other licensed drugs bought legally are bought at the black market exchange rate, which is currently about 40 Riyals to the dollar. For the purpose of price fixing the rate allowed by the SBDMA is this black market rate minus 15%. This 15% is taken off for a "donation to the people" according to the GM of the SBDMA, but it is seen by the agents as a penalty against the bonuses that drug producers give to agents. This then is a third rate of about 31 Riyals to the dollar.

All smuggled goods are bought at the black market rate.

The prices are fixed by cost price ex factory (at whichever rate is allowed) plus 21% for costs and various taxes, plus 10% as profit margin for wholesalers, plus 20% for profit for retailers. This means ex factory plus 60% for the public. The price from neighbouring countries is also taken into account. The fixed price used to be fixed on manufacture and packaging, but is now fixed on arrival. There are however considerable delays from arrival to distribution.

5. SUPPLY

5.1 Quantification

The last quantification exercise was done in 1989. This was based on a previous exercise in the PDRY. Quantification can only be done at the moment by special survey, as the health information system is not reliable. There is currently a project from the planning department to improve this and start a single unified health information system for all health units in the country.

5.2 Procurement

The 1991 procurement process started in October 1990 and took 15 months. This was the first successful procurement for three years. It involved about 14 separate committee stages.

Because this process finished in January 1992, the budget for 1991 was terminated, cancelling the end of the tender (about 20%). Even though the budget is approved, it is very complicated to get it transferred to the Central Bank. When it is transferred, hard currency is often not available.

The 1992 procurement was attempted through WHO EMRO. The agreed budget was $12 million for the public sector (see section 3.3). However the foreign currency has not been found by Government, so the process has failed. The balance of the agreed budget, after the value of donations have been subtracted is 70 million Riyals. The Prime Minister has requested that this be made available in order to buy drugs on the local market. This will be a lot more expensive than international tender. The current black market rate is 40 Riyals to the dollar. This makes the 70 million Riyals worth $1.7 million as opposed to the $3.9 million at the official rate of 18 to the dollar. This is to be compared with the $12 million agreed budget and the proposed $8.5 million (which is $12 million minus the Dutch and German donations).

The procedure needs simplification, and the purchasing department needs to have the necessary office equipment and budget to maintain it (fax, computer, printer, telex, photocopier, stationery, secretarial help, etc). There also needs to be a mechanism for guaranteeing foreign exchange by the government for an agreed budget.

5.3 Clearance

Clearance for imported drugs is performed from the Directorate of Planning (Sana'a) Clearance Department. This means that when a consignment is shipped, the shipping documents go to the Central Bank for endorsement, and then to the pharmaceutical department, who submit them to the planning department. They then start their procedure for custom tax exemption papers. When the consignment arrives the clearance staff are notified and they visit the place (eg Hudeidah) where they arrange the clearance. They then often have to return to the MOF Sana'a, to arrange the money for warehousing. The first 48 hours is free, thereafter there is a daily charge. Therefore the longer the delay the greater the cost. The clearance department has a budget of 150,000 Riyals per month. It also has to arrange transport through the transport department.

In Aden clearance is done by the Department of Pharmaceutical Supply. Transport is also arranged through this department. For drugs for the public sector papers are now needed from Sana'a MOF customs department to allow duty free import.

5.4 Storage and Distribution

Tenders are prepared for three destinations (Sana'a, Aden and Hadhramaut). Each of these places has a CMS, staff and handling equipment. From these stores orders from relevant health facilities are received, prepared and despatched.

5.4.1 CMS Sana'a

Sana'a stores occupy the whole of the ground floor of the MOH in Sana'a. The stores (used since 1987) are of large capacity. The receiving and despatching areas occupy the same space, so some reorganization is necessary. Office space is provided inside the stores at the far end. These were built with the idea that despatch would be at the end where the office space was. However the situation changed when a separate entrance to the Ministry was needed, which stopped trucks using that end. As a result the offices remain unused and the staff use desks situated at the entrance of the stores.

The coding system in the store has changed to that used in Aden, and is as follows:

01 Injections, 02 Vaccines, 03 Tablets, 04 Dangerous drugs, 05 Drugs and pharmaceutical preparations, 06 Inflammables, 07 Dressings. These are then further classified by "L" meaning limited to hospital or specialist facility.

The inventory system was changed from a ledger system to a card index system two years ago. However the cards ran out eight months ago and the ledger system has restarted. Plans for a computer inventory system are being made, but not until the card index is well established. The filing system for invoices, shipping documents, issuing forms and so forth is somewhat confused as some of these documents go to Planning for clearance, and some go to CMS.

Staff at CMS are as follows: Manager, Deputy Manager, and staff for: Reception, Despatch, Infusion and Vaccine, Tablets and Capsules, Chemicals and preparations and cold store (the cold store has no electricity, but it is being installed), Dressings and rubber goods, Narcotics. There is no store keeper for surgical equipment. This store needs attention.

There is a store for flammable items some distance away from CMS.

5.4.2 Other Stores in Sana'a

Within CMS are three other stores, run by a different part of the MOH. Two are for EPI: one for vaccines and one for equipment. The other is for PHC. This means that drug kits for health units are stored here if available, as is equipment for health units. The distribution of drug kits for health units is the responsibility of PHC not CMS. MCH equipment and family planning supplies may also be stored here.

5.4.3 Distribution from Sana'a

Sana'a stores are responsible for supplying the twelve northern governorates. There is a distribution list for each governorate. The plan is to distribute every three months, but there are many intermediate requests. The orders are often inflated as frequently only 25% is filled. The check is the number of beds at the facilities. Each health facility with a pharmacist sends requisition forms to the Governorate Director of

Pharmacy on set dates at three monthly intervals. The needs of health facilities without pharmacists are estimated by the Governorate Pharmacist. The forms ran out some time ago, so that the orders are often hand written. The Governorate Pharmacist collects these forms and sends them to the CMS. He then supervises the collection of the orders and the distribution to the governorate facilities.

There are five lorries, five smaller trucks, and 45 destinations from CMS. The vehicles are under the transport department of the directorate of finance, and may be used for all MOH activity.

Drug kits for health units are distributed by the PHC Department separately. For the last 12 - 20 months there has been a shortage of kits, which has meant that most health units have received virtually no drugs. Within governorates there is a desire to unify PHC and medical supply under one system. This needs MOH approval.

5.4.4 Governorate Stores

Each governorate should have its own medical store, and there is an existing World Bank project to build these where lacking. However some of these stores are still unbuilt, and are presently underequipped in shelves and handling equipment. For example Hajjia procured the land for a store three years ago, but currently there is no activity. Their inventory control is by different systems, and the coding does not correspond to the CMS. Other stores such as Lahej are complete but due to mistakes in design and lack of running budget are still barely working.

Much of the bulk drugs are transported directly from CMS to the health facilities. Therefore in practice the governorate stores are used for epidemic drugs and special drugs such as praziquantel or chloroquine for endemic problems in particular localities. Drug kits for health units, if present, may also be stored there.

Transport within governorates is the responsibility of the governorate health office. Many offices are short of vehicles and budgets to run them. The system is often privatized. This means a local taxi or transport firm is commissioned to move the supplies.

5.4.5 Aden Stores

Aden stores are responsible for distribution to Aden, Abeyan, Lahej, Shebwa and Al Mahra Governorates. The stores organization is unchanged from before unification. Some maintenance to the ceiling, air conditioning, cold store and handling equipment is needed. The inventory control is run by an old Phillips Data machine used since 1983. The card index system has been transferred to it. A new computer has been purchased but the Swedis inventory programme has not yet been installed.

The staff in the store are 4 pharmacists (Director, Assistant, Inspectors outgoing, direct supply), 4 Technical Assistants as storekeepers, 3 computer people, and 3 secretaries.

The Essential Drugs Programme ran a prepacking unit for drug kits for health units. This has now fallen into disuse and disrepair.

5.4.6 Distribution from Aden

Distribution is organized by set dates for receiving three monthly orders and set dates for despatch. All health facilities prepare their own requirements on special forms, which are sent to Aden via the governorate office. These orders are distributed directly to the health facilities from Aden. CMS delivers to 48 places in 5 governorates. Twenty of these destinations are in Aden and 30% of all deliveries are to one hospital in Aden.

Aden, Abeyan, Lahej, Shebwa and Al Mahra Governorates are divided into districts with district health infrastructure. In practice all health units are supervised by the district health office or district hospital or health centre. This means that drugs have continued to be supplied from central stocks to the health units during the failure of the kit supply for the last 12 to 20 months. (In the governorates with no district infrastructure, and with the supply to health units the responsibility of the PHC department, the failure of the kit supply means that drugs have completely failed to reach the periphery.)

Every governorate medical supplies officer has to arrange transport to collect drugs from CMS.

5.4.7 Al Mukhalla (Hadhramaut) Stores

A medical store in Al Mukhalla (Hadhramaut) also exists. Tenders are directly imported there for Hadhramaut governorate. There is a new store, built by the World Bank, near the airport, capable of handling enough supplies for two governorates. It is used for bulk storage. The old store at the governorate health office is still used for direct issue. They are well kept, and use a card index system. The cards are printed locally. The stores supply the whole governorate and some of Shebwa and Al Mahra.

These stores run their own transport consisting of two lorries and one pick-up. They replaced one lorry themselves via friends in Saudi Arabia. The maintenance budget for all cars and for all hospitals is the same as in 1986. Since 1986 they have received three years of indent.

5.4.8 Hudeidah Stores

There is a recently built store in Hudeidah, large enough to act as a regional store for Hudeidah, Hajjia and Al Mahwit. This apparently was the plan when the store was built. However up until now, stores landed in Hudeidah are transported to CMS Sana'a and then back to Hudeidah. The air-conditioning is not working, and the stores do not look well maintained.

There are five pharmacists working in Hudeidah Medical Supplies Department. The record keeping system is an old card index system (different to Sana'a), using cards printed ten years ago. Deliveries are monthly or three monthly to all HCs and hospitals, using a taxi service.

5.4.9 Role of Chief Pharmacist in each Governorate

In each Governorate there is a director of medical supplies who is responsible for receiving the drug orders from the health facilities, passing them onto CMS, arranging collection and delivery to the health institutions. For health facilities without pharmacists the director is responsible for needs assessment. The governorate stores also have a supply of epidemic drugs to distribute as needed.

6. RATIONAL USE OF DRUGS

There is little systematic evidence about whether drugs are used rationally in Yemen.

The calculated size of the drug market indicates that prescriptions are much more expensive than necessary (see introduction). The average individual is paying in the order of $33 US a year instead of the $1.5 US calculated by WHO as necessary.

Anecdotal evidence suggests there is much polypharmacy and over expensive prescribing. In Shebwa a prescription for a seven year old boy with bloody diarrhoea contained 10 items, including two different formulations of the same antibiotic. People report prescription costs being of the order of 1000 Riyals.

There are in excess of 1300 pharmacies and drug shops in Yemen. All drugs can be bought over the counter. Frequently there is no qualified pharmacist available in the shops. Recent legislation, not yet enacted, attempts to address this situation by only allowing pharmacists to have licences for pharmacies. There is no prospective legislation on over the counter drugs.

6.1 Therapeutic Guidelines

A scheme for initiating National Therapeutic Guidelines aimed at general practitioner doctors in district hospitals, was discussed by Dr Offerhaus in March 1990, and proposed at the Taiz workshop in June 1991. Progress has been slow, but six contributors have now almost finished their first draft. Once completed a process of editing, harmonization and consensus has to take place. (For the current state of progress see Appendix C.)

6.2 Standard Treatment Schedules for Health Units and Centres

No treatment schedules are currently in use in health centres and health units. There was a photocopied schedule used in the former PDRY, but this has fallen into disuse.

There are also in-patient treatment guidelines written by the Dutch project in Dhamaar a few years ago. These have also fallen into disuse, but someone remembered that there was a copy in a cupboard.

Copies are now therefore available for further work.

6.3 Prescribers and their Supervision

6.3.1 Doctors

Doctors working in Yemen have been trained in a great variety of places including Bulgaria, Czechoslovakia, Djibouti, Egypt, France, the former GDR, Great Britain, Rumania, Russia, Saudi Arabia, Tunisia. This means that a number of different prescribing norms have been learnt.

This is similarly the case for pharmacists, who are responsible for a great deal of prescribing in the private sector.

There is no prescribing newsletter for doctors and pharmacists, and no agreed therapeutic guidelines.

Internal hospital audit was encountered once at Mukhulla hospital. Here the pharmacists and doctors used to meet every three to six months to discuss prescriptions over that time. However this practice ceased two years ago when the director went on study leave.

6.3.2 Pharmacists in MOPH Pharmacy Division

There are some 40 pharmacists in the MOPH with greatly differing levels of understanding on the concepts of essential drugs and rational prescribing.

6.3.3 Health Workers in Health Centres

Staffing at health centres varies. Many health centres have 20 beds and have doctors on their staff. However it is not a popular posting for a doctor, so often the post is vacant. In this case medical assistants are the most senior prescribers. There is no supervision of prescribing at this level, although the 1989 evaluation of the PDRY found copies of all prescriptions kept. So prescribing supervision was possible.

6.3.4 Health Workers in Health Units

(a) Health Workers in Northern Governorates

These health workers have had a year of training. Ideally there is a male concentrating more on the curative aspects, and a female concentrating on MCH and EPI. In fact there is a shortage of women workers.

In theory health workers are supervised by training health centres, and supervisors visit every health unit monthly. However in practice this is rarely the case as there have been no drugs and no fuel, and the supervisors have lacked motivation. In these governorates there is no district health infrastructure, therefore the supervision is based at governorate level, or sector level in some governorates.

For example in Hudeidah there are 102 health units. The supervision is from the Governorate Centre, but in four clusters. However there have been no drugs for more than a year and the supervision has been curtailed. The two rural health units visited had no relations now with their training health centre. Their only contact was their monthly visit to Hudeidah for salaries.

Hajjia is now divided into six zones, and each zone is developing its infrastructure, so that each will have supervisors, a vehicle, and drug supplies. This was decided in a recent workshop, and one of its main motivations was poor supervision of health workers.

Successful and regular supervision usually only occur where externally funded projects are in operation. The visits are usually carried out by a trainer/supervisor who may be a medical assistant, nurse midwife, administrator or sanitation person. They use a formal checklist and reporting format. However this varies from area to area. Therefore the supervisors have sufficient status to supervise prescribing habits, although at the moment there is no supervision of prescribing. Several times the same response was given, that "the health unit prescriber would obviously prescribe what they had been taught to give when training".

The records kept at the health units involve a register of patients visited, with age, sex, condition and treatment. However the column for treatment is only about 3 cms wide. Therefore abbreviated versions of two names is the maximum that space will allow, so doses and additional drugs are not recorded.

The situation in these Governorates varies widely. One of the main variations is the input of foreign projects. Supervision is often better where these projects, budgets and motivations exist. There seems to be an increasing trend for projects to think on Governorate level (eg UNICEF, the Dutch, the GTZ, USAID, Swedish Save the Children, and IDC).

(b) Health Workers in Health Units in Aden, Shebwa, Lahej, Abeyan, Hadhramaut and Al Mahra

The situation in these Governorates differs somewhat, as they have district level health infrastructures. It has often been said that the qualifications of the health unit worker are higher in these governorates, as they have been trained as medical assistants over three years. However most of the health units visited were staffed by "practical nurses" who had a year of training. This is very similar to those people in the other Governorates.

In addition however there are 880 trained health guides. These are volunteer workers who have received three months training and who work at a more local level. The three months training consisted of a week of theory and three weeks practical each month. It was intended to follow up with further training by Training and Supervision Teams (TSTs). These teams would be composed of MCH/FP, EPI, and a Health Inspector. Five TSTs to be based in HQ, seven in District hospitals, and 15 in Health Centres. However they have not functioned for 2.5 years. In practice therefore the health guides have become defunct.

No kits for health units have been received for 12 to 20 months. But some drugs have come to Hus via the district system.

The health unit supervision is based on the district. Thus the 25 health units in Dhala district of Lahej were supervised by a district team of five supervisors (Malaria. EPI, MCH, nursing, and a medical assistant). The health units are visited every two months or so, but again prescribing is not addressed. However in Abeyan Governorate, Lhauda district, a health unit had no supervisory visit for more than six months. In Behan district of Shebwa, the 10 health units receive drugs from the district hospital. They are supervised, but less regularly than before when MSF were paying for fuel and supplying a car. Health workers, when asked, said that the supervisory visits were useful.

6.3.5 Role of the EDP Aden in Training

In previous years there was an active training programme by the EDP for rational prescribing for health workers. However this has lapsed in the last two years. Eight training sessions were budgeted for during 1992. To date none have taken place, although two are planned for December.

6.4 Educational Establishments

6.4.1 Faculty of Medicine, Sana'a

The Faculty of Medicine trains both doctors and pharmacists. The first graduates of pharmacy will finish this year. The class has about 40 students. The faculty is upgrading its capabilities to include the Arab Board for Medical Specialties.

The Dean and the new Professor of Pharmacology are keen to implement an integrated programme for rational prescribing.

6.4.2 Institute of Medicine, Aden

The Institute trains doctors, but not pharmacists. They currently have about 600 students, with 70 in the final year. They plan to start a 48 hour course in clinical pharmacology over three terms with 96 hours of practical work. The Pharmacology Department staff is comprised of three pharmacists and two physicians.

They have had an STC from WHO to advise on a programme in Clinical Pharmacology for medical students to include the concepts of essential drugs and rational prescribing. This has not yet been fully implemented. The present professor at Sana'a was the same person who was the STC in Aden.

6.4.3 The Institute of Health, Sana'a

There are actually six Institutes in Taiz, Hudeidah, Hajjia, Dhamar, Ibb, and Sana'a for training nurses. They have now given up the practical nurse training of one year, and only give three year courses. The intake is taken from pupils who have completed nine years of schooling.

Medical assistant training is only done in Sana'a. For this the entrant needs 12 years of schooling. Pharmacy technician training, midwifery, health inspector, X-ray and laboratory technicians, are also trained here.

For training in prescribing they have visiting lecturers. They also have one doctor for teaching about communicable diseases. They train 42 medical assistants per year. The curriculum is flexible: prescribing comes in two parts of the syllabus:
a) pharmacology and b) in each segment of the course; in a) the content is easy to control, but in b) it is more difficult as invited specialists do the training.

6.4.4 Institute of Health Manpower, Aden

They now run bachelor courses in Community Health and Nursing. They also train medical assistants, practical nurses, medical technicians, public health inspectors, and nutritionists. They take 350 students a year who have completed 12 years of schooling.

The Pharmacy Department has two pharmacists and three technicians. Pharmacists from the hospital, and occasionally the director of the EDP also come and teach.

6.5 The Public

Public demand is often blamed for prescribers giving so many drugs. However with inflation and the reduced circumstance of many Yemenis, the idea has been expressed more than once that the public now want the drugs that are most essential. Therefore it is a good time to take up this issue.

The health education sector is active in Yemen, with high quality television and radio productions, as well as a developing structure at governorate level to work through many different channels including schools and mosques. However, to date, the issue of rational use of drugs has not been addressed.

7. OPERATIONAL RESEARCH

Currently very little information is available as to prescribing practices in private clinics and pharmacies. Similarly little information is available concerning the public sector.

Community attitudes to disease causes and treatment, to visiting health units and health centres, or to visiting private practices have been little researched. To date no IEC activities have been undertaken concerning the use of drugs.

A baseline study on availability and rational use of drugs was undertaken in 1988. This has not been repeated since. A new study based on the INRUD/WHO indicators is overdue. However due to the appalling supply of drugs for the last two years, and the imminent improvement, it is felt that the study would be more meaningful in a few months time.

Research on methods of cost sharing and effect on patient use has not yet been undertaken anywhere.

8. MANAGEMENT

Many different departments in the MOH are involved in the management structure of issues concerning pharmaceuticals. The following explains the functions of the different groups:

8.1 Structure of Departments involved in Pharmaceuticals

MOPH: (Each sector has an Under Secretary).

(A) Sector of Public and Medical Services (Sana'a)

Directorate of Pharmaceutical Service and Medical Supplies

Responsible for medical purchasing, quantification, storage of drugs and medical appliances, and distribution of drugs to some health centres and hospitals in northern Governorates. There are separate departments of Medical Supplies, Medical Purchasing, and Pharmaceutical Services (Inspection, Licences for private pharmacies).

Directorate of Public Health (Sana'a)

(a) Primary Health Care Department: responsible for supply of drugs to health units and some health centres. Storage of PHC equipment.Training and supervising PHC workers.

(b) EPI Department: responsible for vaccination distribution, with own store, training and supervision

(c) MCH and Family Planning Department: responsible for distribution of contraceptives, with own store, training and supervision

(B) Sector of Finance and Administration

Directorate of Finance (Sana'a)

(a) Under-Secretary, for permission for all activity involving medium funds.

(b) Director General of Finance for permission for all activity involving small funds.

(c) Purchasing department for non medical supplies.

(d) Stores department, for storing non medical supply, including stationery, hospital furniture, sheets etc.

(c) Transport department, for providing all types of transport.

(C) Sector for Health Development and Planning

Directorate of Planning, (Sana'a)

(a) Clearance department, for clearance of all imported drugs for public sector.

(b) International cooperation department, for mediating all development aid including drugs and medical appliances.

(c) Planning department, for budget for hospital and health centre furniture and equipment.

(D) Sector for Aden Branch of MOH

Directorate of Pharmaceutical Service and Medical Supplies

(a) Department of Medical Supplies: responsible for quantification, storage of drugs and medical appliances, and distribution of drugs to all health facilities in southern Governorates (except Hadhramaut, which have own stores and supply), inspection and quality control of all drugs public and private arriving in Aden. Clearance of drugs and medical appliances.

(b) Department of EDP responsible for quantification for Health Units, prepacking kits for Health Units (now lapsed), training and supervision of health workers.

Directorate of Public Health (Aden)

(a) Primary Health Care Department: orders for PHC equipment and medical supplies, submitted to CMS, training and supervising PHC workers.

(b) EPI Department: responsible for vaccination distribution, with own store, training and supervision.

(c) MCH and Family Planning Department: responsible for distribution of contraceptives, with own store, training and supervision.

Directorate of Finance (Aden)

Responsible for providing money and fuel for activity of CMS.

Supreme Board of Drugs and Medical Appliances: (SBDMA)

This is directly under the Minister of Health, and is responsible for all registration of drug products, companies and agents, licensing of all imports, and running the quality control laboratory in Sana'a. It is therefore responsible for supervision, control and planning. It consists of a committee chaired by the Minister, with a DG, and various key academic and hospital physicians. There is a technical committee that meets every week to discuss registrations, and a permanent staff of a DG, import section, statistic section and registration section. There is a draft law to extend the activity to the whole country. Currently in Aden, private sector drug registration does not exist.

The SBDMA has its own inspectorate department which has one inspector in Hudeidah, Taiz and Sana'a to inspect imports.

At present in Aden importers need a licence from the Aden branch of the Ministry of Trade, adequate stores checked by the Inspection Department of Pharmaceuticals, and the drug must be on the EDL.

8.2. Management Structure

The theoretical structure of the EDP for Yemen is well described in sections 7.2.1 and 7.2.2 of the evaluation report and is quoted here directly .

8.2.1 Steering Committee

The Steering Committee was established in 1985, with the following tasks:

(1) To develop, implement, monitor and evaluate the EDP.

(2) To coordinate activities of the partners involved (PHC Department, Pharmacy and Medical Supplies Department, Supreme Board of Drugs and Medical Appliances (SBDMA), WHO and any other relevant organization.

(3) To prepare, follow-up and implement a National Drug Policy (NDP).

(4) To plan and coordinate the work of national and international consultants.

(5) To coordinate training activities within the EDP.

The Steering Committee consisted of various departments involved in aspects of the Plan of Operation. The PHC department was responsible for distribution of kits and training HW's. The SBDMA was responsible for drug registration and drug control. The first NPC was also head of SBDMA. Later NPCs were appointed from other departments. The Pharmacy and Medical Supplies department of the MOH was responsible for Central Medical Stores (CMS). In addition the WHO representative was a member of the committee.

The Steering Committee was scheduled to meet every three months, but met irregularly. The team found references to meetings in 1986, January and March 1990. In August 1990 the NPC and EMRO agreed that the NPC would inform EMRO as early as possible of action regarding the badly functioning Steering Committee. In December 1990 it was agreed that Dr Sallami would convene a new Steering Committee, consisting of the Directors General of CMS, Public Health, SBDMA and the WHO representative. This new Steering Committee has never been convened.

The mission concludes that management of the Programme through the Steering Committee did not function very well. Some possible explanations might be as follows.

(1) The various departments involved acted as competitors rather than partners.

(2) There were differences of opinion about the essential drugs concept and policy between the partners.

(3) Although originally the PHC Department had been given responsibility for the drug kit distribution, this was later taken over by CMS, which operates under the Pharmacy and Medical Supplies Department.

(4) The Steering Committee was dependent on the NPC for organizing meetings; however, the NPC function moved twice to another person and department, with substantial gaps in between.

(5) The NPC represents one of the partners. When he has differences of opinion with some of the members he may be reluctant to call a meeting.

8.2.2 National Programme Coordinator

The terms of reference of the National Programme Coordinator (NPC) were:

(1) To develop, implement, monitor and evaluate the Programme as described in the 1987 plan of operations (PlanOp).

(2) To assist the Department of Pharmacy and Medical Supplies in procurement of essential drugs.

(3) To follow up the reorganization of CMS.

(4) To advise on and coordinate storage and distribution of drug kits to PHC Units.

(5) To advise on and coordinate the staff training programme on storage and distribution.

(6) To advise on and coordinate the establishment of the Drug Quality Control Laboratory (QCL).

(7) To advise on and coordinate the Rational Use of Drugs (RUD) training programme, in close collaboration with the PHC Department and national training institutes.

(8) To coordinate the work of national and international consultants.

(9) To prepare and submit six-monthly reports.

(10) To participate in six-monthly meetings with the WHO/EMRO regional adviser.

In policy matters the NPC reported to the Minister of Health, in technical matters to the WHO/EMRO regional adviser dealing with essential drugs, and in financial/administrative matters to the local WHO representative.

The NPC was not given a salary on the EDP budget. The PlanOp proposed to give the job to an existing MOH official who would appointed by WHO after proposals by the Minister of Health. WHO offered a Special Services Agreement (SSA), first of US$ 500, then of US$ 700 per month on top of the existing MOH salary. When this was later deemed to be contrary to WHO regulations by WHO's Office of the Legal Counsel, it was changed to a Contractual Services Agreement (CSA) for activities beyond the normal daily functions. The CSA equals currently about US$ 1,000 per month.

There have been three National Programme Coordinators (NPCs) in the four years of the project:

1987 - 1988/12	Dr Akabat, DG, SBDMA
1989/1 - 1989/3	vacancy
1989/4 - 1990/9	Mr Farah, Medical Supplies Department
1990/9 - 1991/3	vacancy
1991/4 - 1992/3	Dr A. Sallami, DG, PMS
1992/3 - present	vacant

The sudden transfer of Dr Akabat in December 1988 interrupted the project work for quite some time. The Regional Adviser and Technical Officer of WHO/EMRO went to Sana'a to clarify matters with the Ministry of Health in March 1989. Mr Farah, the second NPC, was appointed in April 1989. Unfortunately, he did not have a great deal of experience in such work and his English language abilities were modest. Mr Farah's contract ended September 1990. In August 1989 WHO appointed an STC (Dr Sallami, formerly Assistant Deputy Minister of Health in PDRY) to assist the NPC. However, in May 1990 unification intervened, which meant that according to WHO rules Dr Sallami could not remain to work as a STC in his own country and his contract was ended. Between September 1990 and April 1991 the project had no NPC. In April 1991 Dr Sallami, then Director General, Pharmacy and Medical Supplies in the (United) Republic of Yemen, was appointed as NPC.

In agreement with the PlanOp no long-term local staff or expatriate adviser was appointed. The project was run by local MOH staff, assisted by regular STC's sent by WHO.

The team concludes that the project has suffered from weak coordination in the years 1989 and 1990. The frequent changes and long vacancy periods have had an important negative effect on the project. The NPCs, who have to combine their coordinating role with their own MOH activities, were overburdened with work, especially in the short working day in Yemen. The team in principle accepts the idea that the NPC should

be an existing senior professional in the MOH, as this gives him authority to execute the programme, but he should be assisted by one or more full-time EDP staff in order to make the project work.

Recommendations: The Steering Committee should not be limited to ex-officio members, but should also include some health professional and academics who think in a positive and enthusiastic way about the ED concept.

The secretariat of the Steering Committee should be entrusted to an independent party, e.g. the WHO representative or WHO project adviser.

The appointment of long-term staff and/or a long-term WHO adviser should be considered in a next phase of the project.

8.2.3 Recent Developments

Since the above was written, Dr Sallami has resigned, and no programme coordinator has been appointed. There is a new DG of Pharmacy and Medical Supplies. A technical officer in EMRO devotes 50% of her time to the programme in Yemen. Only a small part of the 1992 budget has been spent.

8.3 Other Constraints

8.3.1 General Activity

To achieve any activity, a great number of different departments have to be involved. Thus the organizing of the most minor activities takes a great deal of time.

8.3.2 Budget for Running Costs and Maintenance

In all parts of the public sector, there is inadequate provision for running costs. Even where provision has been made, to gain access to the money demands permission from the Finance department and the Ministry of Finance. This is often difficult.

8.3.3 Staff Motivation and Interest in Private Practice

It is difficult to interest staff to be mobile, to work at the periphery, or work long hours, as the salaries are low and private practice is seen as necessary to maintain an adequate income.

8.4 Conclusions on Management of Programme

It is apparent that the structure until now has not been optimal. To resolve these difficulties, major attention has to be paid to the planning of future management structures, as without this lasting success is unlikely.

APPENDIX A

Essential Drugs List for Health Unit Kits for the former YAR
(For 1000 patients)

	Quantity
Acetyl salicylic acid tab 300mg	5000
Aluminium Hydroxide 500 mg tab.	2000
Aminophylline 200 mg tab.	100
Atropine 0.6 mg tab	100
Chlorhexidine 5% sol	1 botl
Cotrimoxazole 480 mg tab.	1000
Ferrous salt 60 mg fe base	10000
folic acid 1 mg tab	2000
Gentian violet 25 g	1 pck
Hydrocortisone 1% oint	5 tbs
Mebendazole 100 mg tab	100
Metronidazole 100 mg tab	500
Multivitamin tab.	1000
Noscapine 15 mg tab	500
Oral Rehydration Salts	200
Paracetamol tab. 500mg	1000
Phenoxymethyl Penicillin 125mg/5ml susp	40 botls
Phenoxymethyl Penicillin 250 mg tab.	2000
Promthazine 25 mg tab.	100
Promthazine 5mg/5ml syrup	6 botls
Senna 7.5mg Tab.	100
Tetracycline eye ointment 1%	9 tubs
Bandage 7.5x10m 10 rolls	4 pck
Cotton 500g	4 rolls
Elastoplast 7.5 cm x 5 m	16
Envelopes for tablets	1000

The list for Health Units in the former PDRY is as follows:
(For 1000 patients)

	Quantity
Acetyl salicylic acid tab 300mg	2000
Aluminium Hydroxide 500 mg tab.	500
Aminophylline 200 mg tab	100
Anti haemorroid oint	2 tbs
Atropine 0.6 mg tab.	100
Chlorhexidine 5% sol	1 btl
Chloroquine 50mg/5ml base syr 1000ml.	1 botl
Chloroquine 150 mg base tab	100
Chlorpromazine 25 mg tab.	100
Cotrimoxazole 480 mg tab	500
Ergometrine 0.5 mg tab.	100
Ferrous salt +folic acid 60 mg .5mg	2000
Gentian violet 25 g	1 pck
Hydrocortisone 1% oint	10 tbs
Iodine tincture	10 btls
Lindane 1% cream	1 tb
Mebendazole 100 mg tab	100
Metronidazole 100 mg tab	1000
Multivitamin tab.	100
Noscapine 15 mg tab	1000
Paracetamol tab. 500mg	1000
Paraffin gauze 36 pc	1 pck
Phenoxymethyl Penicillin 125mg/5ml susp 100 mls.	10 btls
Phenoxymethyl Penicillin 250 mg tab.	1000
Procaine Benzyl Penicillin 3 MU	50
Promthazine 25 mg tab.	200
Promthazine 5mg/5ml syrup	1
Senna 7.5mg Tab.	100
Tetracycline eye ointment 1%	30 tbs
Water for injection 10 ml	50
Bandage 5x10 cm 10 rolls	1 pck
Cotton 500g	1
Disp Syringe with needle 2ml	100
Disp Syringe with needle 5ml	100
Elastoplast 2.5 cm x 5 m	10 rolls
Emergency suture set of 3 size	1 pck
Envelopes for tablets	1000
Gauze absorbent 90 cm	1 pck
Plain plastic bottle 60 ml	1

APPENDIX B

Health Centre Kit List of Essential Drugs
(for 4000 patients)

The list for health centres is now unified, and is contained in the proposed distribution plan for Dutch Emergency drugs. It is as follows:

	Quantity
Acetyl salicylic acid tab 300mg	5000
Adrenaline 1mg/ml 1 ml inj	60
Aluminium Hydroxide 500 mg tab.	3000
Aminophylline 25mg/ml 10 ml inj	190
Aminophylline 200 mg tab	2400
Ampicillin 250 mg caps	5000
Ampicillin 125 mg/5ml susp	47 btls
Anti haemorroid oint	57 tbs
Anti venom sera 10000 unit inj 10 ml	3
Atropine 1 mg/ml 1 ml inj	380
Atropine 1 mg tab.	1000
Benzoic Salicylic acid oint 40 gms	5
Chloroquine 50mg/5ml base syr 1000ml.	30 btls
Chloroquine 150 mg base tab	1000
Chlorpheniramine 4 mg tab	2000
Chlorpromazine 25 mg tab.	1000
Chlorpromazine 25 mg/ml 2 ml inj	20
Chlorpropamide 250 mg tab	600
Dextran 70 6% perf 500 mls	57
Diazepam 5 mg/ml 2 ml inj	280
Diazepam 5 mg tab	700
Digoxin 0.25 mg tab	700
Ergometrine 0.125 mg tab.	500
Ergometrine .5 mg/ml 1 ml inj	400
Ferrous salt 80 mg Fe tab	2000
Folic acid 1 mg tab	1000
Furosemide 40 mg tab	2000
Furosemide 10 mg/ml 2 ml inj	100
Gentian violet 25 g	5 pcks
Glucose 5% perf 500 mls	71
Glyceryl trinitrate 0.5 mg tab	100
Griseofulvin 125 mg tab	1000
Hydrochlorothiazide 50 mg tab	1000
Hydrocortisone 1% oint	24 tbs
Hydrocortisone sod succ 100 mg	50
Imipramine 25 mg tab	1000
Insulin soluble 40 u/ml 10 ml inj	24
Insulin Zinc 40 u/ml 10 ml inj	24
Iodine tincture	10 btls
Lidocain 1% inj 50 ml	5
Lidocain 4% inj 25 ml	2
Lindane 1% cream	1 tb

	Quantity
Mebendazole 100 mg tab	1200
Methyldopa 250 mg tab	1000
Metronidazole 100 mg tab	2000
Metronidazole 125 mg/5 ml susp	95
Multivitamin tab.	2000
Multivitamin drops 30 ml	19 btls
Noscapine 15 mg tab	1000
Oral Rehydration salts	335
Paracetamol tab. 500mg	1000
Pethidine 50 mg/ml inj	9
Phenobarbital 50 mg tab	200
Phenobarbital 100 mg tab	100
Phenoxymethyl Penicillin 125mg/5ml susp	200
Phenoxymethyl Penicillin 250 mg tab.	1000
Potassium permangenate powder	1 kg
Procaine Benzyl Penicillin 3 MU	850
Promethazine 25 mg tab.	1200
Promethazine 5mg/5ml syrup	47
Senna 7.5mg Tab.	1000
Sodium Chloride .9% perf, 500 mls	71
Tetracycline eye ointment 1% 5gm	97
Tetracycline 250 mg caps	1000
Water for injection 10 ml	4500

APPENDIX C

The Current State of Affairs with the Therapeutic Guidelines

The current state of affairs is as follows:
(* = contracted to write, ** = received)

1. Dr Abdulla Abdul Wali Nasher, Senior lecturer, Faculty of Medicine (surgery)

** Antimicrobial treatment in adults
** Antimicrobial prophylaxis in adults
** Antibiotic use in paediatrics
** Pain control
* Malignancies
* Normal laboratory values
* Diagnoses of common surgical emergencies

2. Dr Abdul Kader Mohamed El Guneid, Gastroenterologist, Al Thawrah Hospital, Taiz

** Hypertension
** Cardiac failure
** Diuretics
** Angina pectoris

3. Dr Ahmed Mulhi Al Shareef, Medicine, Algamhouri Hospital, Taiz

** Malaria
** Haematology and blood transfusion
** GI disease
** Protein energy malnutrition

4. Dr Abdul Malik Mohamed Abdulla, Gynaecologist (Private)

** STDs
** Oral contraceptives
** Drugs in pregnancy and lactation

5. Dr Abdul Rahman Ishak, Paediatrician, Faculty of Medicine, Sana'a

** Epilepsy
** Psychiatric disorders

6. Dr Abdul Wadood Al Absi, SBDMA

** Profiles of each drug on the essential drugs list
** Drugs for the elderly
** Drug interactions and incompatibility

And not yet allocated, but perhaps to be taken from the BNF.

ORS in children with diarrhoea
Treatment of common eye conditions
Treatment of common skin conditions
Poisoning
IV fluids
Immunization
Paediatric doses
Childhood diseases
Metric/imperial equivalents
Height/weight charts
TB
Leprosy
Bilharzia
Intestinal Helminths
Asthma
Diabetes Mellitus
Rheumatic Fever