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**STRENGTHENING THE MANAGEMENT  
OF PRIMARY HEALTH CARE  
AND OPPORTUNITIES  
FOR COST CONTAINMENT  
AND COST RECOVERY  
IN HODEIDA GOVERNATE**

**Republic of Yemen**

**8 January - 7 March 1992**



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**by**

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## TABLE OF CONTENTS

List of Tables	ii
Acronyms and Glossary	iii
Acknowledgements	iv
Executive Summary	v
Introduction	1
<b>PART I STRENGTHENING THE MANAGEMENT OF PRIMARY HEALTH CARE</b>	
1 Background	2
2 Discussion of Managerial and Financial Factors	2
3 Workshop	2
4 Follow-Up Activities to Improve PHC Management	3
a) Quality of Information	3
b) Use of Data	6
c) Distribution of Health Manpower	8
d) Supervision of Health Manpower	9
e) Clarification of Responsibilities and Authority	11
f) Transport	12
g) Supplies for Immunization	14
h) Management of Medical and PHC Supplies	17
i) Maintenance of Buildings and Equipment	18
j) Budget	19
5 Conclusion	20
<b>PART II OPPORTUNITIES FOR COST CONTAINMENT AND COST RECOVERY</b>	
1 Introduction	21
2 Background	21
3 Approach	22
4 Profile of Public Expenditure on Health in Hodeida Governorate	23
a) Structure of Financial Records	23
b) Sources of Funds	24
c) Management of Funds	24
d) Profile of Expenditure	25
e) Staff Costs	28
f) Distribution of Other Recurrent Costs between Services	28
g) Public Health Budgets and Expenditures	29
h) Suggestions for Strengthening Financial Management	33
5 Cost Recovery at al Thowra Hospital, Hodeida	34
a) Description of the Hospital and its Services	34
b) Hospital Services in 1991	35
c) Financial Profile	36
d) Suggestions for Improving the Financing of al Thowra Hospital	39
6 Cost Recovery at LCCD First Clinic, Hodeida	41
7 Concluding Remarks on Financial Management in the Health Sector	44
References	46
Appendices	47

## List of Tables

Table 1	Profile of Expenditure on Government Health Services during 1991 in Hodeida Governorate, excluding certain items	26
Table 2	Distribution of Personnel and Salary Costs between Four Groups	29
Table 3	Annual Expenditure 1991 on PHC Running Costs from Three Budgets: Health Centres, PHC Units and Itizaama Daulia	30
Table 4	Budgets for Public Health Funds within Hodeida Governorate	31
Table 5	Revenues Collected at al Thowra Hospital, Hodeida in 1991	36
Table 6	Expenditures from Special Clinics and from MoPH Funds	37
Table 7	Number of Patients and Procedures at LCCD First Clinic, Hodeida	42
Table 8	Some Expenses for the LCCD First Clinic, Hodeida, 1991	43

## Acronyms and Glossary

Aakil	local official
ACCS	Accelerated Cooperation for Child Survival
Awal	first
Bab	Category (in accounting); literally door
Band	Item (second level, after Bab, in accounting line items)
BOCD	British Organization for Community Development
CBR	Crude Birth Rate
DPT	Diphtheria, Pertussis and Tetanus vaccine
HC	Health Centre
HMI	Health Manpower Institute
HUP	Hodeida Urban Project
Iltizaama Daulia	International
Khaamis	fifth
LCCD	Local Council for Cooperation and Development
ltr	litre
Markazi	Central (used to describe centrally paid expenditure)
MCH	Maternal and Child Care
MD	Medical Doctor
MoPH	Ministry of Public Health
Mughtaribeen	Returnees
Mudeiria	District; new name for Nahia
Nahia	administrative unit; smaller than a Qada
Nahiaat	plural of Nahia
Nua'	Kind or Type (third level in line items, after Bab and Band)
OPD	Outpatient Department
OPV	Oral Polio Vaccine
PHC	Primary Health Care
PHCW	Primary Health Care Worker, now Health Facilitator Murshid (male) and Murshida (female)
Qada	administrative unit; smaller than a Governorate
Raabe'	fourth
REACH	Resources for Child Health
ROY	Republic of Yemen
Suq	market
TA	Technical Advisor (usually MD or nurse)
Ta'un	cooperation; used when referring to the LCCD
Thaalith	third
Thaani	second
Tihama	coastal plain between the mountains and the Red Sea
TPHCP	Tihama Primary Health Care Project
TT	Tetanus Toxoid
T/S	Trainer/Supervisor

## **Acknowledgements**

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## EXECUTIVE SUMMARY

This consultancy was conducted for REACH/Yemen (John Snow Inc.) as part of the Child Survival Project (ACCS), and covered two objectives:

- to follow up the findings and recommendations from the assessment of primary health care in Hodeida Governorate which was conducted by the same consultant in August 1991;
- to study the possibilities for cost recovery, using the experience of the afternoon clinics at al Thowra Hospital and the fee-for-service clinics run by the Local Council for Cooperation and Development (LCCD).

The follow-up of the assessment involved working with Hodeida Health Office staff to find solutions to the problems which were constraining the quality of PHC services in the Governorate. The discussions covered the underlying problems of resource constraints and inefficient use of available resources, and were therefore connected with the task of identifying all the resources available to the Health Office in order to establish a denominator for the cost recovery analysis. It became clear that there are substantial inefficiencies in the use of resources, some of which are outside the Health Office's control. Thus the activities to strengthen PHC management were closely connected with financial management and were conceptually linked to the cost recovery analysis outlined in the scope of work (see Appendix 1).

This report presents the findings and recommendations in two parts. The first part covers activities to strengthen the management of PHC. The second part covers expenditure, cost containment and cost recovery, both for government health services in Hodeida Governorate and for the two clinics which were identified for analysis.

**Strengthening the management of PHC:** A workshop was planned at which the findings and recommendations from the assessment would be discussed, and a plan of action for strengthening PHC developed. The consultant would provide assistance with the operational details of the plan after the workshop.

During the preparatory discussions with senior and mid-level managers about the problems which were hindering their work, some common themes were revealed:

- the lack of integration between departments in carrying out their various responsibilities,
- the quantity of resources (including personnel time) wasted through lack of coordination and absence of proper planning, and
- the level of effort spent on crisis management.

It became clear that if better coordination was to be achieved, the workshop should not be restricted to those directly responsible for public health, but that all of the department heads from the Health Office should attend.

To illustrate the need for interdepartmental coordination, the workshop participants were presented with five case studies (arising from the assessment) which showed the consequences of uncoordinated management upon the costs and coverage of PHC services. These case studies covered manpower distribution, supervision, the quality of data, the vehicle fleet, and the story of Butagas, which showed how immunization services have been affected by different departments' decisions. The participants were then invited to share the problems of their own departments and sections with the other participants, and work towards solving them. The working groups outlined proposals for addressing the identified problems, several of which will require action at the central level. (A report of the workshop's proceedings is attached in Appendix 3.)

The workshop met its objective of providing a forum for discussing how PHC services could be strengthened, but it went further than had originally been expected because this was the first time that heads of "administrative" departments (eg finance and manpower) were actively included in solving problems faced by the departments responsible for services and supplies.

After the workshop, immediate action was taken to follow up some of the recommendations.

- Better coordination began with a meeting at which the Statistics Section agreed to give the Public Health Department a monthly summary showing which reports have been received and which are still missing. The summary uses the lists of facilities compiled during the assessment.
- Coordination between three departments (Personnel, Public Health, and Planning & Statistics) was extended by revising the procedure linking receipt of reports to PHCWs' salary payments. The new procedure is still unsatisfactory in that the supervisor's input is excluded; the preferred option of the PHCWs' salary being paid from the supervising health centre cannot yet be implemented in all supervising health centres because some HC directors are not ready to accept the responsibility of managing payroll funds.
- Transportation was frequently mentioned as the main reason which prevents supervisors from visiting PHC Units, and delays the delivery of essential supplies. More than half of the budgets for public health/basic health services running costs are recorded as being spent on fuel, oil, maintenance and public transport. But this expenditure has not produced a transportation system that runs. A more cost effective use of transportation resources might be to use rented vehicles. We surveyed a small number of private drivers in Zaidia and found that some of them would charge less for taking the supervisors to all the PHC Units on the monthly schedule than the Health Office's present expenditure on driver's salary and fuel. The owner of the vehicle covers the maintenance costs and is not paid if the service is not provided. The report recommends further investigation of this alternative on a pilot basis, taking great care with the drivers' contracts.

- Greater cost-effectiveness in the distribution of health manpower could be achieved using explicit criteria when recruiting or assigning personnel. One of the case studies showed that per capita expenditure on staff varies by a factor of nine between the districts of Hodeida Governorate. This is the result of many decisions taken not only in the government health sector but also in the local community (eg whether to support PHCWs). Immediate benefit could be obtained by moving curative staff who have established themselves within a PHC Unit's catchment area to an unserved area, and by making sure that all staff at the 33 Curative Units carry out some basic primary health functions, especially registering births and providing immunization services.
  
- Reduce crisis management: Significant progress has been made on rationalizing and integrating EPI into Health Office activities since last August; the stores have been consolidated at one site, the EPI supervisors' salaries have been transferred to the Health Office, and the supply strategy now builds upon the Public Health Department's supervisory system. But the quantities of supplies obtained were only 75% of the amount that the EPI Supervisors estimated were needed. One necessary step in improving stock management is to get reliable estimates of the amount of supplies needed. Therefore we developed a Lotus spreadsheet which used explicit assumptions and logic for calculating supplies according to two systems: one is based on the population of each facility's catchment area, and the other is based on the number of days work required to cover the eligibles in that catchment area. Both systems indicate that Hodeida Governorate needs more vaccine than it is receiving at present.
  
- We also took steps to increase local involvement in planning by asking the health workers to provide basic information about their own catchment areas, using a format developed with the Public Health Department. The data can then be used for monitoring the coverage achieved by individual facilities. Such micro level monitoring is essential for effective supervision, but at present it is only being done within the Hodeida Urban Project.
  
- The workshop participants repeatedly emphasized the problems of chronic shortages of essential supplies. There is immediate potential for cost savings by sharing trips to collect and deliver supplies, but this depends on the supplies being issued by the central level, whose distribution of stocks should be according to known and rational criteria (such as number and type of facilities, and epidemiological need). In the future the waste of resources spent by transporting drugs from Hodeida Port to the central stores then back to Hodeida could be saved by doing as the Health Office has requested: that is, arranging for containers to be packed and labelled for specific governorates before shipment. The Health Office could improve efficiency by coordinating its logistics activities for different types of services (eg emergency drugs, PHC drugs, family planning supplies, ORS, EPI supplies), and by adopting standard approaches for record keeping and monitoring stock levels.

- Lack of clarity in the lines of responsibility for supervising health centres was addressed and the muddled situation whereby some were supervised by the Public Health Department and others by the Medical Services Department is being rationalized, putting all health centres under the Public Health Department.
- Positive planning for supervisory staff should be promoted by reinstating their regular meetings, giving them the opportunity to share problems and solutions, and prepare for future activities. More female supervisors will be needed as new cohorts of female PHCWs graduate; it is recommended that the Health Manpower Institute in Hodeida and donors work with Health Office staff to arrange for a suitable training programme as the present 6-week course for T/Ss does not give a sufficient preparation for all the responsibilities carried by supervisors.
- Accurate and reliable data are needed for planning. The report suggests that the quality of information can be improved by introducing simple checks of the consistency of data. It also repeats the Public Health Department's plea to the MoPH to supply adequate amounts of essential stationery. The use of data should be improved and extended in careful steps. The departments of Public Health and Planning & Statistics could specify a **small** number of indicators for continuous monitoring. Together they should start working out exactly what analyses of the data should be produced. Links should be created between the information on health service activities and allocation of running costs, making an explicit connection between the work expected (or carried out) and the funding allocated to particular facilities. This will involve coordination between the Finance Department, Planning & Statistics, and Public Health.
- The workshop participants made suggestions for improving the management of the budget, including adhering to the financial regulations and establishing a positive linkage between finance and health services. They proposed that the system of incentives should be explicitly linked to adequate performance.
- Behind many of these suggestions is the lack of clarity in the lines of authority and responsibility. The MoPH has not yet issued the official organization chart for the central level, and its draft structure does not meet the needs of the Health Office. It is recommended that the Health Office should take action to draw up a draft organizational structure with five departments under the Director General: Public Health; Medical Services; Medical Supply & Drugs; Planning, Development & Research; Administration & Financial Affairs. The responsibilities of each department, section and unit can then be clarified.

**Opportunities for cost containment and cost recovery:** In order to identify the share of costs recovered, one must know the total cost, which provides a denominator. Finding a denominator for al Thowra Hospital involved working with Hodeida Health Office's finances. While looking at expenditure for the whole governorate, we identified areas where budgetary allocations could be rationalized and costs which could be brought under the tighter control.

For the whole governorate, we identified public expenditure on health of 87.6 million Rials; this does not include capital expenditures, supplies from the central stores, or the amortized value of equipment. Nor does it include expenditure on training, or any of the inputs to projects supported by bilateral donors. Thus the figure includes only recurrent expenditures, which work out at 71 Rials per capita for all government health services. Three points about the expenditure profile can be highlighted:

- Salaries, representing the cost of personnel, account for 75% of expenditure.
- Payments controlled from central level (Markazi) are 43% of the total.
- Utilities are paid by the central level, and represent 16% of expenditures.

More than one-third of personnel costs are for foreign clinical staff who come to Yemen on bilateral contracts arranged at the central level.

The distribution of recurrent expenditures between hospitals, ambulatory facilities and administration could only be worked out for salaries; the Health Office takes 6% of salaries, the hospitals take 63% and the health centres and units take 30%.

Public health and basic health services in the governorate are funded from three separate budgets. The total amount received in 1991 was 4 17 million Rials, but the allocation from the central level still followed the geographic divisions of the former PHC projects: Zabid in the southern part, and the area to the north covered by the Tihama PHC Project (Zohra to Bait al Faqih). When the allocations are analysed according to the number of facilities or the population of each area, we find that the Zabid area receives between three and four times more funding per facility, and almost three times more funding per capita, than the northern part of the Governorate.

Detailed expenditure records were available for the funds allocated to the Zohra to Bait al Faqih area. Analysis by line item shows that:-

- more than half of these resources are spent on transportation: 35% on government vehicles' fuel, oil and maintenance, and 18% on public transportation.
- the next largest share goes for staff incentives (26%).
- almost one-tenth of expenditures are listed as "Miscellaneous."

However, the line item analysis does not give an accurate profile of expenditures as most of the funds under "public transportation" were in fact used for additional staff incentives.

This analysis supported recommendations to move financial control closer to where the effects of expenditure are felt, to establish incentives and mechanisms for monitoring and controlling costs, to follow line items when recording expenditures (so that planning decisions can be based on actual experience), and to allocate funds according to clear objectives, criteria and guidelines. There is also a need to develop a clear policy on incentive payments and to follow it, to avoid the present confusion and duplication (this was also recommended by the workshop participants).

Analysis of the service statistics and expenditures for al Thowra Hospital showed that the average recurrent cost was less than 500 Rials per occupied bed day, which is far lower than the expenditure at other general acute hospitals in Yemen. Data from other sources indicate that 60% of recurrent expenditure should be for personnel, but the data for al Thowra show that 78% was staff costs. This reflects the underfunding of recurrent costs that has persisted since the hospital opened in 1982 on a "project" budget which made no provision for maintenance or essential non-medical staff.

The Special Clinics which are held in the outpatient department in the afternoons were permitted because the hospital could not function without extra funds and the clinics could generate revenue from their fee-charging services. The analysis shows that Special Clinic revenues (about 2.5 million Rials) comprised 10% of all the recurrent costs identified so far, and these revenues contributed 39% of expenditure on the line items for supplies and services (Bab al Thaani) in 1991. However, the ability of the Special Clinics to generate reliable revenues in the future is now jeopardized by breakdowns of equipment (eg x-ray and sonography machines) which have earned a steady stream of income in the past.

The hospital actually collected 3.15 million Rials from patients in 1991, but gave 0.52 million Rials to the Ministry of Finance and 0.17 million Rials to the Red Crescent Society.

Suggestions for improving the financing of al Thowra Hospital include using equitable and clear criteria when allocating funds from the central level, such as making a positive connection between funding and the services provided (eg bed capacity or occupied bed days). The hospital management should be allowed to be actively involved in the process of setting up contracts for foreign TAs as these staff constitute such a large component of costs. The specialist resources in the outpatient department could be used more effectively if a screening and referral system were used, so that primary care cases were seen at the appropriate level of care (eg in city health centres). Finally the data on numbers and types of patients need to be assembled and tracked so that managers can monitor hospital activities and prepare good documentation to support their requests for the necessary level of funds. This will require some improvements in the official formats for hospital reports.

With an expanding health service, falling purchasing power of the allocated funds, and no clear prospect of an end to budgetary pressures, the government health sector faces three choices:

- tolerate a deterioration in the quality, quantity and/or coverage of services;
- look for ways of improving efficiency and increasing productivity;
- search for new sources of revenue.

The report indicates that a combination of these options may be chosen for strengthening financial and resource management, both for health services throughout the governorate and for al Thowra Hospital. However, it appears that the greatest benefits can be obtained from improving the way in which resources are allocated and committed at the central level. This involves not only specific budgetary allocations for hospitals, public health and projects, but also the procedures for arranging expenditure on foreign TAs, capital expenditures, essential drugs, and utilities. It is hoped that by adopting more equitable criteria for allocations and by decentralizing the control of public finances, there will be significant improvements in the cost effectiveness of government health services.

Patient numbers, revenues and some costs at the LCCD's First Clinic were analysed. Data for 1990 and 1991 illustrate the subtle relationships between volume of patients, cost per procedure, and total revenue. It was not possible to complete a full analysis of costs recovered as some important expenditures could not be identified.

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**INTRODUCTION**

This consultancy was conducted over nine weeks (January to March 1992) for REACH/Yemen (JSI) as part of the Child Survival Project (ACCS), and covered two objectives:

- to follow up the findings and recommendations from the assessment of primary health care in Hodeida Governorate which was conducted by the same consultant in August 1991;
- to study the possibilities for cost recovery, using the experience of the afternoon clinics at al Thowra Hospital and the fee-for-service clinics run by the LCCD.

The follow-up of the assessment provided the opportunity to work with Hodeida Health Office to address the problems constraining the quality of PHC services in the Governorate. Some of these problems involved resource constraints and inefficient use of available resources. During this consultancy the underlying causes of such inefficiencies were examined in more detail. This work was closely connected with the task of establishing a denominator for the cost recovery analysis, which involved building a complete picture of all the resources available to the Health Office. It became clear that there are substantial inefficiencies in the use of resources, some of which are outside the Health Office's control. Thus the activities to strengthen PHC management were closely connected with financial management and were conceptually linked to the cost recovery analysis outlined in the scope of work (see Appendix 1).

The schedule of activities and the people met are shown in Appendix 2.

This report presents the findings and recommendations in two parts. The first part covers activities to strengthen the management of PHC. The second part covers expenditure, cost containment and cost recovery, both for government health services in Hodeida Governorate and for the two clinics which were identified for analysis.

## **PART I STRENGTHENING THE MANAGEMENT OF PRIMARY HEALTH CARE**

### **1. Background**

The report of the assessment of PHC (Feilden, 1991) contained many detailed findings and recommendations. It seemed desirable to provide Health Office staff and key people from the Ministry of Public Health with the opportunity to develop a plan of action for addressing the problems identified during the assessment. Many of the problems with delivering services involved several departments which had not previously been explicitly involved in primary health care. The approach was to meet with individual heads of department in preparation for a short workshop, which would be attended by all the senior managers from the Health Office and selected Health Centre Directors. Detailed problem solving would continue after the workshop through meetings facilitated by the consultant.

### **2. Discussion of Managerial and Financial Factors**

The 1991 assessment had concentrated on the status of PHC services. During the present consultancy we discussed the shortcomings and constraints in PHC services with Health Office staff, thus shifting the focus from health facilities to the administrative structures and practices which affect the quality of services. During these conversations, senior and mid-level managers were asked to identify the problems which they perceived to be hindering them in carrying out their responsibilities, and to present these problems at a workshop. Several themes kept recurring during these discussions:

- the lack of integration in carrying out the responsibilities of each department,
- the quantity of resources (including personnel time) wasted through lack of coordination and proper planning, and
- the level of effort spent on crisis management.

These preliminary meetings provided additional information on the factors hindering PHC service delivery. The new information was added to the findings from the assessment to prepare five case studies which demonstrate the negative effects of uncoordinated actions by senior and middle level managers, HC directors, and the Ministry of Public Health. These case studies were presented during the workshop.

### **3. Workshop**

The workshop was held on 5th and 6th February 1992 in Hodeida. It was attended by all the heads of department in the Health Office, three senior staff from the MoPH in Sana'a, staff from WHO and UNICEF, and members of two PHC projects in the Governorate. The full list of participants is given in the report on the workshop (see Appendix 3), which also includes the five case studies mentioned above.

Participants seemed to welcome the opportunity for discussing problems and practical solutions with members of different departments. The problem-solving actions proposed by the working groups provide a basis on which to build detailed plans for strengthening PHC services. There was not time to develop the necessary plans in detail during the workshop, and we did not succeed in drawing up a time-line or schedule showing when each activity would start and when it would be completed. The next section describes what action has already been taken and what remains to be done.

#### **4. Follow-Up Activities to Improve PHC Management**

The sequence of topics in this section follows the areas covered by the three working groups during the workshop, i.e. information and planning, management and supervision, and logistics (including supply) and finance. Please refer to Appendix 3 for each group's comments.

##### **a) Quality of Information**

The workshop participants were dissatisfied with the quality of data now received at the Health Office. Some time ago (1990?) a new system for collecting data was introduced; each PHCW brings his monthly reports directly to the Health Office where he is given a piece of paper indicating that he has fulfilled his reporting obligations and can therefore be paid. The absence of linkage between (1) the Trainer/Supervisor's (T/S) knowledge of his PHC Units and (2) the acceptance of monthly reports for processing, means that it is now extremely difficult to check on the quality of reported data (eg by looking at the Registers at the facility, or by visiting a random sample of patients). The quality of reporting has become worse since the assessment last August; this is due partly to reductions in routine supervisory visits because of difficulties with transportation from the supervising health centre to the PHC Units, and partly to worsening shortages of essential stationery. These shortages were documented in a memorandum (Appendix 4) which was attached to a letter from the Health Office to the MoPH requesting more supplies of stationery.

The Planning and Statistics Department would like to use the data which it processes on its computers every month for analysing and monitoring activities, but does not have confidence that the numbers are reliable. The Public Health Department complains that it gets no feedback from Statistics about PHC activities, but has never specified what analyses or summaries of reports it would like to receive.

##### **Actions to Improve the Quality of Data:**

###### **i Prepare lists of facilities showing which reports have been received:**

Immediately after the workshop, we held a meeting attended by the heads of Public Health and Planning & Statistics, and some of their staff. We agreed that the Statistics Section should prepare a list of PHC Units and a list of Health Centres, indicating which of the three standard monthly reports had been received by that department. For example,

Health Centre	Nahia	Activity Report	Diseases Report	Immunization Report
1 Zohra	Zohra	Y	Y	
2 Luhayya	Luhayya	Y	Y	Y
3 Khowba	Luhayya			
4 Qanawis	Qanawis		Y	
5 Zaidia	Zaidia	Y	Y	Y

The Statistics Section had already prepared such lists, using Tables 1, 2 and 3 from the 1991 assessment report, but they had not shared the information with the Public Health Department. So we agreed that a regular meeting should be set up between these two departments to initiate active follow-up of missing reports. It was suggested that this meeting should be held around the 15th of every month.

The list of reports received can then be posted in the central hall of the Health Office, as a means of introducing peer group and community pressure for better reporting performance.

A further refinement of this feedback mechanism is to use colours to indicate whether the reports were received on time. Instead of putting "Y" for Yes, write the date received in GREEN if the reports were submitted on time, but for any that were submitted late write the date in RED.

This indicator may seem rather simple, but it is the first step in managing the processing of data from health facilities. It sends a clear message to staff that their reporting performance is being monitored. The next step is to address the quality of information written on the reports.

Performance targets for the next six months need to be set. The following examples suggest practical targets which can be monitored:-

- Meeting between Statistics Section and Public Health Department should be held every month for following up missing reports.
- 100% of Health Centres should report on time.
- 80% of PHC Units from Zohra to Bait al Faqih should report on time.
- 100% of Zabid PHC Units should be trained in the use of Activity Reports and arrangements made for delivering all reports to Hodeida.
- 50% of Curative Units should receive training in the reports required by the Health Office and should start submitting these reports.

## ii Introduce consistency checks:

The 1991 assessment report gave examples of monthly reports which contained numerical impossibilities, such as the number of (still births + live births) not matching the total number of births reported. This problem was found for 44% of the PHC Units which had submitted their Activity Reports (see page 106 of the assessment report). Such inconsistencies can easily be spotted either manually or using the computer.

Procedures need to be developed for dealing with inconsistent data. One suggestion is for the Statistics Section staff to give the T/Ss feedback on

the group of facilities for which they are responsible. The decision to arrange the list of units in (i) according to their supervising health centre will make this task easier.

The following activities are suggested for the next six months:-

- Choose **one** numerical consistency check from the Activity Report and identify PHC Units which reported inconsistent data last month.
- Prepare a monthly memorandum for each T/S, and discuss the specific inconsistencies found for individual Units at a monthly meeting.
- At the following month's meeting, receive feedback from the T/S for each inconsistency identified last month, and present the new memorandum on the latest inconsistencies.
- After four months, make a summary chart showing each T/S, and the percentage of his PHC Units with inconsistent data by month. Discuss reporting performance with the T/Ss' supervisor.

Performance should be monitored by checking whether the memoranda have been prepared and whether the meetings have taken place.

In future, a more appropriate software package than Lotus (such as the public domain epidemiological package, EPI-INFO) could be used to check the consistency of specified items at the moment of typing the data into the computer. Work in this area should be coordinated with the Hodeida Urban Project and the MoPH.

### **iii Revise the procedure linking salaries and monthly reports:**

After the workshop, staff in the Public Health Department made a unilateral decision to change the procedure of recording monthly reports, issuing a paper saying that the PHCW could be paid and forwarding the forms to the Statistics Section. This was a perfect example of chaos caused by absence of coordination between departments when making a decision. After a crisis meeting to find out what had happened, it was agreed that the PHCWs should now give their monthly reports directly to the Statistics Section, which will check certain basic information and inform the Personnel Department (in writing) that the PHCW can be paid.

- The basic information which the Statistics Section must check (before informing the Personnel Department to pay the PHCW) should be written down in a memorandum so that all Statistics Section staff are following the same procedures.

This procedure is a second-best solution. A better procedure would be one which gave the T/S the responsibility for checking the completeness and accuracy of reports at the facility, and the authority to approve salary payment. This is done in Zabid and in Bait al Faqih, whose Health Centre Directors collect salaries from the Health Office and distribute them to all PHC staff in their area. During discussions about extending this system to all Supervising Health Centres (see Figure 2), it was explained that some HC Directors are not considered capable of handling this responsibility, so the PHC staff must travel to Hodeida to collect their salaries in person.

#### **iv Obtain adequate supplies of essential stationery from the MoPH**

It is the MoPH's responsibility to supply printed formats for the monthly reports. The Health Office (Public Health Department) has written at least five times asking for supplies of essential stationery, but only receives a fraction of the quantity requested.

One can expect that the information system will disintegrate unless these supplies are provided.

#### **b) Use of Data**

Apart from the Hodeida Urban Project, which makes an extensive analysis of its data, there is no routine use of the information which is collected and processed every month. For example the EPI Monthly Summaries are processed in the Health Office, and are also sent to the central unit in Sana'a which produces tables of doses administered and percent coverage; as yet the Health Office Planning and Statistics Department does not calculate EPI coverage. If the data start to be used (again) by supervisors of PHC staff, planners and managers, the users will demand better quality information.

With decentralization of finances the Health Office has an incentive to improve the use, productivity and effectiveness of its activities. This will require practical planning, which should be based upon reliable information.

#### **Actions to Improve the Use of Data:**

##### **i Give data entry staff on-the-job training in interpreting PHC data:**

The junior staff in the Statistics Section tend to work as typists, simply keying in the numbers on the forms without any quality control. As they are Health Office employees, they should have an idea of the role of their work within the context of health services. They should know that if the Monthly Disease form shows cases that are preventable by immunization, that is a signal requiring action. They should be aware of the relationships between catchment population, number of eligibles, and coverage (including percentage of births recorded). They need to be taught the basic elements of epidemiology for public health services. As a first step,

- Computer operators from the Statistics Section should go on field visits with T/Ss to become familiar with how the monthly reports are compiled from the registers and records.
- They should then receive intensive on-the-job training in how to check the accuracy of reports compiled from registers. This training could benefit from the experience of Health Office staff who were members of the 1991 assessment team.
- Staff from the Planning and Statistics Department could then participate in supervisory visits, checking the health information system.

**ii Specify indicators for continuous monitoring:**

With more than 100 PHC Units and 34 Health Centres, it will be important to keep the monitoring objectives within the capacity of the Health Office.

- A small number of indicators should be chosen by the Public Health Department. Facilities for which these indicators reported the specified values would be followed up by supervisors. Some suggestions are:-
  - \* No report received last month (see a(i) above)
  - \* Any reported case of a disease that can be prevented by immunization, i.e. TB, Diphtheria, Pertussis, Tetanus, Neonatal Tetanus, Polio or Measles.
  - \* Number of stillbirths is more than 20% of total births reported (this allows 2 stillbirths per month in a catchment population of 3,000).

Note that this short list involves checking more than 1,600 items of data.

This monitoring activity should be established within the next six months.

As the staff gain expertise, and as performance improves, the indicators can be modified so that they continue to discriminate between adequate and unacceptable performance by public health staff. For example when data on catchment populations are available, the Statistics Section can begin checking whether:-

- \* the number of births reported is less than 50% of the number expected, based on the facility's catchment population.

As the completeness of reporting increases (essential for high coverage of antenatal and child health services), the figure of 50% can be revised upwards. Follow-up of this indicator may cause PHC staff to revise their estimates of their catchment population; page 70 of the assessment report summarizes PHCWs' present perceptions of the size of their eligible populations.

**iii Specify what analyses should be prepared:**

There is an infinite number of analyses that could be done. The Public Health Department and the Planning Department should sit together to work out exactly what analyses should be produced, and how often (some will be monthly, others quarterly, and some only once per year). To minimize misunderstandings, the precise layout (lists, tables, etc) should be agreed before the Planning & Statistics Department begins the analysis.

It is suggested that the Health Office could begin by analysing immunization coverage and coverage for antenatal care. There are many details that will need to be specified. (For example "antenatal home visits" does not separate "new" from "old" cases so the indicator cannot capture the percent of eligibles with any antenatal contact; it will have to look at total volume of antenatal visits and make an assumption about the desired number of visits per pregnant woman.)

In the present situation, with so many facilities without these services, there should be a summary showing how many health centres and units offered no service last month, and how many did provide the service. Coverage for specific facilities could then be grouped (eg from highest to lowest, or urban/rural, and for rural facilities according to their supervising health centre). The layout of the tables or lists depends upon how the Public Health Department intends to use the information.

**iv Link the provision of running costs to information on health services:**

At present the Finance Department allocates running costs without any reference to the level of performance expected by the Public Health Department and Medical Services Department. The case study called "The Story of Butagas" (presented during the workshop; see Appendix 3, page 10) illustrates the need to make a connection between financial allocations and planning for services.

- The three departments named above should meet with the Planning Department to decide what information will be prepared as an input to the process of making budget. (Group III suggested population density as one criterion. Anticipated volume of services is another criterion.)

This meeting should take place within the next three months.

- When it is time to make budget allocations, these departments should meet to discuss the specified information and the relative needs of different facilities.

**c) Distribution of Health Manpower**

The case study on "The Distribution of Personnel" (see Appendix 3, page 7) used data from the assessment report (pages 25-29) to show great variations between districts in expenditure per head of population. These variations are partly due to an absence of planning when sending locally contracted staff to work at Curative Units.

Since August 1991, a new problem had arisen with the distribution of female staff, who are a scarcer resource than their male colleagues. A new cohort of midwives recently graduated from Hodeida Health Manpower Institute but instead of working in public health (PHC), the Medical Services Department assigned them to work in the city hospitals as general nurses. This confusion over responsibilities and authority had to be sorted out urgently so that the Public Health Department could proceed with its plans to rectify the shortages of female staff (especially supervisors of female PHCWs).

## **Actions to Improve the Distribution of Health Manpower:**

### **i Use public health planning criteria when assigning personnel:**

Some criteria already exist; for example during the workshop the Management and Supervision group reported that there is a rule about how many kilometres a Curative Unit must be away from any PHC Unit. Other criteria need to be specified; they may be based on ratios of staff per population, or standard staffing patterns for each type of facility, or accessibility of care to the population measured in distance, travel time or transport cost. This is an enormous topic and is being addressed within the survey of health manpower being carried out nationally with support from the Child Survival Project; see Peter Shipp's reports of August-September 1991 and March 1992. In the short term:-

- All Curative Units which are closer than the rule allows should be moved (or closed, and the staff assigned to an established health facility).
- Reasons for recruiting candidates from, or assigning personnel to, any location should be specified, and reviewed by the Planning and Personnel Departments. Guidelines containing criteria for recruitment and posting should be specified in a memorandum. It is proposed that this should be prepared by the Public Health, Medical Services and Planning Departments. (So far it is not clear where the Health Manpower Institute appears on the organizational chart, and they should also be involved.)

In the medium term,

- Keep in contact with the staff at central level (MoPH) who are working on the comprehensive survey of health manpower, to discuss alternative criteria for distributing personnel.

### **ii Clarify the areas of responsibility for different types of staff:**

This involves making an organizational chart for the Health Office (see (e) below).

## **d) Supervision of Health Manpower**

The supervision case study presented during the workshop highlighted the difficulties and unnecessary costs caused by having some PHC services supervised from the Public Health Department and others from the Medical Services Department (see Figure 2 in Appendix 3, pages 5-7). PHC staff have been trained for public health interventions which take a different approach to patient care from those followed by some curative providers. For example PHCWs are trained to control diarrhoeal disease not only by using ORS but also by organizing the community to improve environmental sanitation, whereas a purely curative provider gives drips and antibiotics without attacking the causes of the disease.

In a social environment which values costly treatments more than basic prevention, it is essential that the PHC staff continue to receive regular

supportive visits from their supervisors. Transportation problems are frequently mentioned as the main reason why regular supervision of rural staff has ceased.

Rapid progress is being made in training more female personnel who will provide maternal care. Their greatest need for supervision is in the months following graduation, and there is a serious shortage of female supervisors who have sufficient experience and who are able to work in rural areas.

### **Actions to Improve the Supervision of Health Manpower:**

#### **i Sort out the lines of responsibility for supervising basic health services:**

- The Director-General and the heads of Public Health and Medical Services have already clarified these responsibilities. There seems to be consensus that all ambulatory services will fall under Public Health's responsibility. This would allow, for example, the Public Health Department to establish Bajil Central HC as a supervising HC and intermediate supply point for vaccine, with minimum administrative turmoil.
- However the responsibility for supervising physicians and 3-year nurses in rural facilities must still be addressed.
- The Health Office needs to specify the situation on an organization chart (see (e) below).

#### **ii Reinstate meetings for supervisory staff and activity planning:**

- A schedule for supervisors' meetings, with agendas and objectives, should be prepared. Meetings for T/Ss were stopped in 1990 during the national immunization campaign, and must be restarted to motivate and give direction to these staff.
- For supervisors of physicians and curative-orientated staff, a plan of action with priority activities and a schedule should be prepared and implemented. For example physicians can be reminded to comply with the referral system (this will be an important element of cost containment in the future), their use of funds for running costs should be monitored, and their role in public health interventions emphasized. Staff at Curative Units have never been supervised (see (iii) below).
- Specific objectives should be identified to give a focus to supervisory visits. For example all staff (PHCWs, Curative, physicians) could be reminded of procedures for following up cases of immunizable diseases (ask if the child was immunized, if so where and when; supervisor checks the diagnosis; follow up and retrain as needed). Another example could be treatment of diarrhoeal disease with intensive follow-up (eg visiting the parents) of recent cases. Such reinforcing of correct procedures, module by module, will improve the quality and effectiveness of services.

#### **iii Orientate curative staff:**

Most of the staff at Curative Units are foreign 3-year nurses. Although it is said that they receive a PHC orientation before starting work, their only subsequent connection with the Health Office is collecting their salaries.

It is also clear that some employees working in rural facilities need to be reorientated towards public health perspectives; for example we have met several 3-year nurses working in the immunization room who lack the PHCWs' skills in health education, recording and follow-up of eligibles.

- Prepare a written guideline for curative staff which explains their responsibilities regarding public health services (including birth registration, immunization and monthly reports).
- In-service training in use of drugs seems necessary. The Arabic version of the "Problem Drug Kit" (produced by the Arab Resource Collective) was left with the Director-General in Hodeida, and could form the basis of such a course.

#### **iv Prepare female supervisors:**

The present 6-week training course for T/Ss does not give sufficient preparation in practical, effective supervision. The PHC projects in Hodeida have supported extensive extra training to this cadre of staff. Local capacity to provide appropriate training and continuing education for supervisors is needed.

- Identify the activities which supervisors are expected to carry out.
- List the criteria for selecting candidates to be supervisors (eg practical experience, ability to travel).
- Prepare a training programme. This must include administrative procedures as well as face-to-face supervisory skills. Pairing with an experienced, effective supervisor for practical work in the field should be considered.

The Health Office staff, the Health Manpower Institute and donors should meet to arrange how this training can be implemented. More female supervisors will be needed soon, because new cohorts of female PHCWs are expected to graduate within one year.

#### **v Provide transportation for supervisory visits:**

See (f) below.

#### **e) Clarification of Responsibilities and Authority**

Many of the crises demanding instant attention arise from confusion about which department is responsible for which activities. Functions that should be linked are performed by several people in different departments; the case studies presented to the workshop describe some of the effects upon health services. Eight of the problems mentioned by workshop participants referred to confusion about who is responsible for tasks and absence of coordination between departments.

## **Actions to Clarify Responsibilities and Authority:**

### **i Make an organization chart for Hodeida Health Office:**

During the workshop this task was allocated to the Ministry of Public Health. However for two years the MoPH has been discussing drafts of its own organizational chart, without resolving the final structure. The chart for the central level will not be appropriate for the governorate health offices, so it seems appropriate for the Health Office to act on its own behalf. It cannot afford the real costs of continuing confusion.

- Refer to the draft organization chart in Appendix 3, Figure 1 as a basis for making a draft chart for the Health Office. The structure for Aden seems appropriate, with five departments under the Director General:

Public Health  
Medical Services  
Medical Supply and Drugs  
Planning, Development and Research  
Administration and Financial Affairs.

All other sections and units would fall within these five departments.

### **ii Specify who is responsible for tasks over which there is confusion:**

- Each head of department can prepare a preliminary description of his department's tasks. Heads of sections and units should do the same.
- Then all the department heads and the Director-General review the whole, resolve overlapping tasks, and allocate unclaimed tasks.
- The complete draft should be circulated for comment before it is finalized and issued as a reference document.

This could be a very long document. It is more important to encourage a cooperative teamwork approach among senior managers than to write down a list of static guidelines. However in an administrative environment in which independent and unilateral action are so widespread, there is clearly a desire among staff for a reference document specifying tasks and responsibilities.

## **f) Transport**

The case study "Beyond Economic Repair" illustrates the transport problems of the Health Office (see Appendix 3, pages 9-10). With the present restrictions upon use of funds, all government bodies face the prospect of aging vehicle fleets and increasing maintenance costs. It has proved impossible to introduce proper practices for managing the Health Office's vehicle fleet (such as pooling the availability of vehicles instead of assigning them to senior staff; maintaining a record of kilometres travelled). Thus radically different alternatives must be investigated if we are to solve the transport problem.

After the workshop we had a meeting in Zaidia HC with the Director and T/Ss who cover the PHC Units in that area. Working from the list of PHC Units in the assessment report (Table 1.1, page 13), the T/Ss grouped the Units into the pairs that they would visit on one day. We recorded the distance from Zaidia to the first unit, and the distance from the first unit to the second.

This took a great deal of discussion, partly because vehicle logs have not been kept since the end of the Tihama PHC Project. One T/S suggested that we go back to the TPHCP files and look up the information. We had a document from the Health Office which showed distances between PHC Units and Zaidia which had been used for reimbursing PHCWs' travel. Without this reference document the T/Ss' information would have been guesswork.

Next, we did a small survey of drivers from the suq to find out what they would charge for the round trip from Zaidia HC to each pair of PHC Units to be visited. Some drivers preferred to charge a fixed daily fee plus the variable cost of fuel and oil; others gave a complete price. The information was put into a Lotus spreadsheet (see Appendix 5). The results are summarized below:

	Cost per Month
Driver Number 1: all costs included	3,150 Rials
Driver Number 4: daily fee + fuel	3,169 Rials (add oil)
Driver Number 2: daily fee + fuel	3,669 Rials (add oil)
Driver Number 3: all costs included	3,200 Rials excludes 2 trips

Two drivers have very competitive prices which are less than the monthly cost to the Health Office, which is at least 3,600 Rials. (A full-time driver's salary starts at 1,800 Rials, and fuel for supervision costs 1,800 Rials (10 days out, 30 ltr per day, 6.05 Rials per ltr) excluding oil, which is changed every 1,000 km )

If we take account of maintenance costs (see Part II, pages 29-32), it seems that renting vehicles would be more cost-effective than trying to run an aging vehicle. However great care would have to be taken in working out the details. cash advances would have to be made available to the HC Director, mechanisms for accounting for the cash would have to be established, and incentives built in for T/Ss to minimize the cost of transport.

It is likely that transport arranged from the PHC Unit's village would be much cheaper than cars hired in the health centre town. However, it would be more difficult to coordinate cars **coming in** to collect supervisors and supplies than to organize transport **going out** from the supervising health centre.

#### **Actions to Improve the Use of Resources for Transport:**

- i Develop a plan for organizing transport for supervision visits using rented vehicles.**

Past experience indicates that there must be rigorous controls upon use of the cash advance; for example the salary of the person to whom it is given could be forfeit until the Health Office receives evidence that the visits were made (eg page from the PHC Unit's Duplicate Book signed by the village Aakil).

ii Pilot test the plan at one supervising health centre (eg Zaidia).

iii Assess the pilot test; modify or abandon the scheme.

One way to encourage T/S to take seriously their responsibility for making supervision visits is to state that if they cannot make the rental of transportation work, then they will have no job as the Health Office will not countenance them sitting at their Health Centre.

### g) Supplies for Immunization

Problems with these supplies continued after the August assessment. Out of Hodeida's 22 districts, the number with no immunization services at all during the third quarter of 1991 were:-

	Districts with:	
	No Children Immunized	No TT Given
July	4	10
August	15	17
September	8	11

The Statistics Section's data base shows that from July to September,

57 of the expected 249 monthly sessions at PHC Units (23%) were held, 12 of the 19 rural Health Centres show no services for one month or more, 6 of the 14 urban facilities show no EPI services for one month or more.

Services were disrupted by stock-outs of some antigens, needles and syringes.

Since January 1992 some of the changes suggested by the assessment team have been made. The two cold stores in Hodeida city have been consolidated into one, and one person has been put in charge of obtaining supplies for the whole governorate. The system of delivering PHC Unit supplies to the supervising health centres has been reestablished, and in March the EPI supervisors' salaries were moved from central level to Hodeida Health Office. These supervisors have also begun a regime of intensive supervision of immunization work at health centres, addressing the problems of unsafe vaccine handling and sloppy recording described in the 1991 assessment report (see Knowledge and Practices, pages 46-47).

The current supply strategy and method of calculating vaccine needs was discussed in detail with the EPI Supervisor. He has based his supply calculations on the method presented at the Abyan workshop in August 1991, which proposed four categories of supply:

Population	50,000, supply	25 vials per month	(plus 8 vials for wastage)
	30,000, supply	15 vials	(plus 5 vials for wastage)
	10,000, supply	5 vials	(plus 2 vials for wastage)
	3,000, supply	1 vial	(no allowance for wastage)

This method underestimates the vaccine needed for small communities; for example with a CBR of 41/1000 population, there will be 30 children eligible for DPT and OPV every month, but the method proposes only one 20-dose vial. It also fails to recognize operational constraints. For example in catchment areas with many small hamlets, the eligible children and women are scattered and it is necessary for both PHCWs and eligibles to travel to several meeting places in addition to the Unit; the reconstituted vaccines (BCG and Measles) will not remain potent for the amount of time needed to cover the catchment population, so more than one vial is needed.

The EPI Supervisor had already recognized that the scheme presented at the Abyan meeting was flawed, and had made his own adjustments:-

For population of 50,000,	supply 25	DPT, OPV, TT;	20	Measles;	10	BCG
30,000	15		10		10	
10,000	7		2		1	
3,000	2		1		1	

We put these amounts into a Lotus spreadsheet which instantly summarized the total quantity of vaccine required (see Appendix 6).

However, catchment populations are not of uniform size, and the Health Office's information on population per PHC Unit is out of date. The T/Ss suggested that we update the population figures for PHC Units by repeating the Ramadhan survey which had been carried out by all the PHCWs established during the Tihama PHC Project. A format was drawn up (see Appendix 7) and distributed when staff came to collect their salaries in early March. The in-charge of PHC for Zabid area was also briefed; this will be the first time that the Zabid PHCWs have surveyed their catchment populations.

The plan is to use population data which are specific to each facility for estimating vaccine requirements and for monitoring coverage. A Lotus spreadsheet for calculating immunization supplies has been left with the Planning Department after it was demonstrated to and discussed with the EPI Supervisor and the Head of Basic Health Services. It shows the number of vials, needles and syringes needed, according to two different perspectives: (1) population, assuming all eligibles can be gathered to the facility, and (2) days of work needed to cover the area, based on experience. This spreadsheet is arranged into groups of facilities according to their supplying health centre; see Appendix 6.

### **Actions to Improve Supplies for Immunization:**

#### **i Develop transparent planning for immunization supplies:**

- Follow up on the Ramadhan survey; check the data for consistency (eg compare population figure with number of households reported for each village). Work with T/Ss to obtain data of acceptable quality.
- Enter two numbers for each PHC Unit into the Lotus spreadsheet:  
 (1) population      (2) days of work needed to cover the area.
- Decide how many vials of vaccine will be supplied for each facility.

- Inform the T/Ss in writing how many vials of each antigen and how many needles and syringes they should pack for each PHC Unit. (At present they use gross generalizations.)
- Discuss the necessary supply levels with senior staff and with national programme staff. (At present each governorate seems to receive a share of the available stock based on its relative population size, without reference to the governorate's capacity to deliver services.)
- Allow for a one month "safety stock" so that regular services can continue without interruption.
- Inform the central level of the annual quantity of supplies needed, showing the method of estimation.
- Collect resupply from central stores every three months.

**ii Establish transparent record keeping for registering supplies used:**

- Use stock books in the central store. Records should show quantities received and issued, and the balance, by date, antigen and batch.
- Maintain temperature records at the central store and at all facilities using refrigerators and freezers for vaccine storage.
- On the Monthly Report Forms, fill in the quantities of vials and needles and syringes used. This will enable the supervisors to check whether all EPI needles and syringes are used for immunization services.
- Print up a new supply of the Daily Attendance Form (6/84) enabling PHCWs and their volunteer helpers to keep clear records of who was immunized with what doses at each session.
- Retrain staff who are using the EPI Register as a record of daily attendance.
- Use the EPI Register to follow up drop-outs and to improve communication with parents, concentrating on Health Centres with high wastage of vaccine.

**iii Ensure safe disposal of used supplies:**

- Install an incinerator (eg an empty oil drum) at all health centres.
- Prepare a memorandum covering safe disposal of used needles and syringes. The recommendation from the assessment report (page 51) is repeated here:-

- EITHER** (a) used needles must be recapped with the one-handed technique, then the syringe and needle dropped into a container which can be burned,
- OR** (b) used needles and syringes must be dropped into a needle-proof container (metal, glass or rigid plastic), which is then emptied into the incinerator.

The staff who have used the disposables should be responsible for making sure (observing) that needles and syringes are burned at the end of each session (not leaving the cleaning staff to deal with them, as is now the case).

- Train staff how they must dispose of used supplies, give them a copy of the memorandum, and supervise that they follow the instructions.

Many other improvements in the quality of immunization services are needed; please refer to the assessment report, pages 49-53 for more recommendations.

#### **h) Management of Medical and PHC Supplies**

The governorate suffers because of chronic shortages of curative supplies and irregular supply of unpredictable quantities from the central level (including dumping drugs within days of their expiry date). Donors estimate that massive quantities (40%-60%) of essential drugs are pilfered; Ministry staff accept that pilferage may be 40%. There has been no supply of PHC kits for the last six months. The Health Office has asked for its share of supplies to be packed in separate containers so that they can be collected from Hodeida Port and moved straight into the warehouse. The central level has refused this request. The result is delay (with all the associated risks to drug quality), loss of drugs while in storage, and unnecessary transport expenses as the drugs go up to Sana'a, the governorate staff go up to Sana'a to request their share, then the drugs come down to Hodeida again.

The demoralizing effect of wasted trips to Sana'a to try to obtain supplies is clearly evident. Recently the central stores were closed (for weeks) while stock-taking was in progress, but apparently no-one had thought of informing the governorate health offices, warning them not to come for supplies until further notice.

With an almost empty warehouse, any efforts to improve the management of supplies seem somewhat conceptual. However, the workshop participants had several suggestions for improving drug logistics. Some reorganization of functions which have remained separate for historical reasons, could improve efficiency and effectiveness for the Health Office.

#### **Actions to Improve the Management of Medical and PHC Supplies:**

##### **i Link the level of supply to the number & type of facilities:**

This will involve coordination between several departments: Public Health, Medical Services, Planning, and Medical Supply.

- Use the lists of facilities available in the Statistics Section for processing monthly reports to identify all facilities requiring supplies.
- Show the type of services available at each one (eg PHC only; maternal health) so that the appropriate supplies can be identified.
- Public Health and Medical Services Departments must inform the Medical Supply Department of all plans to open new facilities or to upgrade existing facilities (as when Bait al Faqih became a rural hospital).

##### **ii Establish transparent distribution systems at central level:**

The independence of storekeepers has defied rational logistics systems. Health Office staff have found that one way to avoid returning empty-

handed is to visit the stores for a visual inventory before requesting supplies from Ministry heads.

- The central warehouse should publicise the basis on which it decides the quantities which it will issue to different governorates. Workshop participants suggested that an equitable approach would be one based on population. The number and types of facilities (reflecting the governorate's capacity to provide health services) would be another criterion.
- Greater cooperation from the various parts of the central stores in Sana'a would enable Health Office staff to collect more than one type of supplies (eg essential drugs and family planning supplies) thus reducing the cost (staff time, travel allowance and per diem) of obtaining supplies.

### **iii Coordinate logistics for different types of services:**

Within the governorate, improvements in efficiency can be gained by positive coordination between programmes and projects whose supplies have been organized on a vertical basis. Coordination could include:-

- Sharing trips to Sana'a for collecting resupply.
- Sharing storage facilities to reduce the cost of security and rent.
- Using standard stock records and systems for monitoring stock levels to avoid running out of stock (eg safety stock).
- Sharing delivery of drugs especially to PHC Units, and especially for essential drugs and FP drugs. (This has already started with one essential product - ORS - given to the EPI Supervisors to deliver to Health Centres.) Ways of integrating supplies available through the Malaria Control Project and the TB Project should also be investigated.

### **i) Maintenance of Buildings and Equipment**

The longer preventive maintenance is delayed, the greater the cost; equipment and buildings deteriorate more quickly if they are not properly looked after. Workshop participants recommended action in this area.

### **Actions to Improve the Maintenance of Buildings and Equipment:**

#### **i Specify funds needed for maintenance of buildings and equipment:**

- Prepare a memorandum indicating the needs for maintaining medical equipment and for maintaining and repairing buildings. (The inventories conducted as part of the Child Survival Project can be used as reference materials.)
- Inform the relevant departments (eg Finance) of the cost estimates so that budgetary provision can be made. Detail should be shown so that in case full funding is not available, priorities can be chosen.

#### **ii Prepare a plan for carrying out maintenance:**

- Orientate health staff about reporting maintenance needs.
- Train cadres of maintenance staff.

## **j) Budget**

Behind every discussion of resource use is the perception that the Health Office's budget imposes a binding constraint which limits all activities. Part II analyses the budget in detail. The following suggestions were made during the workshop.

### **Actions to Improve the Management of the Budget:**

#### **i Establish a positive linkage between finance and services:**

- Hold meetings between staff from Public Health, Medical Services, Medical Supply, Planning and Finance Departments to discuss plans for regular activities, new developments and the resource implications. Sufficient advance warning must be given to enable staff to prepare coherent draft plans.

#### **ii Introduce criteria for distributing financial resources:**

- Propose criteria which can be used for allocating financial resources. These may be based on population density, or adjusted for urban/rural differences in access to services. Alternatively the criteria might be based on the population's health needs (which tend to be greater among poorer groups).
- Lobby the Ministry to use the chosen criteria when allocating financial resources.
- Apply the chosen criteria when using the Health Office's financial resources.

#### **iii Adhere to rules and regulations governing financial management:**

- Divide the budget into line items which will be adhered to in all the Health Office's accounting activities. It will be necessary to add some line items to maintain managerial control over expenditures (eg hospital food should appear as a separate item, rather than combined with clothing as it is now - 2.3.2 in the government system).
- Develop procedures for handling funds advanced to responsible individuals.
- Train staff how to follow this system, and how to keep proper financial records according to the Health Office and government regulations.
- Monitor that financial record keeping is correctly done.

#### **iv Decentralize the use of funds:**

- Give the departments freedom to spend the funds allocated to them providing that they use and account for their expenditures in accordance with the rules and regulations specified in (iii).

#### **v Develop a better system of incentives:**

- Work out an incentive system which relates to the nature of the work, and which rewards good performance. Unsatisfactory workers should not receive automatic incentive payments.

- Specify what will be done with funds allocated for staff whose work was too bad to justify an incentive.
- Remove the duplication in incentive payments (one person receiving many payments from different sources of funds).

## **5. Conclusion**

Many of the difficulties mentioned during the workshop could be avoided if the individual departments, sections and units in the Health Office decided to coordinate their decision-making, and to follow up on the implementation of decisions. We have given a long list of specific areas in which practical management can be improved, based on the workshop participants' suggestions.

Now the Health Office needs to make a timetable for following up the workshop suggestions for strengthening management of health services. The timetable should show the people responsible for each activity, and the timeframe within which the activity should be completed.

There are some larger, conceptual issues which should be addressed at national level. For example, certain indicators which should be monitored through the information system cannot be tracked until the central level makes the necessary revisions to the reporting formats (see 1991 assessment report, pages 107-110). All the governorates would also benefit from improved management at central level of the essential drugs programme, from procurement to distribution. The Health Office can do much, but positive action is also needed from the central Ministry to support better PHC services.

## **PART II OPPORTUNITIES FOR COST CONTAINMENT AND COST RECOVERY IN HODEIDA GOVERNORATE**

### **1. Introduction**

The second activity of this consultancy was to assess the experience of cost recovery in Hodeida over the last few years, using al Thowra Hospital and the LCCD Clinics as examples (see the scope of work in Appendix 1). In order to identify the share of costs recovered, one must find out the size of the denominator. For al Thowra Hospital this involved working with Hodeida Health Office's finances; we looked at expenditure for the whole governorate and identified areas where costs could be brought under control. We also discussed how the available financial resources might be used more effectively.

After a brief outline of the economic background, we describe the approach chosen. Then we give a profile of the Health Office's financial allocation and expenditure. Next the profile for al Thowra Hospital is presented, with key indicators of activity. This is followed by a brief description of LCCD's First Clinic in Hodeida.

The report ends with a summary of observations concerning financial management, including cost containment and cost recovery.

### **2. Background**

Since 1979 there has been a massive expansion in the number of facilities and staff providing health care. In Hodeida Governorate all 103 Primary Health Care Units were established, at least seven health centres were constructed (including three rural hospital buildings), the LCCD opened four clinics in Hodeida City and one in Bajil, and al Thowra Hospital was opened for inpatients in January 1982. There is still a shortage of female staff who can provide maternal care, and new cadres are being trained for this work.

In the last two years the country has experienced major political, social and economic changes. On 22nd May 1990, the Yemen Arab Republic and the People's Democratic Republic of Yemen united to become the Republic of Yemen. Unity has involved reorganizing government ministries and budgets, and 1992 is the second transitional year between the former system and a policy of greater decentralization.

Less than three months after Unity, Iraq invaded Kuwait. In the following months more than 800,000 Yemenis who had been living and working in Saudi Arabia and the Gulf States had to return to Yemen. This sudden and enormous influx of returnees (mughtaribeen) has not only stretched the existing resources but has also reduced foreign exchange earnings; before the Gulf Crisis it was estimated that remittances earned by Yemenis working outside the country were \$600,000,000, that is about 50% of the country's foreign exchange earnings. The expansion of oil production has not yet made up this shortfall.

The value of the Yemeni Rial has dropped from 4.5 Rials per US dollar in 1981 to 12 Rials per dollar at the official rate and about 30 Rials per dollar on the open market (1991-92). Deterioration of the Rial's value has reduced the government health sector's ability to purchase imported drugs. It has also increased the pressure on the MoPH's budget for specialist foreign health staff whose contracts state that they will be paid in dollars. Some austerity measures have been announced to reduce government spending. For example a recent circular said that no new vehicles were to be purchased (although some sectors were exempt).

Domestic inflation in 1990 was reported to be 34% per year (World Bank, September 1991). This not only reduces the purchasing power of the budget allocation for health services. It also reduces the real wages of employees. An increase in pay covering the last three years was awarded in January 1992, but it did not fully compensate for the rise in prices. For example employees in Group 4 received an increase of 300 Rials but for a PHCW with 10 years of experience who was earning 2,500 Rials before tax in 1991, this increase is less than 4% per year.

The recent political changes combined with the present economic situation have encouraged policy makers to consider alternative financing arrangements for sustaining public health services. The previous policy that government services in the social sector should be provided free of charge is not in the new Constitution, which states that "user fees are levied with an eye on the society's public interest and in order to achieve social justice among citizens" (Article 11). It also states that "no one shall be subject to taxes, fees or other user charges except by law" (Article 12). The MoPH is examining the possibilities for introducing charges for some drugs. Several studies have begun to explore different options for financing health care (for example see Torrens, 1991).

### **3. Approach**

Meetings were held with key staff in the MoPH to discuss their views on cost recovery. In Hodeida, information on the sources of funds and expenditure for the Health Office was collected through interviews, both with staff in the Finance Department and with staff responsible for services, logistics and supply. We collected summary reports of expenditure, and examined the details of some line items using ledgers (for vehicle repairs) and bills (for utilities).

For al Thowra Hospital and the LCCD Clinic, we first visited the facilities to observe the physical layout, equipment, the services offered in each room, and staffing patterns. Then we gathered information on the costs of these resources and on the revenues collected. For al Thowra Hospital we analyzed a selection of data on inpatient and outpatient activity during 1991.

The current practices for managing the government budget made it difficult to obtain a complete and reliable picture of expenditures. The cost profiles suffer from significant gaps (eg the value of supplies sent from the central level), and these are mentioned in footnotes. The process of gathering the information revealed some opportunities for improving financial management, and these suggestions are summarized at the end of Part II.

#### 4. Profile of Public Expenditure on Health in Hodeida Governorate

All of the information on expenditure is for 1991. The analysis represents the situation during the transition towards more decentralization and greater autonomy in control of funds. During the consultancy several changes occurred; for example the Health Office received, for the first time, a monthly allocation of 660,000 Rials for running costs. In due course the analysis will need to be updated to reflect such changes.

##### a) Structure of Financial Records

Government accounts are organized in three levels of detail:

Bab Category (literally Door)  
Band Item  
Nua' Kind or Type

The main categories are:

Bab al Awal	First Category	Salaries
Bab al Thaani	Second Category	Supplies and Services
Bab al Thaalith	Third Category	Current Transfer Expenditures and General Debt Interest
Bab al Raabe'	Fourth Category	Transfer of Capital Expenditures
Bab al Khaamis	Fifth Category	Investment Expenditures

Each subsidiary level is also identified by a number. For example within Bab al Thaani there are nine Bands, and within each band there are several Nua'. Details of the official structure of accounts are shown in Appendix 8.

These categories are different from those used in the recent past. For example last year the line item codes for Bab al Raabe' closely resembled those for running costs (Bab al Thaani), and included "development projects" which funded parts of al Thowra Hospital and primary health care. Last year the staff at al Thowra Hospital prepared a budget projection with line items which did not match those in the official structure (eg Food was 1.1, Medical Supplies was 1.2); but although it was submitted to the Health Office and the MoPH, no-one asked the hospital to follow the new structure. The al Thowra staff have not been informed how the projected budget was reorganized into the new structure of accounts, making it difficult for them to monitor expenditures. The new categories do not provide all the line items needed for health budgets.

The previous Bab al Raabe' was for Projects (ie development of new activities) However, normal running costs for established activities (such as al Thowra Hospital) continued to be funded as "Projects" under Bab al Raabe' for many years, because the central level did not add this funding to the allocation for regular recurrent costs. Such "Projects" were transferred to the present Bab al Thaani (Supplies and Services) in November 1991. The analysis was made more complicated because the previous categories had been in force for most of 1991. the potential for confusion should diminish as we emerge from this period of transition.

## **b) Sources of Funds**

Funding of government health services is from the central government's revenues, and multilateral and bilateral donors. The governorate receives some resources in kind (eg medical supplies, vaccine) but we only managed to obtain a cost estimate for the immunization supplies.

Revenues are collected from patients attending Health Centres and hospitals, but the facilities are not allowed to retain these funds. All such revenue must be given to the Health Office, which must then return it to the Ministry of Finance.

## **c) Management of Funds**

Hodeida's expenditures are made in three different ways:

"al markazi" expenditures are paid directly by the central level (eg utilities, which are payments between different branches of the government).

some expenditures are paid out locally but the amount is not within the Health Office's control (eg payroll); unused funds are carried over.

some funds are spent at the Health Office's discretion, within the Ministry of Finance's regulations about switching funds between line items. Unused funds from Bab al Thaani must be returned to the Ministry of Finance, whereas any balance from the previous "project" funds in the old Bab al Raabe' could be advanced to leave a balance of zero in the account, so that the funds remained available to the Health Office.

"Al Markazi" expenditures were not examined in detail. Some bills go directly to the central level, which has never informed the Health Office's Finance Department of the amounts actually paid (eg telephone bills).

Anecdotal evidence suggests that centrally arranged contracts have extremely low cost-effectiveness. For example the most recent contracts for Chinese TAs produced staff in specialties that were not needed, and shortages of specialists not yet available in Hodeida. Similarly the delays and lack of site supervision of contracts for building work has resulted in gross wastage of resources (eg al Olofi Hospital roof; Hais Health Centre refurbishment).

The regulations governing the use of different sources of funds are not the same. For example the "Iltizaama Daulia" (International) funds for public health can be advanced, but other funds also meant for basic health services can only be disbursed against receipts.

The rule of "use it or lose it" which is applied to most of the budget means that at the end of December, any unused allocation must be returned to the Ministry of Finance, which receives a percentage of all such retrieved funds as an incentive. This system encourages the Health Office to spend as much of their allocation as possible, and prohibits saving up for large expenditures which cannot be covered by a single allocation.

Any taxes that the payee may owe seem to be deducted at source; for example the documents for contracts with landlords for rent of buildings show the gross value of the contract, and the net amount actually paid. Deducting tax at source is acceptable practice for payroll but leads to confusions in the accounts for goods and outside services. Some employees reported that if they failed to negotiate a payment (eg for paint) net of tax, the amount of tax was deducted from their reimbursement.

Rationalizing the rules and regulations so that financial managers would be enabled and positively encouraged to make the best use of resources for health services would be welcomed by both service managers and administrators.

#### **d) Profile of Expenditure**

In Table 1, we have compiled a picture of last year's finances, but some gaps remain. The total of 87.6 million Rials consists of recurrent expenditures (including salaries) and does not include:-

- Capital Expenditures (Bab al Khaamis)
- Essential Drugs (Al Tamween al Tabi)
- Equipment, Instruments, Furniture from the MoPH
- Health Manpower Institute, Hodeida
- Training from non-MoPH sources (2.8 is zero)
- Contributions to running costs and training from donor supported projects:
  - Hodeida Urban Project, Child Survival Project, Pathfinder, BOCD,
  - OXFAM, Swedish Save the Children

From the available data, we can see that

- Salaries, representing the cost of personnel, account for 75% of expenditure.
- Payments controlled from central level (Markazi) are 43% of the total.
- Utilities are paid by the central level, and represent 16% of expenditures.

Dividing the total recurrent expenditure (so far) by the population of the governorate in 1991 (1,232,979 people) gives 71 Rials per capita per year for all government health services. This includes the administrative costs but does not include the amortized value of long term investments such as buildings, equipment and basic training.

**Table 1 Profile of Expenditure on Government Health Services during 1991 in Hodeida Governorate, excluding certain items**

Bab Band Nua'	Description of Line Items	Local Expenditures Notes 1991	Markazi Expenditures 1991	1991 Total by Bab	Per- cent
1	Salaries			65,772,898.85	75%
1 ?	Employees and Local Contracts	a 42,555,454.85			
1 2 1	TAs on Contract (non Yemeni)	b	22,516,320.00		
1 2 1	Rents for Foreign TAs	c	701,124.00		
2	Supplies and Services	d		18,143,363.14	21%
2 1	Stationery, Books and Printing	122,498.00			
2 2	Fuel and Maintenance of Vehicles	326,176.00			
2 3	Special Expenditures	e 1,824,068.00			
2 4	Rents	f 83,042.00			
2 5	Utilities	1,500.00			
2 5 1	Water	g	2,703,409.40		
2 5 2	Electricity	h	5,520,564.76		
2 5 3	Post and Telecommunications	i	5,393,965.48		
2 6	Maintenance	176,333.60			
2 7	Travel and Transportation	385,686.00			
2 8	Training	0.00			
2 9	Miscellaneous	1,606,119.90			
	(Total Supplies and Services from local expenditure = 4,525,423.50	j			
	iltizaama Daulia (International)	k		2,618,000.00	3%
	Zohra to Bait al Faqih	l 918,000.00			
	Zabid	m 1,700,000.00			
	E P I			1,087,666.00	1%
	Running costs for 3 supervisors	n	138,466.00		
	Salaries for 3 supervisors	o	144,000.00		
	Supplies (vaccine, syringes, etc)	p	805,200.00		
	Total so far:	49,698,878.35	39,606,649.64	87,621,927.99	100%
		56.7%	43.3%	100.0%	

STILL NEED:

Capital Expenditures (Bab al Khaamis)  
 Al Tamween al Tabi (Essential Drugs)  
 Equipment, Instruments, Furniture  
 H M I  
 Training from non-MoPH sources (2.8 is zero)  
 All bilateral projects:  
 Hodeida Urban Project, Child Survival Project, Pathfinder, BOCD, OXFAM

## Notes to Table 1

- a Includes Employees (mughathafeen), Yemenis on short term contracts (1,856,660 per year), and Foreigners on local contracts (2,164,000 per year).  
Includes 1.1 Basic Salaries, 1.2.3 Other Contract and Temporary Staff, 1.3 Overtime and Allowances, 1.4 Allowances, and possibly 1.5 and 1.6.
- b Salaries for Russian TAs are paid in US dollars and are estimated at \$616,800 for 1991.  
Salaries for Chinese TAs are estimated at \$1,366,800 for 1991.  
An exchange rate of Rials 12.2/US \$ has been used.
- c Data on rents are from the summary of 1991 contracts. The value of the centrally paid rents (Bab al Awal) before tax was 938,000 Rials.
- d Includes al Olofi, al Thowra, TB Control, Malaria Control, Public Health, Zabid, Health Office, and Emergency Drugs.
- e Emergency Drugs budget from May to December 1991 was Rials 1.2 million and is included here.
- f Data on rents are from the summary of 1991 contracts. The value before tax was Rials 108,000. One contract for Rials 18,000 was not paid locally.
- g Annual figure is estimated from bills covering 6 months' water use (i.e. three 2-monthly bills).
- h Annual figure is based on bills covering 11 months' electricity use.
- i Annual figure is estimated from one quarterly telephone bill.
- j Details of local expenditure are from Reports supplied by the Health Office Finance Department.
- k Allocation came every three months.
- l Allocation for three months was Rials 229,500.
- m Allocation for three months was Rials 425,000.
- n Estimated by multiplying figures for July-December by 2.
- o Assuming 3 employees from Group 3c with 10 years service (i.e. Rials 4,000 per month per employee). From 2nd March 1992, these staff's salaries will be paid from Hodeida.
- p Estimated taking UNICEF expenditure in 1991 (\$0.6 million) and allocating 11% to Hodeida (ie the governorate's share of the Republic's population).

### e) Staff Costs

Analysis of the payroll details showed that the contractual arrangements under which staff work fall into four groups:-

- Yemeni employees	38.5 million Rials
- Foreign TAs on centrally arranged contracts	23.2 million Rials
- Foreigners on locally arranged contracts	2.2 million Rials
- Yemenis on short term contracts	1.9 million Rials

The cost of foreign TAs working in Hodeida have been estimated from the numbers and salaries of each type of staff. We estimate that the cost of these personnel represents 35% of total staff costs. Their contracts used to be entirely in US dollars, and a share goes directly to their own countries' governments; some are from the Commonwealth of Independent States (formerly the USSR) and some are from China. They work in the hospitals (al Thowra, al Olofi, Bait al Faqih). Their ability to communicate with Yemeni patients and colleagues fundamentally affects the cost-effectiveness of this expenditure.

About 1.6 million Rials of the payroll are salaries of staff (mostly foreign) whose work at Curative Units is scarcely connected with the mainstream of government health services. (This issue was discussed in the management workshop; see Part I.)

### f) Distribution of Other Recurrent Costs between Services

We wanted to find out the distribution of expenditures between the hospitals, ambulatory services and special projects such as control of TB and malaria (see Note (d) of Table 1). Using one month's expenditure, the Finance Department made an estimate of annual running costs (Bab al Thaani). Unfortunately the amount for public health was only 17% of the figure obtained from a larger sample of expenditure data (see Table 3). The Zabid area's allocation for PHC (156,000) was recorded as spent entirely on travel and transportation (what about fuel and vehicle maintenance?). The profile of expenditures (i.e. the distribution between the nine bands) based on projecting from one month's figures was very different from the profile in Table 1; this unsuccessful endeavour shows the dangers of making projections from a limited series of data. We have not reported the estimated share of these expenditures.

Although we were unable to reach any conclusions about the distribution of expenditures between the hospitals, ambulatory services and special projects, we were able to find out the share of the payroll between the four groupings shown in Table 2.

The first three columns show staff costs that are within the Health Office's direct control. Although the Health Office itself has only 6% of staff, they absorb 10% of the payroll; this is because of the relatively high proportion of Level 2 staff (doctors) in the administration. Ambulatory services account for half of the staff and half of staff costs.

However the picture is not complete until we add in another 152 foreign TAs whose terms of employment are arranged by the Ministry. The right-hand column shows that ambulatory services providing primary health care only get 30% of all the funds spent on staff, the hospitals absorb 63%, and the administration and management at the Health Office takes 6%.

**Table 2 Distribution of Personnel and Salary Costs between Four Groups**

Cost Centre	Staff on H.O. n	% of staff	Payroll % of payroll	Foreign TAs	Total Cost % of all staff	of Staff % of all salaries
Health Office	56	6%	10%	0	5%	6%
al Olofi Hospital	250	28%	27%	39	27%	29%
al Thowra Hospital	154	17%	14%	113	25%	34%
HCS and Units	441	49%	49%	0	42%	30%
Total	901			152		

Is this expenditure profile good or bad? To answer the question one must combine the financial information with indicators of activity or output and make an epidemiological judgment about whether the current activities are the most appropriate for the governorate's health needs. For example if hospital resources are being spent on preventable illnesses, a more effective and efficient allocation of resources would be to prevent these cases in the first place, thus avoiding the cost of treatment. This implies improving preventive and primary care, which may require a change in budgetary allocations.

### **g) Public Health Budgets and Expenditures**

**Three Budgets:** Funds for public health arrive in three separate packages: one is for Health Centres, one for PHC Units, and one (Iltizaama Daulia) for basic health services in general. The budgets for Health Centres and Iltizaama Daulia are always quoted as quarterly amounts, and the Units' budget is semi-annual (six months). A further complication is that the budget for Units and Iltizaama Daulia are divided into two portions: Zabid area, and the rest of the governorate (i.e. Zohra to Bait ai Faqih). The budget for Health Centres, according to the Finance Department, is for all Health Centres except Zabid, so Gerahi, Hais, Jebel Raas and Khowkha should receive funds from the Health Centre budget.

Table 3 gives a detailed breakdown of the public health expenditures within these three categories. The annual amount (excluding Zabid) is estimated in the last column, and shows that:-

- more than half of these resources are spent on transportation; 35% on fuel, oil and maintenance, and 18% on public transport.
- the next largest share goes for staff incentives (26%).
- almost one-tenth of expenditures are listed as "Miscellaneous."

**Table 3 Annual Expenditure 1991 on PHC Running Costs from Three Budgets: Health Centres, PHC Units and Iltizaama Daulia**

These figures have been estimated from quarterly expenditures for Health Centres and Iltizaama Daulia, and six months' data in the case of PHC Units. These funds were in the old Bab al Raabe' (Projects) until November 1991 when they became part of Bab al Thani (Supplies and Services). The code numbers (Bab, Band, Nua') follow the present codes for Bab al Thani.

Bab	Combination of three sources of funds	Health Centres	P H C	Iltizaama	Annual	Notes
Band	Budget is for ?? months -->	3	Units	Daulia	Running Costs	A
Nua'			6	3	12	
	?Allowance for transportation & Equip??					
1.3.2	Incentives			3,096.00	12,384	
2 1 1	Stationery & Office supplies	37,610.00	19,213.00	148,900.00	595,600	
2.2 1	Fuel & Oil (cars)	49,023.50	58,820.00	33,804 25	188,866	
2 2 2	?Maintenance & Spare parts??			7,000 00	448,951	
2 2 2	Spare parts & Maintenance of Vehicles	9,540 00	91,563.00	32,379.75	28,000	
2 3 1	Treatments, drugs	450.00			350,805	
2 4 1	Renting buildings	1,200.00	12,000.00		1,800	
2.5 1	Utilities Water	1,683.00			28,800	
2.5 2	Utilities Electricity	3,914.00			6,732	
2 6 1	Maintenance of buildings	2,520.00		2,320.00	15,656	
2 6.2	Maintenance of equipment	3,600.00			19,360	
2 7	Public transportation	84,913 00	26,854.00		14,400	
2.9	Miscellaneous	47,746.50	4,600.00	2,000 00	393,360	
					208,186	
	Total, Zohra to Bait al Faqih	242,200.00	213,050.00	229,500.00	2,000	B
	Zabid	0	78,000.00	425,000.00	1,856,000	C
	Total, per specified interval	242,200.00	291,050.00	654,500.00	4,168,900	D
	Total, per YEAR	968,800.00	582,100.00	2,618,000.00	4,168,900	E
	Number of Facilities, by type:	HCS	PHCUs			
	Zohra to Bait al Faqih	29	71			
	Zabid	5	28			
	Total Number of Facilities	34	99			

- A is the number of months covered by each allocation.  
 B is the sum of the columns above; expenditure details from the Finance Department.  
 C is the allocation to Zabid area, details of expenditure are not available.  
 D is B + C  
 E adjusts the figure in D ( which is for the number of months in A) to the annual total

However, staff in the Health Office explained that most of the funds for public transportation (line item 2.7) were in fact used for additional staff incentives. So these data do not give an accurate profile of expenditure on transport or on incentives.

**Funding per Facility:** To find out how much is allocated for the two types of facility (Health Centres and PHC Units) in the two parts of the Governorate, Iltizaama Daulia has to be divided up. We have done this using the funding ratio from the other two budgets (Health Centres and PHC Units) which implicitly gives a Health Centre 4.85 more funds than a PHC Unit. Once the three budgetary allocations have been divided up in this way (see Table 4) it becomes clear that there is a huge discrepancy in the amount of funding per facility. The central level has allocated between three and four times more funding per facility in the Zabid area than for the northern part of the Governorate. This difference is not accounted for by higher population density in Zabid; when we calculate funding per capita, the allocation for the Zabid area is still three times higher.

**Table 4 Budgets for Public Health Funds within Hodeida Governorate**

<b>a) Rearranging the three budgets shown in Table 3:</b>						
		Zohra to Bait al Faqih	Zabid area	Total per period	Total per year	
Health Centres	Quarterly	not applicable		242,200	968,800	
PCH Units	Every 6 months	213,050	78,000	291,050	582,100	
Iltizaama Daulia	Quarterly	229,500	425,000	654,500	2,618,000	
Total annual allocation from these three budgets					4,168,900	
<b>b) Estimating the annual allocation per type of facility for two areas:</b>						
		Zohra to Bait al Faqih n	Zabid area n	Total facilities		
		Rials	Rials			
i	per Health Centre	29	29,358	4	29,358	33
ii	per PCH Unit	71	6,001	28	5,571	99
Iltizaama Daulia:						
iii	per Health Centre	29	21,030	5	157,731	34
iv	per PHC Unit	71	4,340	28	32,548	99
Combining the data:					Total	
	per Health Centre	i+iii	29	50,388	4 or 5	187,089
	per PHC Unit	ii+iv	71	10,341	28	38,119
Total						
<b>c) Public Health funds per capita:</b>						
	Total Rials	Zohra to Bait al F		Zabid area	Total	
		2,195,470		1,973,430	4,168,900	
	Population	938,012		294,967	1,232,979	
	Rials/Capita	2.34		6.69	3.38	

**Public Health Transportation:** As transport is regarded as such a serious problem in so many departments of the Health Office, we made a closer analysis of transport costs by examining the ledgers recording running costs for Public Health vehicles. Records for expenditure on the Zaidia car during 1991 showed:-

Petrol (three entries)		22,545	Rials	
Spares and repairs		7,185		
	Sub-total			29,730
Driver's salary	1 year of service	24,008		
	10 years' service	48,016		
	Total			53,738 minimum
				77,746 maximum

There are no records of kilometres travelled so we can make assumptions to estimate distance travelled in the year.

At 3.5 km per litre, the vehicle would have travelled	13,000 km
At 3.0 km per litre, the vehicle would have travelled	11,200 km

The scheduled distance per year is 8,100 km for supervision if every trip is made (see Appendix 5), and we can add 3,500 km for trips to the Health Office (one round trip of 136 km every two weeks). Many supervision visits were not made in 1991, and the distance travelled for official business must have been less than 11,600 km.

The ledger recording PHC payments shows three entries for consumption of Zaidia's fuel and oil in 1991:

two bills in August for a total of 10,431  
 one bill in January 1992 for 12,114

If these expenditures are to be controlled, they must be monitored on a regular basis, and much more frequently than twice per year. Monitoring should connect the level of fuel consumption with the trips made and distance travelled. A vehicle use policy would make it possible to do this monitoring.

Maintenance costs also seem to be uncontrolled. Over 27,000 Rials was spent on one car, including a painting bill for 11,500 Rials.

When we consider total expenditure on the vehicle fleet (fuel, maintenance and drivers' salaries) and the fact that these expenditures have not produced a functioning vehicle fleet, it is essential to stop using funds ineffectively and to look for alternative, more viable strategies for PHC transport.

## **h) Suggestions for Strengthening Financial Management**

- **Put financial control where the effect of expenditure is felt:**  
The obvious components for decentralized control are contracts with foreign TAs, payment of utility bills, and contracts for building and maintenance work.
- **Establish incentives to control costs:**  
An example would be giving contract staff a reasonable allowance for their utilities; if they could keep what they did not use, they would quickly switch from using electric cookers to gas. Incentives on vehicle and transportation expenses will have to be carefully designed to avoid distortions and to ensure that the incentive encourages better performance of duties as well as cost-consciousness.
- **Establish mechanisms for monitoring and controlling costs:**  
This involves setting reasonable standards (eg km per litre, or number of telephone hours per month), comparing actual expenditure with the amount expected, and giving regular and frequent feedback to the people who are in charge of the activity (eg supervision) or equipment (eg telephone).
- **Adhere to the line items when recording expenditures:**  
Financial monitoring is impossible if records do not accurately represent actual expenditure.
- **Develop a clear policy on staff incentive payments and follow it:**  
This will remove the duplication referred to by workshop participants and make it possible to reward good performance and discourage poor work, which will contribute to improving quality, efficiency and effectiveness of health services.
- **Allocate funds according to clearly stated objectives and guidelines:**  
The calculations for making financial allocations at central level should be based on clearly stated criteria which are designed to provide for the needs of each type of facility according to its location, catchment population, and services provided.

## **5. Cost Recovery at al Thowra Hospital, Hodeida**

### **a) Description of the Hospital and its Services**

Al Thowra Hospital was built in the 1970s with funds from Kuwait. The completed structure stood unused for several years until it opened for patients in 1982 and gradually expanded until all departments were functioning. It is an acute general hospital with five inpatient wards and capacity for 200 beds. People come from three other governorates (Hajja, Mahweet and the western side of Sana'a) to use this hospital. (Most emergency trauma cases are taken straight to al Olofi Hospital.) There are 12 outpatient clinics providing specialist care, but the hospital is used for primary care by many people because few of the 11 government health centres in Hodeida City have a full-time physician on their staff.

The hospital opened with the help of gifts from the Governorate, the LCCD and private benefactors. The Ministry of Health funded it as a project (Bab al Raabe') and did not make any budgetary provision for certain essential running costs such as plumbers and maintenance. Unfortunately expenditure for urgent maintenance was needed straight away; the air conditioning system was second hand, used 120 volts instead of 240, and was a water-cooled system. The hospital design had low ceilings and was not appropriate for Hodeida's climate, either for natural ventilation or for allowing space for the pipes carrying the AC's cooled water to run on the inside of the building. So these pipes had to be installed on the roof where they heat up in the sun. The first set of spare parts to make the AC system work cost \$40,000; it was estimated that a new and more appropriate system would have cost 5 million Rials but the capital funds could not be obtained. Today there are domestic AC units installed in every room as the disastrous donated system is too costly to maintain.

Repairs were also needed to make the central sterilizing equipment work, and funds had to be found to pay for contract local staff to work in the laundry, kitchens and do plumbing and cleaning.

The absence of a budget for these essential running costs meant that the hospital would not be able to continue without extra money. Permission was obtained to raise funds by opening "Special Clinics" in the afternoons where patients could obtain specialist outpatient services for a fee which was less than that charged in the private sector. The revenues were used, under the supervision of a committee, to pay staff for their time and to subsidize the general running costs of the hospital. The original plan was that 30% of revenues would be used for extra payments to staff working overtime, 30% for materials, supplies, instruments and equipment, 30% for maintenance of the physical plant (building, AC system, plumbing, etc), and 10% for contingencies. In (c) below we show how 1991 revenues were spent.

The total number of hospital staff in 1991 was 274, consisting of 154 government employees, 113 Chinese TAs, and 7 local hire (maintenance and administration). Most of the staff who work afternoon and night shifts for the wards are Chinese.

## b) Hospital Services in 1991

The monthly reports are available for 11 months, so we have adjusted this figure to obtain an estimate of 6,581 inpatients for the full year (see Appendix 9). Although the monthly reports give the number of beds as 200, we counted them and found 183; this figure has been used in the formulae in Appendix 9 to calculate some inpatient statistics, summarized below:

average length of stay	8.25 days per patient admitted
occupancy rate	81%
turnover interval	1.9 days that a bed lies empty between patients
throughput per bed	36 patients per bed per year

Note that if the inaccurate figure of 200 beds were used, the occupancy rate would go down to 74%.

The average length of stay is said to have been substantially reduced by intervening in the Chinese doctors' practice of keeping patients in hospital until they are well enough to return to work. It is expensive to keep a convalescent patient in an acute care bed. For comparison, the private hospital at al Salam, Sa'ada (56 beds) had an average length of stay of 6.48 days and 78% occupancy for the year ending November 30th 1991.

During 1991 we estimate that there were 1,487 major operations and 471 minor operations (see Appendix 9).

Activity indicators for the 12 outpatient departments and the injections and dressings rooms are shown in Appendix 9 and summarized below. We took these data from the entries in the daily summary because there were some transcription errors in the monthly reports sent to the Health Office.

Number of days open      297 days, ranging from 365 (Paediatrics)  
to 157 (Sonography)

Outpatients	Total	Percent	Average per day
Paediatrics	56,655	20%	155
Injections	40,065	14%	135
Internal Medicine M & F	39,209	14%	132 (two clinics)
Dressings	29,028	10%	98
Surgery	27,199	10%	92
Eye Clinic	24,829	9%	94
Obstetrics	14,565	5%	49
Ear Nose & Throat (ENT)	14,474	5%	71
Acupuncture	12,449	4%	42
Dental	12,006	4%	43
Cardiology (ECG)	6,233	2%	21
Psychiatric & Neurology	4,599	2%	25
Sonography	1,947	1%	12
<b>Total Outpatients</b>	<b>283,258</b>	<b>100%</b>	<b>954 per day.</b>

The number of children reported from the Paediatric OPD includes those seen during the afternoon clinic. The other afternoon clinics do not record their patients, so we have used the revenue data to estimate the number of patients seen in the afternoon clinics in two ways:

- 1 Every patient pays 20 Rials for a ticket when attending the afternoon clinics; receipts from tickets were 214,080 Rials so this gives 10,704 patients (36 patients per day).
- 2 Red Crescent received 34,412 Rials from al Thowra afternoon clinics; at 1 Rial per patient there would have been 34,412 patients (115 per day).

We do not know which estimate (10,704 patients per year, or 34,412) is closer to the truth, so it is not possible to calculate the average fees paid per patient attending the afternoon clinics.

### c) Financial Profile

Patients attending al Thowra Hospital in the morning pay a registration fee of 2 Rials for the OPD and 50 Rials for a patient admission. Nominal fees are also charged for diagnostic tests (laboratory and x-ray). The Special Clinics in the afternoons have a much more detailed fee schedule, which is shown in Appendix 10; these fees are lower than fees in the private sector.

Revenues collected from al Thowra's services are shown in Table 5 below. All of the revenue collected in the morning goes to the Ministry of Finance (79%) or to the Red Crescent Society (21%). Most of the revenue from the afternoon clinics is used to support the hospital's services; the payments to Red Crescent from afternoon work ceased during this consultancy. Details of the revenues obtained from different services in the afternoons are given in Appendix 9.

**Table 5 Revenues Collected at al Thowra Hospital, Hodeida in 1991**

MORNING INCOME 1991	Rials	% of morning	% of Total	% to Red Crescent
a) to Ministry of Finance				
Examination Fees	137,100	20.8%		
Admission & Operations	132,600	20.1%		
Lab & Xray	167,820	25.4%		
Miscellaneous	65,075	9.9%		
Fines	20,824	3.2%		
Total to Min of Finance	523,419	79.2%		
b) Red Crescent	137,100	20.8%		4.4%
Total morning income	660,519		21.0%	
AFTERNOON INCOME 1991		% of afternoon		
a) Clinics	2,456,049	98.6%		
b) Red Crescent	34,412	1.4%		1.1%
Total afternoon income	2,490,461		79.0%	
TOTAL INCOME 1991	3,150,980		100.0%	5.5%

The hospital generates 3.15 million Rials of revenue, of which more than half a million Rials was returned to the Ministry of Finance, 171,512 Rials was given to the Red Crescent (following a directive from the prime minister in 1986), and 2.46 million Rials were available to spend on the hospital.

In Table 6 we have combined information on expenditure from the funds raised in the afternoons with expenditures by the MoPH and the Health Office. These figures include an estimate of emergency drugs for the last eight months of the year, but do not include the value of other supplies (eg medical gases, laboratory consumables) and are therefore not complete.

**Table 6 Expenditures from Special Clinics and from MoPH Funds**

**(This table does not include capital expenditures.)**

	From Special Clinics	From MoPH Funds	Total	Percent
Bab al Awal (Salaries)				80%
Local	1,384,272 a	6,015,884 b	7,400,155	26%
Foreign TA	241,000	14,991,360 c	15,232,360	54%
Bab al Thaani				20%
Supplies & Services	1,160,529	1,800,000 d	2,960,529	10%
Emergency drugs		599,256 e	599,256	2%
Utilities:				
Water		438,288 f }		
Electricity		895,017 f }	2,207,797	8%
Telephone		874,492 g }		
Bab al Thaalith (no longer used)	22,940		22,940	*
Total Expenditure	2,808,741 h	25,614,296	28,423,037	100%
Percent of total	9.9%	90.1%		

\* Less than 0.1%.

a Contract salaries (plumbers, cooks, laundry staff) 641,950  
Overtime for all hospital staff 294,047.36  
Incentives 394,007.65  
Responsibility allowance 54,266.66

b Al Thowra employees' salaries were 14.14% of total H.O. payroll in November.

c Foreign TA paid by the central level **does not include rents**.

d Estimated from the monthly allocation of 150,000 multiplied by 12.

e Expenditure for 8 months (May-December) estimated from data for September to December 1991 (Rials 299,627.92). See Appendix 9 for details of items.

f Estimated for water and electricity using Al Thowra's share of the total telephone bill in Table 1 (16.2%).

g Estimated by multiplying the quarterly bill for April/May/June by four.

h The expenditure in the first column exceeds the disposable income from funds raised in the Special Clinics by 352,692 Rials, that is by 14%.

Of the expenditures identified so far, 80% goes on salaries and 20% on other running costs. More than half of the recurrent costs are for Foreign TA. The central level controls 62% of the expenditures (54% on Foreign TAs, 8% on utilities).

Of the 2.8 million Rials reported to have been spent from revenues collected at the special clinics, 58% is spent on various payments to staff, and 41% on supplies and services. The hospital's own revenues are providing 33% of its expenditure on Bab al Thaani (excluding utilities).

These expenditure data are for both inpatient and outpatient services. We have assumed that all non-staff expenditure is for inpatient services. The allocation for Bab al Thaani (1.8 million Rials per year) works out to 33 Rials per occupied bed day (54,322 inpatient days). Clearly the contribution of the Special Clinics has been crucial, but the expenditure on all items other than staff amounts to only 107 Rials per inpatient per day - for drugs, diagnostic tests, food, laundry, cleaning, electricity, maintenance of equipment, etc. A hospital cannot provide adequate care with the equivalent of \$3.56 per inpatient per day for all non-personnel costs.

It should be mentioned that as equipment breaks (eg x-ray, sonography, ECG) and the necessary repairs cannot be paid for, the capacity of the Special Clinics to earn revenues is curtailed. For example the fees from the Sonography Clinic contributed 10% of 1991 revenues and would have been 333,000 Rials if the equipment had been working for the last three months of the year; this clinic will provide no revenues during 1992 unless the equipment is repaired or replaced.

In order to estimate the full expenditure on inpatient care, we have made the simple assumption that 1.5 million Rials are spent on staff for outpatient clinics (12 Yemeni MDs, 12 Yemeni nurses, and the extra payments to foreign TAs). This gives the average cost per occupied bed day as 496 Rials, of which 389 Rials is for staff.

This profile confirms what the senior managers have known for years: namely that the hospital is desperately underfunded for services and supplies. One would expect that about 60% of recurrent costs would be for staff and 12% for drugs and dressings. Assuming that the present level of expenditure on staff is adequate, this implies that 4,526,500 Rials should be spent on al Thowra's drugs and dressings in a year. This is seven times more than the amount spent on emergency drugs last year.

Data from three modest Palestinian hospitals indicate that their costs per occupied bed day are \$91 (al Ahli, 68 beds), \$95 (Augusta Victoria, 137 beds) and \$96 (Makassed, 256 beds).

Information on other government hospitals in Yemen shows enormous inequalities in the size of the financial allocations, whether measured per occupied bed day or in terms of the size of the facility (bed capacity). For years, Al Thowra Hospital in Hodeida has been allocated the same budget for running costs as Zabid Health Centre, which has no inpatients.

#### **d) Suggestions for Improving the Financing of al Thowra Hospital**

In the preceding analysis we have seen that the Special Clinics in the afternoons are not only covering their own marginal costs (eg staff overtime) but also subsidising the general operation of the hospital. First we make some suggestions about financial management of funds supplied by the Ministry of Public Health. These are followed by specific suggestions for the Special Clinics in the afternoons.

##### **- Use equitable and transparent criteria when allocating funds:**

The central level should introduce equitable and transparent criteria for allocating budgets for hospitals. This includes staff, supplies and services, and replacement of equipment, which should be budgeted at about 6% of total annual recurrent costs (including staff). Capital investments in equipment and building improvements also need to be allocated so that provision of adequate services is ensured.

##### **- Participate fully in arranging contracts for Foreign TAs:**

At present the hospital management has no control over 54% of the expenditure on al Thowra Hospital. In 1991 the central level spent 15.2 million Rials on foreign staff, which works out to be 2.7 times more per MD and 3.0 times more per nurse than the cost per Yemeni staff. There are still shortages of some specialties, and of nurses prepared to work during the afternoon and night shifts. But having observed the almost complete absence of communication between the Foreign TAs and their Yemeni colleagues and patients, one has serious questions about the cost-effectiveness of the present level of expenditure on Foreign TAs.

In the short term, cost-effectiveness can be improved by making sure that the Foreign TAs who are sent to work in the hospital have the necessary skills. The central level should agree that the hospital management will be invited to specify al Thowra's requirements (such as specialties) for foreign TAs. These contracts should be revised so that the hospital managers (or the Health Office) are able to control the consumption of utilities, which are presently provided free and in unlimited amounts.

In the medium term, it would be worth considering offering Yemeni staff adequate incentives to cover the afternoon and night shifts. This would involve shifting the funding profile away from Foreign TAs and towards local staff.

In the longer term the training of Yemeni staff to fill the necessary specialist posts should continue.

##### **- Introduce Patient Screening to Identify Appropriate Level of Service:**

The specialist outpatient clinics cannot function properly as long as they are swamped with patients. Al Salam Hospital in Sa'ada has a Primary Care Clinic as well as its specialist clinics. Al Thowra Hospital managers could consider setting up a rapid screening unit in which patients are

routed to the level of service that they need. This would have to be staffed by people who can communicate effectively and make a competent preliminary diagnosis.

An alternative proposal is to increase the integration between al Thowra and the city Health Centres. These will be upgraded during the Hodeida Urban Project so that primary curative services of good quality become available throughout Hodeida. The existing referral system should be fully complied with by all health providers; then non-emergency patients who go straight to the OPD without a referral slip can be told that they will be seen after all of the patients who have been referred. Another option is to charge more money to patients who attend the Hospital OPD without a referral; this option would require legislative approval.

People have become accustomed to using the hospital for every health problem, so effective public relations and health education will be needed to convince them to alter their behaviour.

**- Develop an Explicit Policy on Quality of Service and Fees:**

Revenue from the Special Clinics in the afternoons will fall if people do not feel that the quality of service is better than what they can get for 2 Rials in the mornings (in the same rooms, sometimes with the same foreign staff), or elsewhere in Hodeida. The Special Clinics' administration should develop a policy for ensuring a quality of service worth paying for. Then fees should be regularly reviewed (eg annually) to maintain the desired differential between them and private sector fees.

Pricing policy can be used to put a small financial penalty on unnecessary treatments demanded by fee-paying patients (eg injectable drugs instead of pills). The present cost of an injection (2 Rials) is only 40% of the price charged at the LCCD Clinics.

**- Monitor Activity and Revenue:**

At present the Special Clinics administration keeps detailed financial records but does not have activity indicators, such as patients per clinic per day. Monitoring of such indicators may reveal the need for more staff on Saturdays and fewer staff at other times, leading to a more efficient use of overtime allowances. Tracking patient load and revenues by week or by month would make it possible to identify changes that may require prompt intervention. Such monitoring activities would also provide a model for the general management of the hospital.

This last suggestion links back to the general financing of the hospital. If and when central funds are allocated according to stated criteria (eg number of beds, or workload, eg occupied bed days), then the Health Office will need good data in order to support its request for funds. At present the single statistics clerk is doing extraordinarily well to produce monthly reports from basic data that are handed in on scraps of paper. The daily summaries and the monthly report formats need improving; for example when the Arabic says "Negatives" and the English says "Positives" for the same box, which number should be entered?

**- Process and analyse hospital statistics:**

The hospital management can specify a short list of indicators which they wish to see on a monthly basis (eg average length of stay and occupancy rate, for each set of beds in Appendix 9). The Health Office's Planning and Statistics Department can work with the hospital's statistical clerk to prepare the data entry shells, then process and check data, and produce the required analysis. The results should then be discussed with heads of specialty in the hospital to improve patient management.

## **6. Cost Recovery at LCCD First Clinic, Hodeida**

In the early 1980s the Local Council decided to open its own clinics because the specialist outpatient departments at al Olofi Hospital were too crowded and the private clinics were too expensive for poor people. They asked the MoPH to help identify the specialties required (obstetrics and gynaecology, general and internal medicine for men and women, paediatrics, dermatology and dental care). However there was no surplus of doctors with these specialties who were prepared to work full time (mornings and afternoons/evenings) in an LCCD clinic. After many meetings it was agreed that foreign specialists would be recruited.

The First LCCD Clinic opened in a rented building on Sana'a Street on 7th June 1983. The next year the Second Clinic opened in Omaal, and the Third Clinic opened on Jemaal Street. The Fourth Clinic opened in 1985, closed the same year, then reopened in 1987 in Shamsan. The Second Clinic was purpose built by the LCCD and the second floor is presently being converted to a renal dialysis centre. The other clinics are in rented buildings. The rest of this section concentrates on the First Clinic.

The clinic is open from 9 am to noon, and from 4 pm to 8 pm, with emergency cover from noon to 4 pm and from 8 pm to 10 pm. Today the services offered are general and internal medicine for males, obstetrics and gynaecology and general/internal medicine for females, paediatrics, dermatology, and dentistry. All of the seven physicians and the dentist are foreign and most have come from Egypt. There are rooms for injections and dressings, and a laboratory; the staff running these diagnostic and ancillary services are Yemeni. The services vary slightly from year to year, depending on the availability of staff and equipment. The current fee schedule is shown in Appendix 10.

Table 7 shows the number of patients for the last two years. It is interesting to note that the largest number of patients are women, in contrast to al Thowra Hospital OPD where 54% are male. The female doctors at the LCCD First Clinic speak Arabic as their mother tongue, and this may be a factor influencing women to attend this clinic rather than the hospital OPD, where they are likely to see a foreign doctor.

**Table 7 Number of Patients and Procedures at LCCD First Clinic, Hodeida**

	1990 Patients	Average Revenue/ Patient (Rials)	1991 Patients	Average Revenue/ Patient (Rials)
Female	16,007	21.45	16,884	24.99
Male	15,935	21.12	14,158	24.99
Pædiatric	15,440	21.38	12,292	25.00
Dentist	0		1,720	25.02
Dental Operation	0		1,145	77.95
Laboratory	29,636	33.93	28,569	34.52
Injections	8,895	6.16	25,908	3.91
Dressings	189	9.92	123	11.75
Cutary	77	140.39	50	108.00
Ear Nose Throat	5,393	22.08	742	24.85
F.T.	21	21.19		
X-Ray	0		3,696	25.12
ECG	0		1	25.00
Annual Totals	91,593	24.04	105,288	22.99
Total Revenue (Rials)		2,202,312		2,420,870
Average Revenue per month		183,526		201,739
Minimum	April	119,295	August	124,600
Maximum	October	264,895	January	310,415

Two important points emerge from Table 7:

- The average revenue per patient is less than the cost of the registration ticket (see Female, Male and Pædiatric). This may be explained by the LCCD's policy on exemptions which allows the very poor (eg those registered for social assistance) to receive treatment without charge.
- The average revenue per patient and procedure fell by 4% between 1990 and 1991. However the number of patients and procedures rose by 15%, and the net result was an increase in revenue of 10%.

These data illustrate the difficulty of predicting revenues from user fees. The minimum and maximum revenues varied by a factor of two in 1990 and two and a half in 1991, and the high and low points occurred at different times of the year. The population's use of fee-for-service facilities is influenced by a complex set of factors including changes in their own economic circumstances

and ability to pay, and the availability of alternative sources of care. For example although immunization is available at the First Clinic, the volume of service is negligible; most mothers choose to take their children to Tahreer or Ghuleil for this service.

LCCD staff estimated that in the early years revenues covered 25% of their running costs and that now this figure is 50%. We tried to build a profile of clinic expenditures (see Table 8) but there were many gaps. Unfortunately these figures are not complete enough to draw any conclusions about cost recovery.

**Table 8 Some Expenses for the LCCD First Clinic, Hodeida, 1991**

Description		Rials Per Year		Notes
Salaries, Foreign staff	n=7	1,519,149	OR 1,742,160	a
Housing, Foreign staff		168,000		b
Salaries, Local staff	n=15	805,694		c
Incentives and overtime		?		
Laboratory supplies		218,750		d
Rent of building		144,000		e
Utilities		?		
Fuel and oil for staff transport		73,500		d
Refurbishment of clinics		?		
Equipment		?		
Maintenance		?		
Materials		?		
TOTAL SO FAR:		Low 2,929,093	High 3,152,104	
Revenue 1991		2,420,870		

- Lower figure is 7/16 (43.75%) of the payroll for the 16 foreign staff. Higher figure is salary for a specialist multiplied by 7, at 12.2 Rials/s/s.
- Rent allowance for one person is 2,000 Rials per month.
- Estimate based on average monthly salary for Level 3 (nurse) government employee.
- Estimate based on First Clinic's share of foreign staff (43.75%).
- Data are for the First Clinic.

An important difference between the financing of LCCD Clinics and financing government health facilities is that the LCCD has sources of funds (eg fees from the port, the qat suq, utility companies, taxi and airline services, rents, as well as central funding) which can be used to support the work of the clinics. For example the first contracts with specialists were arranged in dollars; when the exchange rate changed, this caused a sudden increase in clinic expenses, which could be covered from other sources of funds.

## **7. Concluding Remarks on Financial Management in the Health Sector**

With an expanding health service, falling purchasing power of the allocated funds, and no clear prospect of an end to budgetary pressures, the government health sector faces three choices:

- tolerate a deterioration in the quality, quantity and/or coverage of services;
- look for ways of improving efficiency and increasing productivity;
- search for new sources of revenue.

The preceding analysis indicates that a combination of these options may be chosen for strengthening financial and resource management, both for health services throughout the governorate and for al Thowra Hospital.

Services may be restricted to deliver a better quality of care within the resource constraints. For example instead of the present ambition (which has failed) to provide immunization every month in all rural areas, the possibility could be considered of supplying peripheral units every other month, and putting a lot of effort into ensuring that the scheduled sessions do in fact take place. Another example of restricting services is to introduce screening of those wishing to attend hospital outpatient clinics, to distinguish primary care cases from those who really need to see a specialist; this would allow more time per OPD patient and would make better use of specialist care, a scarce resource. The balancing investment in general practitioners at the Health Centres in Hodeida City has to take place so that people are able to obtain primary care at the appropriate level.

These examples underline the importance of making a positive connection between planning investments and services, planning use of funds, and monitoring both activities and expenditures. We have made suggestions for establishing mechanisms for monitoring and controlling costs, including setting up the incentives which will encourage staff to use public resources responsibly and efficiently. The mechanisms include all staff who process financial data adhering to the same systems; this may involve short in-service training of staff at health facilities and in the Health Office. Financial monitoring will be meaningless unless the expenditure records reflect the real use of funds, so some current practices will have to change, if planners and senior managers are to have reliable data on which to base their plans.

There seem to be some financial regulations which discourage efficient use of funds (for example the difficulty of transferring funds between line items, and the financial penalty for "underspending"). The health services need a financial management system which promotes efficiency and productivity, and central level review of the present regulations is needed to achieve such a system.

The greatest benefits can be obtained from changes at central level in the way resources are allocated and committed. We have seen the inequities in PHC funding between different parts of the Governorate, and the inequities between al Thowra and sister hospitals which opened later and were funded differently. Funds should be allocated according to clearly stated objectives and guidelines, and the criteria should be equitable. This applies to PHC (eg funding per capita, or per PHC Unit) and hospitals (eg funding per occupied bed day).

Finally it is time to move the control of public finances closer to where the effect of expenditure is felt. We have found that 43% of Hodeida Governorate's public expenditure on health is controlled by the central level, and for al Thowra Hospital this figure is 62% (foreign TAs and utilities). If the Health Office had greater involvement in drawing up contracts for foreign TAs and building contracts, and was responsible for the level of expenditure on utilities, the resources are likely to be spent more carefully and effectively, especially if greater flexibility between line items is permitted.

Many changes have already taken place in the transition to greater decentralization. In the past, considerable expenditure was incurred to fulfil the requirements of processing financial documentation at the central level; it is expected that much of this expense can now be saved. The Health Office faces a positive opportunity to improve the efficiency and productivity of the resources at its disposal.

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## **APPENDICES**

- Appendix 1 Scope of Work**
- Appendix 2 Schedule of Activities and People Met**
- Appendix 3 Report of a Workshop on the Management of PHC**
- Appendix 4 Memorandum about Shortages of Essential Stationery**
- Appendix 5 Survey of Zaidia Drivers to Find the Cost of Renting a Vehicle**
- Appendix 6 Immunization Supplies Estimated under Alternative Assumptions**
- Appendix 7 Format for Data About the PHC Unit's Catchment Area**
- Appendix 8 Structure of Government Accounts by Bab, Band and Nua'**
- Appendix 9 Hospital Statistics**
- Appendix 10 Fee Schedules**

**APPENDIX 1**

**Scope of Work (2 pages)**

## APPENDIX 1

### SCOPE OF WORK PHC MANAGEMENT CONSULTANT ACCS/RFACU/Yemen

NAME: Rachel Feilden

CONSULTANCY: PHC Management

PERIOD: January 4 - February 25, 1992

PURPOSE: I. Conduct a PHC Management Workshop for the PHC/EPI managers in the governorate based on consultant's November report on the ASSESSMENT of PHC IN HODEIDAH GOVERNORATE.

II. Perform an assessment on the experience of cost recovery over the last several years at Al Thorah hospital in Hodeidah and health centers operated by the LCCD in Hodeidah governorate.

I. In collaboration with the HOPH and the Hodeidah Health office, the consultant will plan and conduct a PHC Management Workshop for the PHC/EPI managers in the governorate. This will provide the opportunity to review the consultant's report from the previous consultancy and discuss practical methods and recommendations to improve the PHC system in the governorate. It will also provide the opportunity to determine what areas of the system to focus on in the short and long term in order to improve PHC activities. As part of the workshop, it is expected that specific problem areas will be identified; a practical strategy will be suggested to correct specific problem areas along with the specific resources needed. A realistic implementation schedule will also be developed.

II. In collaboration with the MOPH, the Hodeidah Health Office, and Al Thorah hospital conduct an assessment on the experimental efforts to recover a portion of the operating costs of the hospital and the LCCD health centers through the charging of fees for certain patient services. Collect, review and analyze this data in view of making appropriate recommendations to support the running costs of the hospital and health centers from patients fees. As a result of the study, determine the present constitutional restrictions, if any. Also, determine whether eligibility requirements should be established and by who for those patients who are obviously poor to be charged for services.

#### SPECIFIC TASKS:

I. Meet with representatives from the MOPH/LCCD and the WHO PHC technical consultant in Sana'a. Travel to Hodeidah and meet with the Hodeidah health office staff, LCCD representative, Al Thorah hospital representative, and Governorate Coordinator to,

**APPENDIX 1 (continued)**

discuss the nature of the two month consultancy and the role of the respective parties. Arrange to meet again at the end of this consultancy to discuss findings and review recommendations.

2. In collaboration with the Hodeidah health office staff, plan and conduct the PHC Management Workshop as described above and prepare a report on the recommendations and action to be taken.
3. As background to the cost recovery portion of the consultancy, review the new constitution and identify any areas that relate to health and the role of the public and private sector in providing health services. Determine what the limitations are constitutionally and/or politically on public health facilities developing a system of official "fees" for selected patient services including drugs and medical supplies. Also, determine what alternative suggestions are presently being explored by the government such as health insurance and what is the status of these schemes?
4. Develop the design methodology, and conduct the cost recovery portion of the consultancy in collaboration with Al Thora hospital and the LCCD health centers. Collect and analyze the data and make the appropriate recommendations.

**END OF CONSULTANCY PRODUCTS:**

Technical Report with recommendations and action to be taken that cover the above mentioned tasks.

**RELATIONSHIPS:**

The consultant will work under the general direction of the ACCS/REACH/Yemen Chief of Party, and in collaboration with the designated Yemeni counterpart(s) appointed before arrival by the MOPII for the duration of the consultancy. Prior to the consultants arrival, an entry briefing and exit debriefing will be arranged with USAID/Yemen.

**CONTRACT PERIOD:**

The consultancy will be for<sup>11</sup> approximately eight weeks beginning on or about January 9, 1992 and ending on or about February 29, 1992. JAN 11 - MARCH 8<sup>TH</sup> NB 12/15/91

**SCOPE OF WORK APPROVAL:**

[Signature] 12/10/91  
USAID/OPJM/MPN/Yemen DATE

[Signature] 7 Jan. 92  
MOPII/MPREV DATE

## APPENDIX 2 PEOPLE MET AND SCHEDULE OF ACTIVITIES

### Sana'a

Dr. Ahmed Mekki, Permanent Secretary, Health & Medical Services, MoPH  
Dr. Abdulla Assa'edi, Permanent Secretary, Planning & Health Development  
Dr. Abdul Halim Hashem, Director of Public Health  
Dr. Mohammed Hajar, National Director of EPI  
Dr. Ahmed al Hamli, National Director of Health Education  
George Flores, Mission Director, USAID  
Ken Kennedy, USAID  
Abdulazziz K. Yahya, USAID  
Noel Brown, ACCS/REACH  
Sereen Thadeus, SEATS/REACH  
Dr Madeleine Taha, Training Consultant, ACCS  
Najwa Kasaifi, Training Consultant, ACCS  
Peter Shipp, Manpower Consultant, ACCS  
Carl Hasselblad, EPI Consultant, ACCS  
David Bevan, Information Systems Consultant, ACCS  
Dr. Edward Kassira, National Epidemiological Disease Surveillance Project  
Dr. Ali Biely, WHO PHC Advisor  
Stuart McNab, Resident Representative, UNICEF  
Mohammed Beshir, UNICEF  
Dr. Ahmed Zain  
Sharon Beatty, PHC Advisor, Taiz (Radda Barnen)  
Debbie Dorman, BOCD

### Hodeida

Dr. Ali Omar Fakira, Director General, Health Office  
Dr. Ahmed Borgi, DG's Assistant, Technical Affairs  
Dr. Abdul Galeel Qaid Saif, Director Public Health  
Dr. Ali Shura'i, Head of Basic Health Services  
Ahmed Ahmed Wahban, Training & Coordination  
Asia Sharaf Mohammed Shaibani, Maternal & Child Health  
Ali Derwish and Yahya Ma'agam, PHC Supervision  
Nagib Qaid, Drug and Medical Equipment Supplies  
Saleh Hakami, Director of Planning and Statistics (and staff)  
Dr. Farouq Shaadil, Director of Medical Services  
Abd al Wahad Aswadi, Director of Pharmacy and Medical Supply  
Hussein Showkani, Director of Finance (and staff)  
Abu Faas, PHC Accountant  
Yacoub Yussuf Harba, Director of Manpower  
Ismail Hamboosh, Deputy Director of Manpower  
Mohammed Ali Mohammed & Ahmed al Hodeidh, EPI Supervisors  
Mohammed Hassan, Director of Zaidia Health Centre, and the T/Ss  
Abdul Ali Ahmed Zabidi, PHC Director & Deputy Director, Zabid H. Centre  
Dr. Ahmed al Junaid, Hodeida Urban PHC Project  
Dr. Paul Weelen, Hodeida Urban PHC  
Thera de Haas, Hodeida Urban PHC  
Zahra No'man, Pathfinder Advisor, HMI Midwifery Training  
Sharaf al Hamli, ACCS Coordinator for Hodeida

**Al Thowra Hospital, Hodeida**

Dr. Sadiq Ahmed Ali, Director of al Thowra Hospital  
Al Hadi Amin Director of Administration & Finance (am)  
Nagib Hamid Ahmed, Director of Stores (am) and  
Director of Administration & Finance, Special Clinics (pm)  
Abdulla Ali Bajili, Statistical Clerk  
Abdul Ali 'Ugeil, Clerk of Bookkeeping and Controller  
Abdo Ali Mohammedo  
Ismail Habili  
Gaber Mohammed Zabidi

**Local Council for Cooperation and Development, Hodeida**

Dr. Abdul Hafath Saleh (also DG's Assistant at the Health Office)  
Abdulrahman al Yemani, Secretary of the LCCD  
Hamid Omar, Cashier and Assistant at First Clinic  
Abdul Qader, Finance (Isaabat)

See also the list of participants in the Workshop, Appendix 3.

January 9th-15th Sana'a

Meetings with ACCS staff, MoPH and USAID  
Collecting and reading background material

January 15th-February 6th Hodeida

Discussions with heads of departments about strengthening PHC  
Preparation for the Workshop (held 5th-6th February)  
Meetings with staff at al Thowra Hospital, and collecting statistics  
Meetings with staff at the First LCCD Clinic

February 6th-10th Sana'a

February 11th-17th Compassionate leave, UK

February 18th Sana'a

Meetings at the MoPH

February 18th-5th March Hodeida

Follow up of workshop recommendations  
Visit to Zaidia to work out alternative transport for supervisors  
Developing Lotus spreadsheets for supervision and vaccine supply  
Collecting remaining financial data and activity indicators

March 5th-7th Sana'a

Debriefing at USAID and discussions with other ACCS consultants

March 8th-10th Hodeida

Final discussions with the Director General and counterparts

March 11th-12th Sana'a

Meetings at ACCS office; departure

**APPENDIX 3**

**REPORT OF A WORKSHOP ON THE MANAGEMENT OF PRIMARY HEALTH CARE**  
**held at the TB Centre, Hodeida**  
**Wednesday 5th February - Thursday 6th February 1992**

# REPORT OF A WORKSHOP ON THE MANAGEMENT OF PRIMARY HEALTH CARE

held at the TB Centre, Hodeida

Wednesday 5th February - Thursday 6th February 1992

## Background

The assessment of Primary Health Care in Hodeida Governorate (July-August 1991) identified many ways in which services could be strengthened. The report on that assessment gives detailed suggestions about how improvements might be made. A workshop was held to discuss how to solve the problems hindering PHC services, and to make a plan of action for strengthening these services.

## Objective of the Workshop

1. To produce an integrated plan for practical improvements in the primary health care system.
2. To strengthen the coordination between management actions in the technical, administrative and financial departments.

## Preparation for the Workshop

The consultant who had conducted the assessment of PHC held discussions with the Child Survival Project team leader, with the Director General of Public Health (MoPH), the Director General of Hodeida Health Office, the Director of Public Health and the Director of Planning. She and her counterpart (Deputy DG, Services and PHC) drafted a background memorandum (see Appendix A) describing the purpose of the workshop, the approach that would be followed, and a preliminary list of participants. The memorandum was translated and circulated to all the intended participants, with whom preparatory meetings were also held to learn about senior managers' perceptions of the problems hindering their work.

There was considerable interest in the workshop and the number of participants grew from an initial goal of 15-20 to a final list of 34 (see Appendix B). All the heads of department in the health office were invited, but we had to leave out some of the vertical projects (eg malaria control), two of the hospitals, and HMI as the group was already so big. The only participant from outside the health system was the LCCD representative.

The TB Centre was suggested as a venue as it is at the other end of town from the Health Office (to minimize interruptions) and has a beautifully equipped teaching room. The tables were arranged into a large square so that all participants could see each other during the discussions.

Stationery was prepared (see Appendix C). The most important supplies were the marker pens, plain A4 paper and masking tape to stick the participants' formulation of their problems to the wall.

## Conduct of the Workshop

The workshop was chaired by the Director General of the Health Office, and deputy chairmen were the Director General of Public Health and the National Director of EPI from the Ministry of Public Health, Sana'a. Administration and coordination were carried out by the ACCS Project's Hodeida Coordinator and the PHC management consultant. Refreshments were prepared by staff of the TB Centre.

The remainder of this report describes the programme of activities, then summarizes the content of each presentation, and finally gives the timetable of activities for following up the workshop's findings and recommendations.

## Programme

### Day 1

- |          |  |                    |
|----------|--|--------------------|
| 8.30 am  | Participants arrive; coffee and tea  |                    |
| 9.00 am  | Introduction   | Dr Ali Omar Faqira |
| 9.15 am  | Participants introduced with Organizational Chart (see Figure 1)               |                    |
|          | Choice of Rapporteurs  |                    |
| 9.40 am  | Objectives of the workshop   | Dr Abdul Halim     |
| 10.00 am | Why PHC management should be integrated:<br>Case studies from the assessment   | Rachel Feilden     |
| 10.45 am | Break  |                    |
| 11.15 am | Summary of the main problems identified so far                                 | Dr Ahmed Bourgi    |
| 11.30 am | Problem identification: each participant writes his or her three main problems |                    |
| 11.40 am | Problems are presented - on the wall   | Participants       |
| 12.30 pm | Sorting the problems into categories   | Participants       |
| 1.15 pm  | Concluding Comments by the Chairman  |                    |
| 1.30 pm  | Dividing the participants into groups for tomorrow's work                      |                    |

(continued)

## Programme (continued)

Day 2

- |          |   |                    |
|----------|---|--------------------|
| 8.45 am  | Integration                                 | Dr. Abdul Halim    |
| 9.15 am  | Supervision                                 | Dr. Mohammed Hajar |
| 9.45 am  | Break                                       |                    |
| 10.05 am | Groups start work on their area of problems |                    |
| 12.45 am | Reports from each group                     |                    |
| 1.30 am  | Closing ceremonies and Group Photo          |                    |

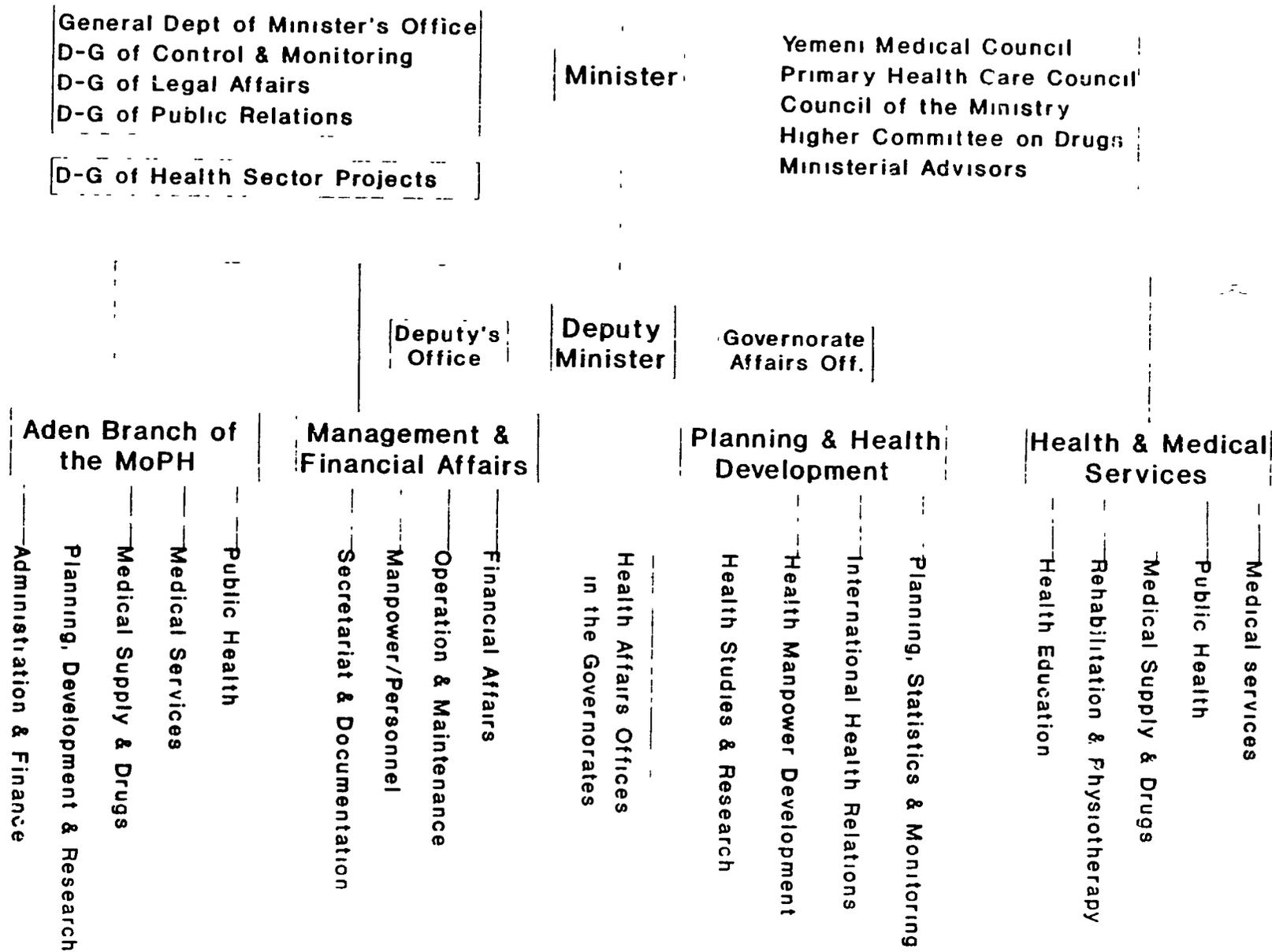
## Summary of Each Presentation

The Director General welcomed the participants to the workshop. He said that many reports of problems have been sent from Hodeida Health Office to the Ministry of Public Health in Sana'a but so far many of these problems remain unsolved. The workshop would give an opportunity to follow up on these and other problems. One particular issue is the need to upgrade the female PHC staff (murshidaat), both to improve their skills and to give them better career prospects in the future. The Director General encouraged the participants to contribute actively to the discussion of both their problems and the solutions.

Each participant was then introduced by asking him or her to attach a paper containing his/her position or job title to the appropriate place on an empty organization chart. This exercise did not produce a clear structure of the lines of authority, and we did not stop to discuss the issue. The Ministry of Public Health is still discussing proposals for the organizational structure. A draft organizational chart for the central level (MoPH) is attached in Figure 1 (no date, thought to be late 1990) for reference. (This chart was not discussed during the workshop.) Note that EPI is not shown in the chart; at present the National Director of EPI reports directly to the Deputy Minister.

For the Governorate level, it would seem sensible to adopt a simple organizational structure, for example with the five Departments shown for Aden: 1 Public Health, 2 Medical Services, 3 Medical Supply and Drugs, 4 Planning, Development and Research, and 5 Administration & Financial Affairs.

**Figure 1 Draft Organization Chart of the Ministry of Public Health**



**Attachment to the Draft Organizational Chart (Figure 1)**

The hierarchy is General Department, Department, Section, Unit.

General Department of Medical Services has Departments of:

- Public Medical Establishments and Services
- Medical Health Cadre
- Diagnostic Services
- Emergency Services
- Private Medical Establishments
- Medical Care

General Department of Public Health has Departments of:

- Family Health
- Communicable Diseases and Epidemics
- Occupational Health
- Coordination and Guidance
- Basic Health Services

General Department of Medical Supply & Drugs has Departments of:

- Pharmaceutical Services
- Drugs and Medical Supply
- Stores, Procurement and Logistics
- Computer

General Department of Rehabilitation and Physiotherapy has:

- Physiotherapy
- Technical Department
- Administration and Financial Affairs

General Department of Health Education has Departments of:

- Health Information
- Health Education
- Technical Products

General Department of Planning and Statistics has Departments of:

- Health Planning and Programming
- Health Information and Statistics
- Evaluation and Monitoring
- Projects
- Health Economics

General Department of International Health Relations has:

- Technical Cooperation
- Public Relations
- International Organizations
- Quarantine and Port Clearances

General Department of Health Manpower Development has Departments:

- Cadre Development
- Health Institutes
- Continuing Education and Outside Training

General Department of Health Studies has Departments of:

- Research and Health Studies
- Documentation and Archives

SB

Day 1

**Why PHC Management should be Integrated:  
Case Studies of the Effects of Uncoordinated Decisions**

**1. Introduction**

Last summer, a team visited PHC Units and Health Centres throughout Hodeida Governorate to assess primary health care services. The assessment team found a number of problems which were discussed at that time, and described in a report by Feilden (November 1991).

This workshop is to provide all senior managers with the opportunity to sort out how the problems of managing PHC can be solved.

Most people regard PHC as being part of the Public Health Department's responsibilities. The case studies that I will present are not hypothetical cases, but real cases that we found during a few unannounced visits to health units and health centres. They demonstrate

- a) the effect upon PHC services of the decisions taken in several departments of the Health Office, and
- b) the consequences for the population who should be receiving the PHC services.

These case studies should convince all the senior managers that even if PHC is not their principle responsibility, their decisions do affect the availability and quality of PHC services throughout the Governorate.

**2. Supervision of Health Facilities**

If the middle section of the organization chart is enlarged, we can see that some PH services are supervised by the Public Health Department, and others are supervised by the Medical Services Department. (see Figure 2).

There are five or six types of health centres.

- The Rural HCs with doctors and the HCs without doctors (Sub-Centres) are supervised by Medical Services Department
- The HCs with Trainer/Supervisors, the Training Health Centres, and the three THCs with both training and supervision are supervised by the Public Health Department.
- Some of the Urban HCs are for MCH only.

The six Health Centres with Supervisors (Zohra, Zaidia, Tahreer, Mansuria, Bait al Faqih, Zabid) are responsible for the technical quality of the work at the PHC Units in their area. There are a total of 103 Units in the Governorate, of which 99 or 100 are functioning. Thus on average each Supervising Health Centre covers 16-17 PHC Units.

. The Hodeida Urban HCs are under the Director of Tahreer.

## Day 1 Case Studies of the Effects of Uncoordinated Decisions

The Curative Units are supervised directly from Medical Services in the Health Office, but the Directors of Zaidia and Zabid also have responsibility for them.

When one looks at the map showing the location of PHC Units, it would make more sense to place a T/S in Bajil Central. About 980 km of travel would be saved by this change. This translates into 4,000 Rials (650 ltr) saved from the quarterly running costs. The present division of responsibility for health centres means that this decision must involve two departments: Medical Services and Public Health.

PHC staff also report that some curative providers do not follow the same protocols for treatment as the Mushid and Murshida have been taught. For example inappropriate drugs are prescribed for diarrhoea, and oxytocin injections are given to women in labour by male providers who have not examined the progress of the dilation of the cervix. Although the most frequent supervision is by T/Ss, they are not authorized to take action in such cases. It is the Murshid and Murshida who face the difficulties of trying to maintain and promote safe and effective practices in their communities.

### 3. The Distribution of Personnel

Last August, our analysis of the distribution of manpower showed that there were enormous variations in the availability of PHC staff between the 22 mudeiriat.

Luhayya Mudeiria has 11 PHC Units and 2 Health Centres for  
for 40,000 people

Mighlaf Mudeiria has 1 PHC Unit for 22,300 people.

Analysis of the salary lists showed that there were 33 curative units, and the average cost of staff at curative units is 2.5 times more than at PHC Units.

Are the curative staff doing so much better work than a Murshid? We cannot easily find out from the information system as most curative units do not report on their activities.

The Public Health Department needs to know where the curative staff work so as to include them as providers of immunization. The Statistics Department tried to find out where they were working, because they should be included in the reporting system.

Mighlaf has 9 curative units, and has the highest ratio of staff per population of any mudeiria (except Kamaran and Salif)

What are the financial implications for the policy goal of equity in basic health services? Dividing the salary data for staff in each nahia by its population we find that the cost of manpower at health centres and units ranges from 24 fils per capita (Bait al Faqih) to 1.91 Rials in Mighlaf (see Table 1).

Day 1 Case Studies of the Effects of Uncoordinated Decisions

Table 1 Estimated Salary Cost of PHC Health Personnel in 1991 showing the Salary Cost per Population, by Mudeiria

Mudeiria	Total Population 1991*	Health Ctrs	PHC Units	Cura-tive Units	Salary Cost per Mudeiria	Rials per capita
Bait al Faqih	132,890	1	7		32,000	0.24
Hajaila	30,670		2	1	12,500	0.41
Zohra	95,303	1	7	1	41,000	0.43
Bura'	36,556		5	1	18,500	0.51
Khowkha	49,848	1	5		28,000	0.56
Marawa'a	74,505	2			54,000	0.72
Sukhna	41,449	1	7		34,000	0.82
Hais	32,527	1	5		30,000	0.92
Mansuria	28,836	1	5		28,000	0.97
Munira	22,933		5	3	23,500	1.02
Duraihimi	30,623	1	6		32,000	1.04
Qanawis	39,375	1	3	3	42,000	1.07
Jebel Ras	28,314		2	5	31,000	1.09
Bajil	59,588	2	5	1	68,500	1.15
Zabid	184,278	2	16	1	226,500	1.23
Hodeida	162,195	15		1	220,500	1.36
Luhayya	40,081	2	11		58,000	1.45
Zaidia	84,497	1	6	5	126,500	1.50
al Dhahi	29,443	2	1	2	47,000	1.60
Mighlaf	22,282		1	9	42,500	1.91
Salif	4,350	1			18,000	4.14
Kamaran	2,436	1			18,000	7.39
Hodeida Governorate	1,232,979	36	99	33	1,232,000	1.00

What justifies that al Dhahi and Mighlaf should have 8 times more spent by the Ministry of Health than in Bait al Faqih, Hajaila and Zohra mudeiriat?

The analysis of the availability of female staff trained in maternal care shows that there are:

- 5 mudeiriat with no trained female staff at all (Mighlaf, Munira, Jebel Ras, Luhayya and Khowkha)
- 3 mudeiriat where the only trained female staff are Murshidaat or Local Birth Attendants (Hajaila, Bura' and Sukhna)

Mighlaf gets the third largest share of salary cost per population, yet there are no trained female staff providing maternal care. One of the target groups for PHC is excluded.

In this case, the situation has been affected by decisions taken in the:

## Day 1 Case Studies of the Effects of Uncoordinated Decisions

- Personnel Department which pays salaries without verification of adequate performance from supervisors.
- Medical Services who assign where curative staff will work.
- Public Health Department who looks after the distribution of candidates recruited for Murshid and Murshida training.
- The local communities (LCCD and leaders) who are asked to support primary health care and public health.

### 4. The Quality of Data

Supervision, monitoring and planning use the formats for reports designed by the MoPH. The 1991 assessment of PHC found that there were widespread stock-outs of basic stationery (see Table 11 from the assessment report). Six months later the shortages and stock-outs of Monthly Reports have become more widespread. For December 1991, the Monthly Activity Reports received from PHC Units are:

- 30% reported on the correct form.
- 23% reported on various other formats, including used undercopies of previous month's reports, hand-made copies, and photocopies of the Health Centre format, which is different.
- 47% of the Units have not yet reported (including 27 of the 28 Units in Zabid area). Perhaps these PHCU staff are waiting for their proper stationery.

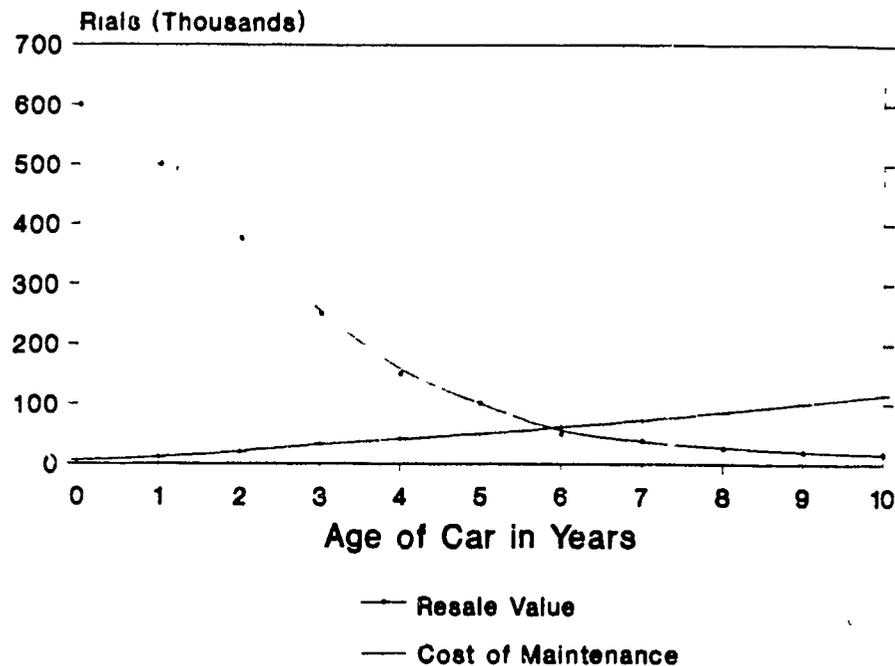
The system used to be that the Supervisor checked the Murshid's reports and the Murshid was paid. Now the system demands only that a report must be produced and salaries are paid, without reference to performance. One December report is simply labelled "Ali." No-one has any idea which Unit it is for, yet it has been placed in the files. With the technical supervisors removed from the chain of control, and the signature approving payment given in the Health Office with no possibility to check the reports with the Units' registers for accuracy, it is hardly surprising that the data in the computer files show all kinds of unbelievable inconsistencies.

A more coherent process has to be chosen.

### 5. Beyond Economic Repair

A vehicle has a useful life. The length of that life is closely linked to the number of kilometres driven. Plans for oil, petrol and spare parts can be allocated a budget based on the trips that Supervisors know they will make. Figure 3 shows that the value of a vehicle declines from the day it is purchased, and that the cost of maintaining it and keeping it running increases over time. At some point (say 150,000 km) the cost of maintenance exceeds the vehicle's value. When one is spending ever increasing amounts of money for less and less mileage, one says that the vehicle is Beyond Economic Repair.

Figure 3 Comparing a Car's Value with its Maintenance Costs



If a vehicle travels as far out of working hours, for personal use, as during its working use, its useful life will be approximately halved. Instead of running well for 6-7 years, it will run well for 3-4 years.

The present policy is that the revenue from selling old vehicles is lost to the Health Office, and purchase of new vehicles is not allowed. The present situation is that at least half of PHC running costs are spent on maintaining vehicles which are past the point of economic repair.

It is time to think about radical changes in the way we manage PHC transport, including decentralizing transport budgets based on detailed trip plans, and transport arranged by the community. Discussion of solutions must wait until the problem solving phase of the workshop.

## 6. The Story of Butagas

One of the essential elements of PHC is immunization.

The Health Office has chosen a strategy which combines fixed point services at Health Centres and monthly outreach to rural areas where Murshideen and Murshidaat are working. Their Supervisor brings the supplies once per month from the Supervising Health Centre using cold boxes and a daily vaccine carrier to protect the vaccine.

63

## Day 1 Case Studies of the Effects of Uncoordinated Decisions

Each cold box needs 24 frozen ice-packs to maintain the cold chain. Each PHC Unit needs two cold boxes: one for the vaccines, and one for icepacks used daily in the vaccine carrier. Each Unit may keep the cold boxes and vaccine carrier for 3 to 6 days to complete the work in that catchment area. Some Supervising Health Centres supply as many as 20 PHC Units, so every month 12 sets of icepacks (24 per set) would have to be refrozen four times. For this an icepack freezer is needed. It uses one cylinder of Butagas every 12 days. Sometimes more than a week passes before the empty cylinder can be returned from the depot refilled, so in rural areas there must be at least two cylinders for every one in use.

We found two cases where a Health Centre had run out of gas. The most tragic case was at a supervising centre which had stopped using its icepack freezer. When the village people pressed the Murshid to go and pick up their immunization supplies himself, his Supervisor told him that it was not his turn on the schedule. The Supervisor's explanation to the assessment team was that the Health Centre had no icepacks ready to send with the vaccine - because they had not refilled their gas. The director of this facility did not bother to collect his allocated running costs from the Finance Department last year. The Finance Department says that this is not a supervising health centre and does not need so many cylinders of gas. Yet the EPI Supervisor delivered supplies for all the surrounding Units to that Centre in December. The Medical Services Department has tried to intervene to improve the Director's performance, but his influence in the local community has resulted in no change.

What started out as a shortage of gas turns into a much more complex case. The effect of actions by a few individuals is that thousands of infants are denied access to immunization. We must make sure that these problems are solved.

### 7. Conclusion

All of these case studies show evidence of confusion or duplication or lack of clarity in the lines of authority and lines of responsibility. The approach to solving problems in this workshop is to concentrate on the management practices or structures which are allowing the problems to continue. After pooling the problems named by all the participants, we will categorize them for smaller groups to work on. Each group will classify the problems into the three types described in the Outline:

- 1 can be solved during the workshop,
- 2 can be solved with more detailed analysis/information/planning
- 3 can only be solved with help from outside the Health Office.

The objective for the end of the workshop is that we will have worked out a plan of action for dealing with each problem, identifying the follow-up steps and the person responsible.

Day 1

### **Participants' Descriptions of their Three Biggest Problems**

The participants were given ten minutes to write their three biggest problems with marker pens on A4 paper (one problem per page). The coordinators took the completed pages and used masking tape to stick them onto the wall, without attempting to sort or arrange the pages. The purpose of this exercise is to break the linkage between particular problems and individual departments, and to make the treatment of each problem the responsibility of the entire group.

When everyone had finished, there were 45 problems on the wall, some of which were discussed.

### **Sorting the Problems into Categories**

The participants decided that the problems could be categorized under five general headings:

- Transport/Logistics
- Administration/Management
- Human Resources
- Planning and Information
- Supply and Financial Resources

The masking tape made it possible to put each problem on its paper into the appropriate category. There was consensus about the correct categorization of problems, and within 5 minutes the workshop was looking at all its problems neatly rearranged into five columns of papers.

### **Forming Groups for Detailed Discussion Next Day**

Three groups were formed to cover the following areas:

- I Information and Planning
- II Management and Supervision
- III Finance, Supply and Transport

Arrangements were made for two extra rooms to be used next day so that each group could work undisturbed.

## DAY 2

The second day of the workshop was opened with two short lectures. Dr Abdul Halim Hashem spoke about integration and Dr Mohammed Hajar spoke about supervision.

### Integration

After the success of the programme to eradicate smallpox, there has been a tendency to promote other vertical activities covering particular areas of interest and responsibility. Pressure for vertical programmes has been sustained because each group feels that it will lose its significance if it is integrated as a component of health services. However, when numerous separate teams - EPI, malaria control, health education, MCH - visit the community, confusion arises about which health activity is most important for their support, and how the services relate to each other, and who is responsible for what.

Integration of vertical programmes into primary health care has been proposed as an important way of making better use of resources, especially manpower and finance. It is expected that the nucleus of programmes can stay separate at the central level, but it is planned and encouraged that activities will be integrated at the governorate and peripheral levels of the health service. (This implies that the organizational chart for the governorate will not have as many departments as the Ministry.)

Integration of activities means that existing staff, who know their own programmes, will need retraining to orientate them towards providing and supervising all PHC activities.

Integration will require greater changes than merely cooperating with other departments and programmes. Coordination is like a salad, in which the various ingredients remain identifiable as separate pieces, whereas integration is like an omelette in which the ingredients go through an irreversible change to obtain the final result.

### Supervision

Supervision is a basic component of follow-up and evaluation which comprise one of the steps of the managerial processes for national development.

Health development plans should be part of the overall national development plan. Political commitment and support are important.

To achieve health development the following steps are important:-

- collection of information
- analysis of information
- identifying the problems
- identifying the objectives
- identifying the strategies
- allocation of resources
- work plan.

## Day 2

It is clear that supervision is one way for evaluation and follow-up. It provides a mechanism for (1) communication between different levels, (2) supply, and (3) feedback.

Levels of supervision and its frequency:

National (Ministry)	annual/seasonal, monthly
Governorate	monthly
District	weekly

When supervision is at the site where services are provided, it should be more frequent and regular.

Supervision is one way to know the standard of performance and the need for support. Training for supervision is vital for any supervisory position. The supervisor should be:-

- knowledgeable
- honest
- experienced
- able to teach others
- a decision maker.

The outcome:

Supervision is one of the measures by which we can know the progress towards achievement of the objectives. Also supervision is one way for reprogramming. Supervisory positions are vital, and one should give considerable attention to preparing and training those who are going to perform supervision.

### Group Work on Problems

After these two short lectures, the working groups were asked to categorize and discuss their problems as follows:

- Which problems can be solved now?  
For each one, what is the solution?
- Which problems need more analysis, or more detailed information, or different participants, before they can be solved?  
Who is responsible for follow-up of each one?
- Which problems require decisions from outside the Health Office?  
From where exactly?  
Who will follow up?

The following pages give each working group's summary of its discussions:

- I. Information and Planning
- II. Management and Supervision
- III. Logistics (including Supply) and Finance

Day 2

## Reports on Each Group's Work

### I. INFORMATION AND PLANNING

Saleh Hakami, Farouq al Saqaf, Dr Ahmed al Hamli, Dr Ahmed Bourgi, Dr Daud, Asia Shaibani, Mohammed Beshir, Dr Hashem al Hamli, Mohammed Abdulla Saif, Hashem Omar Aamu

The problems were listed as follows:

- 1 Irregularity and inaccuracy of statistics from health facilities
- 2 A complete absence of reports from curative units
- 3 Data are not analysed; the information could be used as planning indicators
- 4 Lack of coordination between different departments
- 5 Lack of registers, records, report forms, and patient cards.

Actions which can be taken straight away:

- 1 Field visit to be made by statistics employees for checking the registers.
- 2 Taking a copy of the comprehensive health survey and following up every new issue within the frame of appointments and transfer "movement of manpower" through copies of relevant memoranda.
- 3 Obtaining data from curative units.
- 4 Statistics and reporting to be linked with salary payment.
- 5 Statistics and information to be linked with providing funds (running costs) to health facilities.

Actions which can be solved within the Health Office but will take some time.

- 6 Reinforce the supervision system at all levels.
- 7 Build a qualified cadre in statistics.
- 8 Approach the Ministry for providing all registers, records, reports, and patient cards.
- 9 Carry out planning in the governorate by checking and analysing health information, and by conducting studies and research for identifying the problems (following the principles of practical planning).

Actions required from the Ministry of Health

- 10 Issue a resolution on the health information system, specifying the channels of data processing, analysis systems and the purpose and objectives.
- 11 Obtain funds for guaranteeing that the work continues without interruption.

## II. MANAGEMENT AND SUPERVISION

Dr Ali Omar Faqira, Dr Abdul Halim Hashem, Dr Abdul Galeel, Dr Farouq Shaadil, Dr Ali Biely, Rachel Feilden, Dr Paramina Merial, Yacoub Abkar, Mohammed Hassan Kharifi

The 23 problems were put into four categories. The first three categories are to be solved in the Health Office, and the fourth must be solved in coordination with the Ministry of Public Health.

First Category: to be solved in the Health Office

- 2 The existence of Curative Units
- 10 Inconsistencies and a different approach to work by Curative Nurse and PHCW working in the same area
- 13 Confusion of tasks between the PHCW, the Curative staff and the vertical projects (eg TB)
- 15 Absence of coordination and cooperation and integration within the sector and outside the sector
- 16 There is no integration and coordination between the department to set up health education plan according to the available budget
- 17 Problems with Curative Units being next to PHC Units

## Comments:

There is a rule in the Public Health Department about how many kilometres the Curative Unit must be away from any PHC Unit. If the Curative Unit is too close, it should be moved. The Curative staff should be trained how to fill the birth register, do immunization, and fill the monthly reports.

Second Category: to be solved in the Health Office

- 7 Problems between Public Health Dept and Medical Services
- 18 There is no list of tasks specifying who responsible for each activity
- 19 Who is responsible for MCH staff (i.e. assigning murshidaat and midwives to their place of work)?
- 21 Working staff
- 22 Confusion of responsibilities between departments

## Comments:

These problems should be considered by the Director General who should delegate responsibility for solving them to the relevant persons in the Health Office.

Third Category: to be solved in the Public Health Department

- 3 Direct Supervision of PHC Units
- 4 Ineffectiveness of supervision system
- 5 PHCW doesn't feel any responsibility towards his work
- 9 PHCW is careless about his work
- 11 Who is responsible for the supervisors?
- 14 Supervision of the PHC Units in remote villages
- 20 Shortage of female trainer/supervisors
- 23 Shortage of transport hinders supervision of PHC Units

Comments on the Third Category of problems:  
The supervision problem should be solved by the Public Health Department through the Health Office and the Governorate.

The Public Health Department should supervise health education.

Supervision of Health Units should be done through the Health Centres at nahia level. The Health Office should supervise the Health Centres to take all the information from them, then discuss it at the office, and include it in the Public Health plan. Supervision should be multidisciplinary.

Fourth Category: to be solved by the Ministry of Public Health

- 1 a Absence of national indicators for staff
  - b Finance
  - c Expenditures
- 6 Centralization in: a) planning, b) implementation, c) follow-up, d) evaluation
- 8 There are no criteria for filling positions
- 12 The organization chart

Comments:

The Health Office should write a letter to the Ministry of Health and the HO should follow up.

### III. LOGISTICS (INCLUDING SUPPLY) AND FINANCE

Dr Ali Shura'i, Hussein Showkani, (Abdul Wahed al Aswadi), Ma'aruf AbuBaker, Ahmed Wahban, Mohammed Ali Mohammed, Dr Mohammed Hajar, Mohammed 'Ateeg, Nageeb Qaid Ma'ana, Dr Ahmed al Juneid, Dr Ahmed Zabara, Dr Tahseen al Khalifa

#### 1. Logistics at the Governorate Level

Before we deal with supply, we are faced with a transport problem with two parts:

a) Problem of conveying employees to their place of work. This may be solved by the Director-General of the Health Office allocating a bus from the Health Manpower Institute.

b) Supervision problem both from the Health Office to Health Centres, and from Centres to Health Units.

It is worth mentioning here that PHC cars are mostly used for personal purposes whereas cars which are now used for supervising PHC Units from the Health Centres have outlived their useful life, and in order to keep them running, continuous maintenance involving high expenditure will be required.

Solution:

- To formulate an "organization schedule" for using the cars on the basis of the central level (Ministry), provided that the Director General can ensure that these schedules are complied with.
- To submit a memorandum to the Ministry regarding needs and requirements (but not for cars whose useful life is over) and to carry out maintenance on those which are worth maintaining.

**Motorcycles**

Motorcycles were distributed to male PHCWs in 1983. These motorcycles have become unusable because they have surpassed their useful life.

Solution: - To submit a memorandum to the Ministry for contacting donors (UNICEF or USAID) at the central level.

**Supplies for Immunization**

At Central level:

- To provide vaccines and allocate funds for functioning from the governorate.

At Governorate level:

- To specify the supplies required (such as vaccines) for a period of one year. This resupply should take place every three months.

- To work out a plan for providing immunization services in 1992 that would enable the target population to benefit from coverage of these services.

- To continue systematic and programmed supervision of service delivery concerning child immunization in health centres and health units in order to observe those "players" who play with vaccines and syringes/needles, as well as to control such infringements.

**Storage of Vaccine in the Governorate**

- To produce a system for the upkeep (?stock control?) of vaccines along with means of safety (?) for managing them, starting from central level through to the point of service delivery in the governorate and districts (mudeiriaat). This is a mutual responsibility between the Ministry and the Governorate.

All vaccines are to be kept in one store of Al Thowra Hospital, and Mohammed Ali (EPI Supervisor) shall be in charge of vaccines, syringes, needles, and their distribution under the supervision of the Public Health Department (Basic Health Services). This will define (make clear) the immediate responsibility which would make it possible to avoid repeating previous negative experiences concerning the "cold chain."

**Medical Supply**

Problem: A shortage of curative supplies at central level.

The continuous expansion of opening health institutions outstrips the quantities of drugs and equipment that arrive from the Ministry. For example, a curative unit and a health centre are not included in the budget.

- A memorandum to be submitted by the Director General of the Health Office to the Ministry. To undertake the process of expansion along with a plan for guaranteeing availability of funds, personnel and drugs.

**Irregular system of drug supply at central level**

- To produce a system for distributing drugs to governorates according to population density.

- To produce a distribution system on the basis of decentralization.

- To produce a distribution system within a frame of coordination between medical supply and primary health care (Health Units and Health Centres).

- To provide means of transport for distribution from the main store to health centres and hospitals.
- To provide means of transport for pharmaceutical services to enable them to carry out continuous supervision, monitoring and control of infringements.
- To provide a budget allocated for medical supply after specifying the needs.

#### Maintenance

- To submit a memorandum to the Ministry indicating therein the needs for maintaining medical equipment and building repairs.
- To formulate a future plan for establishing maintenance units at governorate level.

#### Temporary Health Units (those with rent paid by Local Councils)

- To define temporary health units.
- To specify names of units whose rent is supposed to be paid by Local Councils. Possible community participation for rent payment.
- To refer to Ministry for acquiring appropriate solutions.
- Rent confrontation to be through the Health Office and Public Health Department.
- To contact Local Councils for studying the proposed plan for the year 1992 in connection with building of health units.

#### Budget (Funds)

- To introduce a criterion for distributing financial resources in accordance with population density, and the governorate should distribute this budget according to needs.
- Budget to be tabulated (divided into chapters) by the Ministry.
- To ask the Ministry to reconsider the actual needs of the area in accordance with the needs submitted by the Health Office.
- To work out a system for incentives in conformity with the nature of the work in general in different departments, and to avoid duplication.
- Enhance confidence between Health Office - represented by Financial Affairs - and different departments with respect to spending (disbursement) of budget on condition that these departments should have freedom of spending in accordance with regulations and rules that have been agreed upon.

#### Activity Timetable for Following Up the Workshop

This was not completed during the workshop or the consultancy.

## Appendix A

### OUTLINE OF A WORKSHOP ON THE MANAGEMENT OF PRIMARY HEALTH CARE

#### Background

The assessment of Primary Health Care in Hodeida Governorate (July-August 1991) identified many ways in which services could be strengthened. The report gives detailed suggestions about how improvements might be made. A workshop will be held to discuss how to solve the problems hindering PHC services, and to make a plan of action for strengthening these services.

#### Objective

1. To produce an integrated plan for practical improvements in the primary health care system.
2. To strengthen the coordination between management actions in the technical, administrative and financial departments.

These objectives can best be met if the participants are the senior managers of the Health Office, who are also the most knowledgeable about administrative and policy constraints upon problem solving. About 20 directors and managers will be involved. The workshop should be limited to two days, for identifying major problems and dealing with them as described below (see Approach). Detailed planning will be done by sub-groups involving mid-level staff, after the workshop.

#### Approach

- a) To identify the problems that are hindering the provision of PHC services, especially maternal care, monitoring the growth of children, immunization, and treatment of common illnesses.
- b) To decide the nature of each problem; for example is the failure to treat diarrhoeal disease effectively due to a lack of skill by health workers, or contrary advice from other curative providers, or what?
- c) To categorize the problems into three groups:
  - those that can be solved immediately,
  - those that can be solved within the Health Office but will take some time to prepare the details or the solution
  - those that require coordinated action with bodies outside the Health Office (eg the Ministry of Health, the LCCD) before they can be solved.
- d) To agree on the actions for overcoming the problems that can be solved immediately.  
To designate the people responsible for organizing meetings of sub-groups, after the workshop, for developing solutions for the second group of problems.  
To indicate the action desired, and from whom, for the third group of problems requiring decisions from other bodies.

For each problem that can be solved, the participants at the workshop will decide who will be responsible for organizing meetings to prepare detailed strategies for overcoming the

V

## Appendix A

problem. These meetings will be held after the workshop and will sometimes include people who did not attend the workshop (eg trainer/supervisors, HC directors). The meetings will provide the opportunity to consider the detailed suggestions offered in the assessment report (for example see the discussion about different methods for calculating the minimum supply of vaccine needed, on pages 50 and 56.) Health Office staff who are involved in more than one problem area will thus be able to contribute to all relevant meetings of the sub-groups, and the ACC consultant will be able to work with each sub-group.

The workshop participants will also decide the date when all the sub-groups must complete their work and present their solutions to the workshop directors. This will provide an opportunity for further discussion and revisions if necessary. A final plenary session of the workshop may also be convened (eg after 3 weeks). A report summarizing the plans should be prepared, for use as a plan of action for PHC in the Governorate.

For each problem that can only be solved in coordination with authorities outside the health office, the participants will prepare a precise analysis explaining the problem, the steps needed to solve it, and to whom the request for the proposed action should be addressed. These analyses will then be presented to the relevant authorities and followed up by the workshop directors.

### Timing

Wednesday 5th February - Thursday 6th February 1992

### Participants

Director-General Dr. Ali Omar Fakira  
Assistant DG (Financial Affairs) Dr. Abdul Hafath Saleh  
Assistant DG (Technical Affairs) Dr. Ahmed Bourgi  
Director Public Health Dr. Abdul Caleel Qaid  
Director of Medical Services Dr. Farouq Shaadil  
Director, Pharmacy & Medical Supply Abd al Wahed Aswadi  
Director of Finance Hussein Showkani  
Director of Manpower Yakoub Yussuf Harba  
Director Planning & Statistics Saleh Hakami  
Head, Primary Health Care Dr. Ali Shura'i  
Head, Training & Coordination Ahmed Ahmed Wahban  
Head, Maternal & Child Care Asia Sharaf Mohammed Shaibani  
Head, EPI Mohammed Ali Mohammed  
Director Hodeida Urban HCs Dr Ahmed Zabara  
Director Zabid THC Farouq al Saqaf  
Director Zaidia THC Mohammed Hassan  
Hodeida Urban Project Dr Ahmed al Junaid, Dr Paul Weelen  
ACCS consultant Rachel Feilden  
Representative of the LCCD  
From Sana'a:  
Director General of Public Health, Dr Abdul Halim Hashem  
Director of Health Education Dr al Hamli  
Director of EPI Dr Mohammed Hajja  
WHO and UNICEF

## Appendix B

Participants who attended the Workshop on Management of Primary Health Care (Wednesday 5th and Thursday 6th February 1992)

### From Hodeida:

- 1 Director-General Dr. Ali Omar Fakira
- 2 Assistant DG (Technical Affairs) Dr. Ahmed Bourgi
- 3 Director Public Health Dr. Abdul Galeel Qaid
- 4 Director of Medical Services Dr. Farouq Shaadil
- 5 Director, Pharmacy & Medical Supply Abd al Wahed Aswadi
- 6 Director of Finance Hussein Showkani
- 7 Director of Manpower Yakoub Yussuf Harba
- 8 Director Planning & Statistics Saleh Hakami
- 9 Head, Primary Health Care Dr. Ali Shura'i
- 10 Head, Training & Coordination Ahmed Ahmed Wahban
- 11 Head, Maternal & Child Care Asia Sharaf Mohammed Shaibani
- 12 Head, EPI Mohammed Ali Mohammed
- 13 Head, Health Education Dr. Daud Usaabi
- 14 I/C PHC Stores Nagib Qaid Ma'ana
- 15 Hodeida Urban Project Dr Ahmed al Junaid
- 16 Hodeida Urban Project Dr Paul Weelen
- 17 Director Hodeida Urban HCs Dr Ahmed Zabara
- 18 Director Zabid THC Farouq al Saqaf
- 19 Director Zaidia THC Mohammed Hassan al Khaarifi
- 20 Deputy, Medical Services Ma'aruf AbuBakar
- 21 Dy Director (Technical) al Olofi Hospital Dr Hashem bin Hashem al Hamli
- 22 Dr Paramina Merial, WHO mid-career student from EMRO course
- 23 Dr Tahseen al Khalifa WHO mid-career student, EMRO course
- 24 Child Survival (ACCS) Project Coordinator Sharaf al Hamli
- 25 Child Survival (ACCS) Project consultant Rachel Feilden
- 26 Director, TB Centre Dr Hashem Omar Aamu
- 27 Technical I/C TB Centre Dr Mohammed Abdulla Saif
- 28 Representative of the LCCD Mohammed 'Ateeg Yahya

### From Sana'a:

- 29 Director General of Public Health Dr Abdul Halim Hashem
- 30 Director of Health Education Dr Ahmed al Hamli
- 31 Director of EPI Dr Mohammed Hajar
- 32 WHO PHC Representative Dr Ali Beily
- 33 UNICEF Field Officer Mohammed Beshir
- 34 Child Survival Project Team Leader Noel Brown

## Appendix C

### Workshop Expenditure

Per Diem for Participants from Sana'a:	8,163
for Zabid and Zaidia:	1,504
Transportation for Hodeida Participants	3,360
Stationery:	3,435
Refreshments (including staff time)	4,330
Translation	4,000
	24,792

### Stationery:

- 30 Cardboard file folders
- 30 Plastic pockets
- 5 packets photocopying paper
- 1 packet lined foolscap paper
- 20 Transparencies
- 2 rolls of masking tape
- 1 set whiteboard pens
- 15 black felt-tip marker pens
- 30 ballpoint pens
- Photocopying

Also: Flip chart papers (1 roll)

Appendix 4

To: Dr Abdul Galeel, Director of Public Health  
Saleh Hakami, Director of Planning and Statistics

From: Rachel Feilden, Child Survival Project consultant

Re: Shortage of Stock for Monthly Reports: Planning  
Information  
Supply

Date: 20th February 1992

The assessment of PHC last summer found that out of 20 items of basic stationery, only one was available at all units (the Register of Curative Attendance; however we found 6 different formats). See Table 11 from the assessment report, attached.

Six months later the shortages and stock-outs of Monthly Reports have become more widespread. The following table shows the type of format or paper used for the PHC Units' Monthly Activity Reports in December 1991:

Correct form for PHC Units	31	(30%)
Photocopy of correct form	2	
Green/yellow page of an already used PHCU form	6	
Hand-copied onto blank paper	9	
Health Centre format	5	
Photocopy of HC format	2	
No report received	48*	(47%)
TOTAL	103	

\* One PHC Unit from Zabid sent an Activity Report, 27 did not.

Thus 53% of Units sent in reports, and only 30% reported on the correct stationery.

The Health Office has the capacity to analyze the information sent by the Units, but if the Ministry of Health formats are not available, the health staff get the message that we do not regard the reports as being important. The supervision of Units is also affected, because the excellent system of having two copies (one for the Trainer/Supervisor, one to stay in the Unit) cannot function without the Ministry's forms, which are supplied printed in triplicate on special paper.

Appendix 4

From Assessment of Primary Health Care in Hodeida Governorate,  
29th June-31st August 1991, page 95

Table 11 PHC Stationery found at Facilities

	Number of Printed Formats	Health Centres (n=4)	PHC Units (n=14)
<b>Registers</b>			
Register of Curative Attendance	(6) <sup>a</sup>	4	14
Antenatal register	(3)	4	2
Register of Deliveries	?	?	6
Family planning register	(2)	4	none
Child Health Register	(2)	4	none
EPI Register	(1)	4	4 <sup>b</sup>
Birth Register	(2) <sup>a</sup>	4	10 <sup>c</sup>
Death Register	(3) <sup>a</sup>	3	9
Stock Book	(2)	1	2 <sup>d</sup>
Duplicate Book/Visitor's Book	(2)	?	2
<b>Cards and Report Forms</b>			
Referral forms	(2)	2	3
Antenatal cards	(4)	3	2
TT cards (women)	(3)	4	2
Family planning cards	?	2	none
Road to Health cards	(1)	1	2 <sup>e</sup>
EPI cards (children)	(3)	4	9
EPI Daily Attendance (84/6)	(1)	n.a.	2
EPI Summary of Monthly Activity	(2) <sup>f</sup>	4	2
Monthly Activity Report forms	(1)	4	6 <sup>g</sup>
Monthly Disease Report forms	(1)	4	13

- a. One format combines the Curative Register, Birth Register, Death Register and Field Visit Register in one book.
- b. Two of these 4 EPI Registers were not being used.
- c. Two of these 10 Birth Registers were never used.
- d. Both of these had been given out for use as curative registers.
- e. Neither Unit was using the Road to Health cards.
- f. One format is for a rough or daily tally, the other is for the final fair copy.
- g. None of the staff trained in Zabid had this form.

Shortages combined with inappropriate formats make it harder for staff, especially at the PHC units, to keep their records properly and to fill out their monthly reports accurately. These findings demonstrate the need for a comprehensive review of the information system (see Section 7.3). Once that review has identified the essential stationery for PHC, then the supply system will be responsible for keeping facilities stocked with registers, records and forms.

## APPENDIX 5 Survey of Zaidia Drivers to Find the Cost of Renting a Vehicle

It was assumed that a litre of petrol cost 6.02 Rials, and that the vehicle would do 3.5 km per litre (based on petrol consumption in an 8-year-old Toyota Salon during the assessment). As logs are no longer kept, we do not have accurate figures for the Zaidia routes, which vary in the amount of 4-wheel drive needed.

Same day A,B,..	First PHC Unit	km from HC to 1st	Second PHC Unit	km from 1st to 2nd	Total km	Assume 3.5 km/ltr	Price /ltr= 6.05	
A1	Bait 'Atta	10	Dayr al Quraiti	13	46	13.1	80	
A2	Dayr al Quraiti							
B1	al Ma'arufia	11	al Hashaabara	5	32	9.1	55	
B2	al Hashaabara							
C1	al Mughaidafia	30	al Hassania	3	66	18.9	114	
C2	al Hassania							
D1	Dayr a' Najaari	37	Dayr Kuzaaba	10	94	26.9	162	
D2	Dayr Kuzaaba							
E1	Dayr 'Abdalla	36	al Sherinbaan	5	82	23.4	142	
E2	al Sherinbaan							
F1	Dayr Mahdi	17	Mahal al Khobaal	12	58	16.6	100	
F2	Mahal al Khobaal							
G1	al Munira	9	Ibn 'Abbas	26	70	20.0	121	
G2	Ibn 'Abbas							
H1	Dayr Dukhna	46	al Qaiqab	6	104	29.7	180	
H2	al Qaiqab							
I1	al Huteiria	40	Dayr 'Abad	5	90	25.7	156	
I2	Dayr 'Abad							
J	Barkhal	17	none		34	9.7	59	
XXX	Dayr al Wali	closed						
10 days out per month:					TOTALS	676	193	1169
BUT... If only 3 km/ltr .....						225	1363	

First PHC Unit	Second PHC Unit	Price /ltr= 6.05	Market Prices 1	2 250/day	from Drivers 3	4 200/day	
A1 Bait 'Atta	A2 Dayr al Quraiti	80	250	330	300	280	
B1 al Ma'arufia	B2 al Hashaabara	55	250	305	300	255	
C1 al Mughaidafia	C2 al Hassania	114	300	364	won't	314	
D1 Dayr al Najaari	D2 Dayr Kuzaaba	162	350	412	400	362	
E1 Dayr 'Abdalla	E2 al Sherinbaan	142	350	392	400	342	
F1 Dayr Mahdi	F2 Mahal al Khobaal	100	400	350	500	300	
G1 al Munira	G2 Ibn 'Abbas	121	300	371	400	321	
H1 Dayr Dukhna	H2 al Qaiqab	180	350	430	400	380	
I1 al Huteiria	I2 Dayr 'Abad	156	400	406	500	356	
J Barkhal	none	59	200	309	won't	259	
10 days out per month.		TOTAL	1169	3150	3669	[3200]	3159
BUT if only 3 km/ltr		1363	3150	3863	[3200]	3159	

Assumptions about fuel consumption must be checked from experience.

11

## Appendix 6 Immunization Supplies Estimated under Alternative Assumptions

A. In March 1991, the monthly immunization supplies needed for Hodeida were being calculated using the following assumptions:

METHOD A:	Number of Vials of Vaccine:					Needles:*		Syringes:*	
	BCG	DPT	OPV	Measles	TT	BCG	24g	BCG	2ml
Population of 3,000	1	2	2	1	2	2	63	2	63
10,000	1	7	7	2	7	2	210	2	210
30,000	10	15	15	10	15	20	490	20	490
50,000	10	25	25	20	25	20	840	20	840

\* Needles and syringes were supplied at the rate of 70% of the doses issued.

The total supply estimates for the whole Governorate for one month are shown in a spreadsheet containing every facility in Appendix 6 A. The monthly total for the Governorate is summarized in the table below.

B. The quantities in (A) are not arithmetically logical. In Appendix 6 B, we have recalculated the supplies needed based on the following assumptions about eligibles and wastage.

First, the numbers of eligible women and children in each facility's catchment population were calculated from the rough estimates of population used in (A), using a Crude Birth Rate (CBR) of 41 per 1000 population (see the first three columns of numbers in Appendix 6 B).

Then the following assumptions about wastage were applied to the number of eligibles to find the minimum number of vials needed to cover all eligibles on a monthly basis:-

	BCG	DPT	OPV	Measles	TT
Doses in a vial	20	20	20	10	20
Doses given per vial	14	17	17	8	17
Doses per eligible	1	3	3	1	2

We have also assumed that each dose of every injected antigen will be given using a sterile needle and a sterile syringe. (Needles and syringes used for mixing BCG & Measles have not been included.) In this case, the needles and syringes are directly linked to the number of eligibles, not to wastage rates.

METHOD B:	Number of Vials of Vaccine:					Needles:*		Syringes:*	
	BCG	DPT	OPV	Measles	TT	BCG	24g	BCG	2ml
Population of 3,000	1	2	2	2	2	11	66	11	66
10,000	3	7	7	5	5	35	210	35	210
30,000	8	19	19	13	13	103	618	103	618
50,000	13	31	31	22	21	171	1026	171	1026

The full results are shown in the spreadsheet in Appendix 6 B.

If the policy of giving four doses of OPV were adopted, the figures would be:

Population of 3,000	3 vials
10,000	9
30,000	25
50,000	41

(continued)

Appendix 6 (continued)

The following table compares the supplies needed per month for the whole of Hodeida Governorate, according to Method A (see p.7) and Method B (p.11).

Hodeida Governorate: Supplies Needed per MONTH with a regular monthly service:

	Number of Vials of Vaccine:					Needles:		Syringes:	
	BCG	DPT	OPV	Measles	TT	BCG	24g	BCC	2m
A EPI Supervisor's system (see Appendix 6 A)	536	1117	1117	651	1117	1072	35833	102	35833
B Estimate using number of eligibles per facility and wastage per vial (see Appendix 6 B)	562	1301	1301	955	947	6986	41916	6985	41916
	+5%	+16%	+16%	+47%	-15%	+552%	+17%	+552%	+17%

The estimates in (B) are still rather crude, for two reasons:

- The population figures on which they are based are very rough estimates. Catchment populations clearly vary much more than the four categories provided (3,000; 10,000; 30,000; 50,000).

- The estimates do not take account of operational factors such as the number of days immunization will be offered, and density of the population which affects the time it will take to reach all of the eligible women and children.

The main report outlines a plan to include these two factors in the supply calculations by obtaining more accurate figures for the catchment populations, and by finding out the number of days required to cover each facility's eligibles. A format for collecting the necessary data is shown in Appendix 7.

Here, we show a HYPOTHETICAL example of the effects upon supply estimates of:-  
(1) using more precise population data, and  
(2) using the minimum number of days needed to cover all the eligibles.

Population	Supply estimates based on Births per		(1) Number of Eligibles Vials of Vaccine					(2) Number of Days per Month Vials of Vaccine					Needles and Syringes		
	Year	Month	BCG	DPT	OPV	Measles	TT	DAYS	BCG	DPT	OPV	Measles	TT	BCG	Others
3,000	123	11	1	2	2	2	2	2	2	2	2	2	2	11	66
3,500	144	12	1	3	3	2	2	1	1	3	3	2	2	12	72
4,000	164	14	1	3	3	2	2	1	1	3	3	2	2	14	84
4,500	185	16	2	3	3	2	2	2	2	3	3	2	2	16	96
5,000	205	18	2	4	4	3	3	3	3	4	4	3	3	18	108
5,500	226	19	2	4	4	3	3	2	2	4	4	3	3	19	114
6,000	246	21	2	4	4	3	3	1	2	4	4	3	3	21	126
7,000	287	24	2	5	5	3	3	2	2	5	5	3	3	24	144
8,000	328	28	2	5	5	4	4	3	3	5	5	4	4	28	168
9,000	369	31	3	6	6	4	4	2	3	6	6	4	4	31	186
10,000	410	35	3	7	7	5	5	2	3	7	7	5	5	35	210
11,000	451	38	3	7	7	5	5	3	3	7	7	5	5	38	228
12,000	492	41	3	8	8	6	5	4	4	8	8	6	5	41	246
13,000	533	45	4	8	8	6	6	4	4	8	8	6	6	45	270
14,000	574	48	4	9	9	6	6	5	5	9	9	6	6	48	288
15,000	615	52	4	10	10	7	7	5	5	10	10	7	7	52	312

Appendix 6 (continued)

The precise effect upon the Governorate's immunization supplies of using these two methods can be explored using the Lotus spreadsheet left with the Planning Department in Hodeida Health Office.

The difference between the two methods occurs whenever the number of days is bigger than the minimum number of vials worked out from the eligibles alone.

The 1991 assessment found that PHCWs expect to spend three to six days immunizing in their catchment areas; if they were supplied according to these expectations, the number of vials required would be much higher than any of the estimates shown here. (Note that both Method A and Method B assume that all BCG and Measles doses will be given on one day).

Conclusion

For every antigen except TT, and for all needles and syringes, the EPI Supervisor's present system (Method A) gives the lowest estimates of supplies. However, the amount received in February 1992 was only 75% of the quantity needed (i.e. 18,000 of the 24,000 doses of DPT).

With the present constraints imposed by transport difficulties, it is essential that once immunization sessions have been arranged, their effectiveness is not limited by shortage of supplies. The complexity of projecting the amount of vaccine required has led us to recommend two clear, logical systems for estimating supplies, using input from health workers. If the data on population and days of work are put into the spreadsheet, the task of calculation is much easier.

Appendix 6 A: EPI Supervisor's Method for Estimating Immunization Supplies

Appendix 6 B: Supply Calculations based on a Rough Estimate of Population, and Specific Assumptions about Wastage Rates

(continued)

Appendix 6 (continued)

Appendix 6 A: EPI Supervisor's Method for Estimating Immunization Supplies

Supervision from Code where?	NAME OF FACILITY Code	Mudeiria Code	Type of Facility	Fridge and/ or freezer?+	Gaz dubba/ month	Vials per month DPT, OPV, TT	BCG	Measles
CURATIVE UNITS								
	819 Dayr al Wali	5 Zaidia	C Unit			0		
	807 Mighlaf Mehagam	4 Mighlaf	C Unit			2	1	1
	817 Harounia	6 Munira	C Unit			2	1	1
	810 Dayr Da'an	4 Mighlaf	C Unit			2	1	1
	802 Daudia	3 Qanawis	C Unit			2	1	1
	801 Qanama	1 Zohra	C Unit			0		
H O	805 Haddadia	4 Mighlaf	C Unit	Sibir		15	10	10
	820 Ibn Abbas	6 Munira	C Unit			2	1	1
	816 Dayr Jelala	5 Zaidia	C Unit			2	1	1
	814 Maslouba	4 Mighlaf	C Unit			2	1	1
	809 Dayr al Rubeidi	5 Zaidia	C Unit			0		
H O	815 'Ursh	5 Zaidia	C Unit	Sibir		7	1	2
	818 Dayr al Bahri	5 Zaidia	C Unit			0		
H O	822 'Urj	14 Bajil	C Unit	RCW42		7	1	2
	Hail al Sa'eed Farm	7 al Dhahri	C Unit			0		
	825 'Obaal	13 Hajeila	C Unit			0		
	823 Mazra al Da'ud Sa'ee	7 al Dhahri	C Unit			0		
	803 Qanawis	3 Qanawis	C Unit			0		
	804 Qanawis village	3 Qanawis	C Unit			0		
	813 Mighlaf Menwab?	4 Mighlaf	C Unit			2	1	1
	808 Mighlaf	4 Mighlaf	C Unit			0		
	821 Ja'alia	6 Munira	C Unit			2	1	1
	806 Mighlaf	4 Mighlaf	C Unit			0		
	812 Mighlaf Menaber?	4 Mighlaf	C Unit			2	1	1
	814 Maqazaia	4 Mighlaf	C Unit			2	1	1
URBAN HEALTH CENTRES AND CLINICS								
H O	All	H16 al Olofi	10 Hodeida	Hospital	RCW42	15	10	10
H O	these	H17 al Thowra	10 Hodeida	Hospital	RCW42	15	10	10
H O	H C	H01 Muqtaribeen	10 Hodeida	H C MCH	IceLiner	25	10	20
H O	are	H02 'Omaal/R Cr	10 Hodeida	H C	RCW42	15	10	10
H O	supp-	H03 Haali	10 Hodeida	H C	MO(f)RCW42	15	10	10
H O	lied	H04 AlQala'a	10 Hodeida	H C	RCW42	15	10	10
H O	directly	H05 Sadeeqiya	10 Hodeida	H C	RCW42	15	10	10
H O	from	H06 Shahariya	10 Hodeida	H C	RCW42	15	10	10
H O	the	H07 Howak	10 Hodeida	H C	RCW42	15	10	10
H O	main	H08 Tahreer	10 Hodeida	H C MCH	Phillips	25	10	20
H O	store	H09 Yemen	10 Hodeida	H C	RCW42	15	10	10
H O	by	H10 Ghuleil	10 Hodeida	H C MCH	ElecFF Kariba	25	10	20
H O	the	H11 Salkhana	10 Hodeida	H C	RCW42	15	10	10
H O	EPI	H12 Rabassa	10 Hodeida	not open		0	0	0
H O	Super-	H13 LCCD Clinic 1	10 Hodeida	H C	?	15	10	10
H O	visors	H14 LCCD Clinic 2	10 Hodeida	H C	?	15	10	10
H O	(H O )	H15 LCCD Clinic 3	10 Hodeida	C Unit		0	0	0

App 6 A (cont)	Facility	Mudeiria	Type	Fridge?+	Butagaz	Vials per month of - DPT, OPV TT	BCG	Measles
RURAL HEALTH CENTRES WITHOUT TRAINER/SUPERVISORS								
H O	824 Mandar	10 Hodeida	C Unit	RCW42		15	10	10
H O	2 Luhayya	2 Luhayya	H C	Sibir		15	10	10
H O	3 Khowba	2 Luhayya	H C (sub)	RCW42		15	10	10
H O	4 Qanawis	3 Qanawis	H C +Mwf	RCW42(Sibir)		15	10	10
H O	6 al Dhahri	7 al Dhahri	H C +Mwf	RCW42(Sibir)		15	10	10
H C	7 Kadan	7 al Dhahri	H C +Msh	Icel.RCW42		15	10	10
H O	8 Kamaran	8 Kamaran	H C +Msh	RCW42		15	10	10
H O	9 Salif	9 Salif	H C +Msh	Sibir		15	10	10
H O	10 El Qotari	11 Marawa'a	H C +Msh	Sibir,FrGaz		15	10	10
H O	11 Marawa'a	11 Marawa'a	H C	Sibir		25	10	20
H O	12 Bajil Centre	14 Bajil	H C	Sibir		25	10	20
H O	13 Workers' Bajil	14 Bajil	H C MD(F)	RCW42		15	10	10
H O	15 Duraihim	16 Duraihim	H C MD(F)	RCW42(Sibir)		15	10	10
H C	16 Sukhna	17 Sukhna	H C	Sibir		15	10	10
ZOHRA SUPERVISING HEALTH CENTRE								
1 Zohra	5 al Mirwagh	1 Zohra	PHCU	RCW42		7	1	2
1 Zohra	6 al Khamees	1 Zohra	PHCU	RCW42		7	1	2
1 Zohra	8 Mawr	2 Luhayya	PHCU	RCW42		7	1	2
1 Zohra	24 al Raafai	1 Zohra	PHCU			2	1	1
1 Zohra	26 No'maan	1 Zohra	PHCU			2	1	1
1 Zohra	27 al Jubeiria	2 Luhayya	PHCU	RCW42		7	1	2
1 Zohra	29 al Ma'ras	1 Zohra	PHCU			2	1	1
1 Zohra	30 al Mo'taradh	1 Zohra	PHCU			2	1	1
1 Zohra	42 Dayr al Sheikh	2 Luhayya	PHCU			2	1	1
1 Zohra	45 Dayr Abkar	2 Luhayya	PHCU			2	1	1
1 Zohra	52 Dayr Yaaseen	2 Luhayya	PHCU			2	1	1
1 Zohra	57 al Homaasia	2 Luhayya	PHCU			2	1	1
1 Zohra	66 Khabt al Muqaarina	2 Luhayya	PHCU			2	1	1
1 Zohra	67 Jabal al Milh	2 Luhayya	PHCU EPI			2	1	1
1 Zohra	70 al Sha'abia	1 Zohra	PHCU			2	1	1
1 H O	1 Zohra	1 Zohra	H C	2Fr,Sibir		15	10	10
ZAIDIA SUPERVISING HEALTH CENTRE								
9 Zaidia	1 al Munira	6 Munira	PHCU	RCW42(Sibir)		15	10	10
9 Zaidia	2 Bait 'Atta	5 Zaidia	PHCU			7	1	1
9 Zaidia	7 Dayr Mahdi	4 Mighlaf	PHCU			2	1	1
9 Zaidia	16 Dayr 'Abdalla	3 Qanawis	PHCU			2	1	1
9 Zaidia	17 Mahal al Khobaal	5 Zaidia	PHCU	RCW42		7	1	2
9 Zaidia	20 al Mughaidafia	5 Munira	PHCU	RCW42		7	1	2
9 Zaidia	21 al Hashaabara	5 Zaidia	PHCU			2	1	1
9 Zaidia	22 al Ma'arufia	5 Zaidia	PHCU			2	1	1
9 Zaidia	25 al Hassania	6 Munira	PHCU			2	1	1
9 Zaidia	31 Dayr Dukhna	2 Luhayya	PHCU			2	1	1
9 Zaidia	32 Dayr Kuzaaba	3 Qanawis	PHCU	RCW42		7	1	2
9 Zaidia	33 al Huteiria	2 Luhayya	PHCU			2	1	1
9 Zaidia	34 Dayr al Quraiti	5 Zaidia	PHCU+F	RCW42		7	1	2
9 Zaidia	49 al Qaiqab	2 Luhayya	PHCU			2	1	1
9 Zaidia	50 Ibn 'Abbas	6 Munira	PHCU			2	1	1
9 Zaidia	61 Dayr al Najaari	3 Qanawis	PHCU			2	1	1
9 Zaidia	68 al Sherinbaan	6 Munira	PHCU			2	1	1
9 Zaidia	69 Barkhal	5 Zaidia	PHCU			2	1	1
9 Zaidia	77 Dayr 'Abad	2 Luhayya	PHCU			2	1	1
9 Zaidia	98 Dayr al Wali	5 Zaidia	Closed			2	1	1
9 H O	5 Zaidia	5 Zaidia	H C	2Fr,IL,Sibir		25	10	20

App 6 A (cont)	Facility	Mudairia	Type	Fridge?+	Butagaz	Vials per month of -		
						DPT	BCG	Measles
						OPV TT		
Formerly El Qotai	now Health Office	proposed to be	BAJIL HC					
13 Tahreer	9 al Qamaria	14 Bajil	PHCU	RCW42		7	1	2
13 Tahreer	10 Kidf Zumeila	14 Bajil	PHCU			2	1	1
13 Tahreer	11 al Benaah	14 Bajil	PHCU			2	1	.
13 Tahreer	28 al Jaran	12 Bura	PHCU+F			2	1	.
13 Tahreer	43 al Hajaila	13 Hajaila	PHCU+F			2	1	1
13 Tahreer	46 Obail	13 Hajaila	PHCU+MD	Engel(solar)		15	10	10
13 Tahreer	54 Dayr Jaabci	14 Bajil	PHCU			2	1	1
13 Tahreer	56 al Shaawer	12 Bura	PHCU			2	1	1
13 Tahreer	62 Mahal Mohammed Sa e	14 Bajil	Closed			2	1	1
13 Tahreer	63 Ghazaala/Shabz	14 Bajil	PHCU			2	1	.
13 Tahreer	64 'Ofeidar	14 Bajil	PHCU			2	.	1
13 Tahreer	99 Gheileen	12 Bura	PHCU	in town		7	1	2
13 ?	new Antara (Bani Sulei	12 Bura'	Food Inspector			7	1	2
13 ?	new al Snaama	12 Bura'	C Unit	RCW42		15	10	10
TAHREER TRAINING HEALTH CENTRE								
14 5 Tahreer	12 Al Mahaal/Kilo 16	16 Duraihim	PHCU			2	1	1
14 5 Tahreer	18 Mahal al Saeed	7 al Dhahi	PHCU			2	1	1
14 5 Tahreer	60 al Mukaimania	16 Duraihim	PHCU			2	1	1
14 5 Tahreer	76 Shujeera	16 Duraihim	PHCU			2	1	1
MANSURIA SUPERVISING HEALTH CENTRE								
16 Mansuria	13 Dayr Daud	17 Sukhna	PHCU+F			2	1	1
16 Mansuria	14 al Midman	17 Sukhna	PHCU			2	1	.
16 Mansuria	15 al Hosaya	15 Mansuria	PHCU	RCW42		7	1	2
16 Mansuria	19 al Daamegh	17 Sukhna	PHCU			2	1	1
16 Mansuria	23 Magreba	12 Bura'	PHCU	Sibir		15	10	10
16 (Mansuria)	23 Ruqaab (EPI only)	12 Bura'	PHCU EPI			2	1	1
16 Mansuria	35 Biyut al Buta	17 Sukhna	PHCU			2	1	1
16 Mansuria	36 Shujaina	17 Sukhna	PHCU			2	1	1
16 Mansuria	37 Manwab	12 Bura'	PHCU+F			2	1	1
16 Mansuria	39 Dayr al Tubain	17 Sukhna	PHCU			2	1	1
16 Mansuria	40 'Awaaja	17 Sukhna	PHCU			2	1	1
16 Mansuria	44 al Maibelia	15 Mansuria	PHCU EPI			2	1	1
16 Mansuria	47 Dayr al Qamaat	17 Sukhna	Closed			2	1	1
16 Mansuria	48 al Radhia	15 Mansuria	PHCU			2	1	1
16 H O	14 Mansuria	15 Mansuria	H C	RCW42, Sibir, 2Fr		15	10	10
BAIT AL FAQIH RURAL HOSPITAL								
19 BaitalFaqih	4 al Laawia	16 Duraihim	PHCU+F			2	1	1
19 BaitalFaqih	38 al Mahwa	15 Mansuria	PHCU	RCW42		7	1	2
19 BaitalFaqih	41 al LiJaam	15 Mansuria	PHCU			2	1	1
19 BaitalFaqih	51 Munqum	16 Duraihim	PHCU			2	1	1
19 BaitalFaqih	53 Omania	16 Duraihim	PHCU			2	1	.
19 BaitalFaqih	55 Hajeb	15 Mansuria	PHCU			2	1	1
19 BaitalFaqih	58 al Ghuzia	18 Bait al F	PHCU	RCW42		7	1	2
19 BaitalFaqih	59 al 'Abassi	18 Bait al F	PHCU	RCW42		7	1	2
19 BaitalFaqih	71 Hur'ainia	18 Bait al F	PHCU	Sibir		7	1	2
19 BaitalFaqih	72 Jurbishia	18 Bait al F	PHCU	Sibir		7	1	2
19 BaitalFaqih	73 Nafhaan	18 Bait al F	PHCU	Sibir		7	1	2
19 BaitalFaqih	74 al Jaah	18 Bait al F	PHCU	Sibir		7	1	2
19 BaitalFaqih	75 Asa'eed	18 Bait al F	PHCU	RCW42		7	1	2
19 H O	17 Bait al Faqih	18 Bait al F	H C	Fr, Sibir		25	10	20

App G A (cont)	Facility	Mudairia	Type	Fridge?	Butagaz	Vials per month of -			
						DPT*	BCG	Measles	
<b>ZABID TRAINING HEALTH CENTRE</b>									
20	Zabid 65 Maghrass	19 Zabid	PHCU	RCW42		7	1	2	
20	Zabid 901 Madar	19 Zabid	PHCU+F	Sibir		7	1	2	
20	Zabid 902 Mowqer	19 Zabid	PHCU	Sibir		7	1	2	
20	Zabid 903 Tuhaita	19 Zabid	PHCU	Sibir		7	1	2	
20	Zabid 904 Turaiba	19 Zabid	PHCU+F	RCW42		7	1	2	
20	Zabid 905 Zareeba	19 Zabid	PHCU+F	RCW42		7	1	2	
20	Zabid 914 Toweela	19 Zabid	PHCU F	RCW42		7	1	2	
20	Zabid 915 Bait al Sheikh Omar	19 Zabid	PHCU F		Closed		0	0	
20	Zabid 916 Musallab	19 Zabid	PHCU+F			2	1	1	
20	Zabid 917 Jirba	19 Zabid	PHCU+F		Closed		0	0	
20	Zabid 918 Mahal al Sheikh	19 Zabid	PHCU			2	1	1	
20	Zabid 919 Majalis	19 Zabid	PHCU			2	1	1	
20	Zabid 920 Mudaman	19 Zabid	PHCU			2	1	1	
20	Zabid 921 Radaadia	19 Zabid	PHCU			2	1	1	
20	Zabid 926 Mahat	19 Zabid	PHCU F			2	1	1	
20	Zabid 927 Bedwa	19 Zabid	PHCU F	RCW42		7	1	2	
20	H O 18 Zabid	19 Zabid	H C	2IL,Sibir,2FF		25	10	20	
20	?Zabid 19 Gerah	19 Zabid	H C	Sibir		15	10	10	
20	Zabid 826 Mahat/Mukheirif	19 Zabid	C Unit	RCW42		7	1	2	
21	? new Mureir	20 Jebel Ras	C Unit			0	0	0	
21	Jebel Ras 827 Muntawfia 'Ulia	20 Jebel Ras	C Unit			0	0	0	
21	Jebel Ras 828 Fouahz	20 Jebel Ras	C Unit			0	0	0	
21	Jebel Ras 829 Dubas	20 Jebel Ras	C Unit			0	0	0	
21	Jebel Ras 830 Mujoreen	20 Jebel Ras	C Unit			0	0	0	
21	Jebel Ras 831 Ashara	20 Jebel Ras	C Unit			0	0	0	
21	Jebel Ras 906 Qahara	20 Jebel Ras	PHCU+MD	Sibir,RCW42		7	1	2	
21	Jebel Ras 922 Dhohra	20 Jebel Ras	PHCU+?	RCW42		7	1	2	
22	Hais 907 al Fash	21 Hais	PHCU			2	1	1	
22	Hais 908 Asurad	21 Hais	PHCU			2	1	1	
22	Hais 909 Mahal al Rabi'	21 Hais	PHCU			2	1	1	
22	Hais 910 Qulma	21 Hais	PHCU	RCW42		7	1	2	
22	Hais 911 Thami	21 Hais	PHCU+F	RCW42		7	1	2	
22	H O 21 Hais	21 Hais	H C	Sibir		15	10	10	
23	Khowkha 912 Mowshej	22 Khowkha	PHCU			2	1	1	
23	Khowkha 913 Qataaba	22 Khowkha	PHCU			2	1	1	
23	Khowkha 923 Abu Zahr	22 Khowkha	PHCU			2	1	1	
23	Khowkha 924 Dar al Khubaish	22 Khowkha	PHCU			2	1	1	
23	Khowkha 925 Dar Naaji	22 Khowkha	PHCU			2	1	1	
23	H O 22 Khowkha	22 Khowkha	H C	Sibir		15	10	10	
<b>TOTAL VIALS</b>						*OPT,OPV,TT	1,117	536	651
							BCG	Measles	

DOSES \*OPT,OPV,TT 22,340 10,720 6,510

EPI Staff's estimate of Monthly Supply 24,000 doses  
 Actual Supply last month 18,000 doses (75%)

+ FF=fridgefreezer combined in one  
 fr=Freezer (for BCG, OPV, Measles & icepacks)  
 IL=Ice Liner (Electrolux TCW 1151)

**Appendix 6 B Supply Calculations based on a Rough Estimate of Population, and Specific Assumptions about Wastage Rates (see below)**

ASSUMPTIONS FOR THE SUPPLY CALCULATIONS (can be changed)		Doses given/vial	BCG	DPT	OPV	Measles	TT	a Ignores the needles & syringes used for mixing BCG & Measles b One needle and one syringe for giving BCG to each child				
		Doses in a vial	14	17	17	8	17					
		Doses/eligible	20	20	20	10	20					
			1	3	3	1	2					
Facility (HCs or Units)	Total Population	Crude Birth Rate		Vials calculated from births					NEEDLES(a)		SYRINGES(a)	
		CSR= 41/1000	Births per Year	Month	BCG	DPT	OPV	Measles	TT	b) 24g	BCG(b) 2m <sup>1</sup>	
<b>CURATIVE UNITS</b>												
Dayr al wal'	0	0	0	0	0	0	0	0	0	0	0	0
Highlaf Menagam	3 000	123	11	1	2	2	2	2	11	66	11	66
Marcouba	3 000	123	11	1	2	2	2	2	11	66	11	66
Dayr Da'an	3 000	123	11	1	2	2	2	2	11	66	11	66
Dawda	3 000	123	11	1	2	2	2	2	11	66	11	66
Qanama	0	0	0	0	0	0	0	0	0	0	0	0
Haddadia	30 000	1 230	103	8	19	19	13	13	103	618	103	618
Ibn Abbas	3 000	123	11	1	2	2	2	2	11	66	11	66
Dayr Je'ala	3 000	123	11	1	2	2	2	2	11	66	11	66
Masiouba	3 000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Rubeid	0	0	0	0	0	0	0	0	0	0	0	0
Mursr	10,000	410	35	3	7	7	5	5	35	210	35	210
Dayr al Bahri	0	0	0	0	0	0	0	0	0	0	0	0
Urj	10,000	410	35	3	7	7	5	5	35	210	35	210
Ma'ial Sa'ed Far	0	0	0	0	0	0	0	0	0	0	0	0
Obaa'	0	0	0	0	0	0	0	0	0	0	0	0
Mazra'a Sa'ud Sae	0	0	0	0	0	0	0	0	0	0	0	0
Qanaw's	0	0	0	0	0	0	0	0	0	0	0	0
Qanaw's village	0	0	0	0	0	0	0	0	0	0	0	0
Highlaf Menwab?	3 000	123	11	1	2	2	2	2	11	66	11	66
M'ghlaf	0	0	0	0	0	0	0	0	0	0	0	0
Ja'alia	3,000	123	11	1	2	2	2	2	11	66	11	66
Highlaf	0	0	0	0	0	0	0	0	0	0	0	0
Highlaf Menaber?	3,000	123	11	1	2	2	2	2	11	66	11	66
Maqazala	3,000	123	11	1	2	2	2	2	11	66	11	66
<b>URBAN HEALTH CENTRES AND CLINICS</b>												
al Olofi	30,000	1,230	103	8	19	19	13	13	103	618	103	618
al Thowra	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Muqtaribeen	50,000	2,050	171	13	31	31	22	21	171	1026	171	1026
'Omaal/R Cr	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Haali	30,000	1,230	103	8	19	19	13	13	103	618	103	618
AlOala'a	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Sadee'iva	30 000	1,230	103	8	19	19	13	13	103	618	103	618
Srahar'ya	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Howak	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Tahreer	50 000	2,050	171	13	31	31	22	21	171	1026	171	1026
Yemen	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Ghuleil	50,000	2,050	171	13	31	31	22	21	171	1026	171	1026
Salkhana	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Rabassa	0	0	0	0	0	0	0	0	0	0	0	0
LCCD Clinic 1	30,000	1,230	103	8	19	19	13	13	103	618	103	618
LCCD Clinic 2	30,000	1,230	103	8	19	19	13	13	103	618	103	618
LCCD Clinic 3	0	0	0	0	0	0	0	0	0	0	0	0

51

ALU 6 B (cont)	Population	Births /Month	BCG	DPT	OPV	Measles	TT	BCG-N	24g	BCG-S	2ml	
RURAL HEALTH CENTRES WITHOUT TRAINER/SUPERVISORS												
Mandar	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Luhayya	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Khowaa	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Qanawis	30,000	1,230	103	8	19	19	13	13	103	618	103	618
al Dhari	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Kadan	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Katran	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Salif	30,000	1,230	103	8	19	19	13	13	103	618	103	618
El Octay	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Mzawa'a	50,000	2,050	171	13	31	31	22	21	171	1026	171	1026
Bajil Centre	50,000	2,050	171	13	31	31	22	21	171	1026	171	1026
Workers, Bajil	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Durayhim	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Sukhna	30,000	1,230	103	8	19	19	13	13	103	618	103	618
ZOHRA SUPERVISING HEALTH CENTRE												
al Mirwagh	10,000	410	35	3	7	7	5	5	35	210	35	210
al Khamees	10,000	410	35	3	7	7	5	5	35	210	35	210
Mawr	10,000	410	35	3	7	7	5	5	35	210	35	210
al Raifa'i	3,000	123	11	1	2	2	2	2	11	66	11	66
No maan	3,000	123	11	1	2	2	2	2	11	66	11	66
al Jubeirna	10,000	410	35	3	7	7	5	5	35	210	35	210
al Ma'ras	3,000	123	11	1	2	2	2	2	11	66	11	66
al Mo'taradh	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Sheikh	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr Abkar	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr Yaaseen	3,000	123	11	1	2	2	2	2	11	66	11	66
al Homaasia	3,000	123	11	1	2	2	2	2	11	66	11	66
Khadr al Muqaarina	3,000	123	11	1	2	2	2	2	11	66	11	66
Jabal al Milh	3,000	123	11	1	2	2	2	2	11	66	11	66
al Sha'abia	3,000	123	11	1	2	2	2	2	11	66	11	66
Zohra	30,000	1,230	103	8	19	19	13	13	103	618	103	618
ZAIDIA SUPERVISING HEALTH CENTRE												
al Munira	30,000	1,230	103	8	19	19	13	13	103	618	103	618
Bait 'Atta	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr Mahdi	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr 'Abdalla	3,000	123	11	1	2	2	2	2	11	66	11	66
Mahal al Khobaa	10,000	410	35	3	7	7	5	5	35	210	35	210
al Mughaidafia	10,000	410	35	3	7	7	5	5	35	210	35	210
al Hashaabara	3,000	123	11	1	2	2	2	2	11	66	11	66
al Ma'arufia	3,000	123	11	1	2	2	2	2	11	66	11	66
al Hassania	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr Dukhna	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr Kuzaaba	10,000	410	35	3	7	7	5	5	35	210	35	210
al Huteirna	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Quraiti	10,000	410	35	3	7	7	5	5	35	210	35	210
al Qaiqa	3,000	123	11	1	2	2	2	2	11	66	11	66
Ibn 'Abbas	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Najaari	3,000	123	11	1	2	2	2	2	11	66	11	66
al Sherinbaan	3,000	123	11	1	2	2	2	2	11	66	11	66
Barkhal	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr 'Abad	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Wali	3,000	123	11	1	2	2	2	2	11	66	11	66
Zaidia	50,000	2,050	171	13	31	31	22	21	171	1026	171	1026

App 6 B (cont)	Population	Births /Month	BCG	DPT	OPV	Measles	TT	BFG-N	24g	BCG-S	2ml	
Formerly El Qotai now Health Office, proposed to be BAJIL HC												
al Qamaria	10 000	410	35	3	7	7	5	5	35	210	35	210
Kidf Zumeia	3 000	123	11	1	2	2	2	2	11	66	11	66
al Behaar	3 000	123	11	1	2	2	2	2	11	66	11	66
al Jarar	3 000	123	11	1	2	2	2	2	11	66	11	66
al Ha_a 'a	3 000	123	11	1	2	2	2	2	11	66	11	66
'Obaa	30 000	1,230	103	8	19	19	13	13	103	618	103	618
Dayr Jaaber	3 000	123	11	1	2	2	2	2	11	66	11	66
al Shaawer	3,000	123	11	1	2	2	2	2	11	66	11	66
Maha' Mohammed Sa'	3 000	123	11	1	2	2	2	2	11	66	11	66
Ghazaala/Sh'a'ba	3 000	123	11	1	2	2	2	2	11	66	11	66
'Ofaidar	3 000	123	11	1	2	2	2	2	11	66	11	66
Gheileen	10 000	410	35	3	7	7	5	5	35	210	35	210
'Antara (Ben' Sule	10 000	410	35	3	7	7	5	5	35	210	35	210
al Shaama	30 000	1 230	103	8	19	19	13	13	103	618	103	618
TAHREER TRAINING HEALTH CENTRE												
A Mahaal/Kilo 16	3,000	123	11	1	2	2	2	2	11	66	11	66
Mu al Saeed	3,000	123	11	1	2	2	2	2	11	66	11	66
al 'akaimania	3,000	123	11	1	2	2	2	2	11	66	11	66
Shujeera	3,000	123	11	1	2	2	2	2	11	66	11	66
MANSURIA SUPERVISING HEALTH CENTRE												
Dayr Daud	3 000	123	11	1	2	2	2	2	11	66	11	66
al Midman	3,000	123	11	1	2	2	2	2	11	66	11	66
al Hosaya	10 000	410	35	3	7	7	5	5	35	210	35	210
al Daamegh	3,000	123	11	1	2	2	2	2	11	66	11	66
Magreba	30 000	1,230	103	8	19	19	13	13	103	618	103	618
Ruqaab (EPI only)	3 000	123	11	1	2	2	2	2	11	66	11	66
Biyyut al Buta	3 000	123	11	1	2	2	2	2	11	66	11	66
Shujaina	3,000	123	11	1	2	2	2	2	11	66	11	66
Manwab	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Tubaiii	3,000	123	11	1	2	2	2	2	11	66	11	66
'Awaaja	3,000	123	11	1	2	2	2	2	11	66	11	66
al Maibelia	3,000	123	11	1	2	2	2	2	11	66	11	66
Dayr al Qamaat	3,000	123	11	1	2	2	2	2	11	66	11	66
al Radhia	3,000	123	11	1	2	2	2	2	11	66	11	66
Mansuria	30,000	1,230	103	8	19	19	13	13	103	618	103	618
BAIT AL FAQIH RURAL HOSPITAL												
al Laawia	3,000	123	11	1	2	2	2	2	11	66	11	66
al Mahwa	10,000	410	35	3	7	7	5	5	35	210	35	210
al Liyaam	3,000	123	11	1	2	2	2	2	11	66	11	66
Munqum	3,000	123	11	1	2	2	2	2	11	66	11	66
'Omaria	3,000	123	11	1	2	2	2	2	11	66	11	66
Hajab	3,000	123	11	1	2	2	2	2	11	66	11	66
al Ghuzia	10 000	410	35	3	7	7	5	5	35	210	35	210
al 'Abassi	10,000	410	35	3	7	7	5	5	35	210	35	210
Hussainia	10,000	410	35	3	7	7	5	5	35	210	35	210
Jurbishia	10,000	410	35	3	7	7	5	5	35	210	35	210
Nafhaan	10,000	410	35	3	7	7	5	5	35	210	35	210
al Jaah	10,000	410	35	3	7	7	5	5	35	210	35	210
Asa'aeed	10,000	410	35	3	7	7	5	5	35	210	35	210
Bait al Faqih	50,000	2,050	171	13	31	31	22	21	171	1026	171	1026

61

App 6 B (cont)	Population	Births /Month	BCG	OPT	OPV	Measles	TT	BCG-N	24g	BCG-S	2ml	
<b>ZABIO TRAINING HEALTH CENTRE</b>												
Maghrass	10 000	410	35	3	7	7	5	5	35	210	35	210
Madar	10 000	410	35	3	7	7	5	5	35	210	35	210
Mowcer	10 000	410	35	3	7	7	5	5	35	210	35	210
Tuhaita	10.000	410	35	3	7	7	5	5	35	210	35	210
Tura ba	10 000	410	35	3	7	7	5	5	35	210	35	210
Zareeba	10.000	410	35	3	7	7	5	5	35	210	35	210
Toweela	10.000	410	35	3	7	7	5	5	35	210	35	210
Bait al Sheikh Omar	0	0	0	0	0	0	0	0	0	0	0	0
Musa'lab	3 000	123	11	1	2	2	2	2	11	66	11	66
Jirba	0	0	0	0	0	0	0	0	0	0	0	0
Mahal al Sheikh	3 000	123	11	1	2	2	2	2	11	66	11	66
Majalis	3 000	123	11	1	2	2	2	2	11	66	11	66
Mudaman	3 000	123	11	1	2	2	2	2	11	66	11	66
Radaadia	3 000	123	11	1	2	2	2	2	11	66	11	66
Mahat	3.000	123	11	1	2	2	2	2	11	66	11	66
Bedwa	10.000	410	35	3	7	7	5	5	35	210	35	210
Zabid	50.000	2.050	171	13	31	31	22	21	171	1026	171	1026
Gerahi	30.000	1.230	103	8	19	19	13	13	103	618	103	618
Mahat/Mukheirif	10 000	410	35	3	7	7	5	5	35	210	35	210
<b>JEBEL RAS</b>												
Mureir	0	0	0	0	0	0	0	0	0	0	0	0
Muntawfia 'Ulia	0	0	0	0	0	0	0	0	0	0	0	0
Fouaha	0	0	0	0	0	0	0	0	0	0	0	0
Oubas	0	0	0	0	0	0	0	0	0	0	0	0
Mujeireen	0	0	0	0	0	0	0	0	0	0	0	0
Asha'ira	0	0	0	0	0	0	0	0	0	0	0	0
Qahara	10.000	410	35	3	7	7	5	5	35	210	35	210
Onohra	10.000	410	35	3	7	7	5	5	35	210	35	210
<b>HAIS</b>												
a' Fash	3.000	123	11	1	2	2	2	2	11	66	11	66
Asurad	3.000	123	11	1	2	2	2	2	11	66	11	66
Mahal al Rabi'	3.000	123	11	1	2	2	2	2	11	66	11	66
Qulma	10.000	410	35	3	7	7	5	5	35	210	35	210
Thami	10.000	410	35	3	7	7	5	5	35	210	35	210
Hais	30.000	1.230	103	8	19	19	13	13	103	618	103	618
<b>KHOWKHA</b>												
Mowshej	3.000	123	11	1	2	2	2	2	11	66	11	66
Qataaba	3.000	123	11	1	2	2	2	2	11	66	11	66
Abu Zahr	3.000	123	11	1	2	2	2	2	11	66	11	66
Dar al K'ubaish	3.000	123	11	1	2	2	2	2	11	66	11	66
Dar Naaji	3.000	123	11	1	2	2	2	2	11	66	11	66
Khowkha	30.000	1.230	103	8	19	19	13	13	103	618	103	618
<b>Number of Vials of Vaccine Needed</b>			562	1301	1301	955	947	6986	41916	6986	41916	
									BCG	24g	BCG	2ml
									Needles		Syringes	

110



Ministry of Public Health  
 Hodeida Health Office  
 Department of Public Health

**APPENDIX 7**  
 (rough translation)

Name of the Unit ..... Mudeiria .....

Name of Murshid ..... Murshida .....

Daia (LBA) .....

How much does transport cost from the Unit to the Supervizing HC?

How many kilometers is it from the Unit to the Supervizing HC?

How many days (per month) does it take you to immunize your area?

Write the name of the village where the Unit is located:

Name of Main Village	Population	Households	Days for Immunization
1 .....	.....	.....	.....

Names of Surrounding Villages	Distance in kilometers	Population	Households
1 .....	.....	.....	.....
2 .....	.....	.....	.....
3 .....	.....	.....	.....
4 .....	.....	.....	.....
5 .....	.....	.....	.....
6 .....	.....	.....	.....
7 .....	.....	.....	.....
8 .....	.....	.....	.....
9 .....	.....	.....	.....
10 .....	.....	.....	.....
11 .....	.....	.....	.....

12

APPENDIX 8 STRUCTURE OF GOVERNMENT ACCOUNTS BY BAB, BAND AND NUA'

E X P E N D I T U R E S

BAB	Band	Nua'	Description of Line Items
1			SALARIES
1	1		Basic salaries
1	2		Salaries of Contract (Temporary) staff
1	2	1	TAs on Contract (non Yemeni)
1	2	2	Teachers' salaries (non Yemeni)
1	2	3	Other Contract & Temporary staff
1	3		Overtime and Incentives
1	3	1	Overtime
1	3	2	Incentives
1	4		Allowances
1	4	1	Appearances and Representation allowance
1	4	2	Graduate allowance
1	4	3	Rural allowance
1	4	4	Meal allowance
1	4	5	Clothing allowance
1	4	6	Other allowances
1	5		Government share in Pension Funds
1	6		Instalments to social security
2			SUPPLIES AND SERVICES
2	1		Stationery, Books and Printing
2	1	1	Stationery
2	1	2	Books and Printing
2	1	3	Magazines and Journals
2	2		Fuel and Maintenance of Vehicles
2	2	1	Petrol and Oil
2	2	2	Spare Parts and Maintenance
2	3		Special Expenditures
2	3	1	Drugs and Medical Supplies
2	3	2	Meals and Clothing
2	3	3	Medals allowances
2	3	4	Other
2	4		Rents
2	4	1	Rent of Housing and Land
2	4	2	Rent of Machines and Equipment
2	5		Utilities
2	5	1	Water
2	5	2	Electricity
2	5	3	Post and Telecommunications
2	6		Maintenance
2	6	1	Small refurbishment and repairs
2	6	2	Repairs and Spare Parts for Machinery & equipment
2	6	3	Repair of bridges, roads, parks and wells
2	7		Travel and Transportation
2	7	1	Duty travel
2	7	2	Internal transportation
2	7	3	External transportation
2	7	4	Attending conferences and other visits

E X P E N D I T U R E S (continued)

BAB	Description of Line Items	
Band	Nua'	
2 8		Training
2 8 1		Local training
2 8 2		Training outside Yemen
2 9		Miscellaneous
2 9 1		Conferences/Parties/Entertaining
2 9 2		Special expenditures
2 9 3		Other
3		CURRENT TRANSFER EXPENDITURES AND DEBT INTEREST (including scholarships, compensation, fines, social security)
4		CAPITAL AND TRANSFER PAYMENTS
4 1		Capital expenditures
4 1 1		Building and construction
4 1 2		Furnishing and decoration
4 1 3		Machines and equipment
4 1 4		Vehicles and other means of transportation
4 1 5		Real estate and land
4 1 6		Other capital expenditures
4 2		Capital transfers
4 2 1		Local (internal) loans
4 2 2		External loans
4 2 3		Public and public limited sectors
4 2 4		Arab, Regional and Foreign companies and corporations
4 2 5		Development projects
4 2 6		Other transfer payments
4 2 7		Loans (short and long term) to the public sector
4 2 8		Loans (short and long term) to the public limited sector
4 2 9		Other loans
4 2 10		Loan repayments
5		INVESTMENT
5 1		Design, Research and Education
5 2		Real estate and Land
5 3		Building and construction
5 4		Machines and equipment
5 5		Furnishing and decoration
5 6		Means of transportation
5 7		Wages and Salaries
5 8		General expenditure of projects

Line items for INCOME were not translated.

**APPENDIX 9**  
**HOSPITAL STATISTICS**

Definitions of Some Hospital Utilization Statistics

Average length of stay:  $\frac{\text{Number of inpatient days/year}}{\text{Number of admissions/year}}$   
(in days)

Some countries use Discharges + Deaths instead of Admissions

Percentage bed occupancy:

in a year:  $\frac{\text{Number of in-patient days/year} \times 100}{\text{Number of beds} \times 365}$

in a given month:  $\frac{\text{Number of in-patient days/month} \times 100}{\text{Number of beds} \times \text{days in that month}}$

Throughput per bed:  $\frac{\text{Number of admissions/year}}{\text{Number of beds}}$

Throughput per bed is the average number of patients admitted to a bed in a year. It can also be worked out per month.

Available bed days: Number of beds x 365 for a year

Occupied bed days: Number of inpatient days

Unoccupied bed days:  $\frac{\text{Available bed days} - \text{Occupied bed days}}{\text{per year}}$

This could also be worked out per month for frequent monitoring

Turnover interval:  $\frac{\text{Unoccupied bed days}}{\text{Number of admissions}}$

The time period for the numerator and denominator must be the same, ie per year, or per month.

Turnover interval measures the average time that a bed lies empty between patients, in days. It is used as a measure of the efficiency of a hospital's or specialty's wait-list and admissions policy.

### INPATIENTS AT AL THOWRA HOSPITAL, HOEDEIDA (183 beds)

Month	Days	Inpatient days	Dead	Discharged	Admissions	Average length of stay (days)	Occupancy rate	Through put per bed	Turn-over interval
January	31	4,207	92	586	575	7.32	74.2%	3.1	2.5
February	28	2,862	77	355	474	6.04	55.9%	2.6	4.8
March	31	4,808	74	465	601	8.00	84.8%	3.3	1.4
April	30	4,136	88	454	516	8.02	75.3%	2.8	2.6
May	31	4,719	64	455	515	9.16	83.2%	2.8	1.9
June	30	4,146	75	386	549	7.55	75.5%	3.0	2.4
July									
August	31	5,035	80	447	543	9.27	88.8%	3.0	1.2
September	30	4,760	64	469	526	9.05	86.7%	2.9	1.4
October	31	5,250	65	500	558	9.41	92.5%	3.0	0.8
November	30	4,977	71	501	570	8.73	90.7%	3.1	0.9
December	31	4,808	80	524	595	8.08	84.8%	3.3	1.5
Total 1991 excluding July	334	49,708	830	5,142	6,022	8.25	81.3%	32.9	1.9
Weighted to a full year	365	54,322	907	5,619	6,581	8.25	81.3%	36.0	1.9

The shortest average length of stay was in February (6.04 days), and the occupancy rate fell to 56%; on some days fewer than half the beds were occupied. We do not know what caused these variations.

Although the Chinese staff do a bed census at the beginning and end of each of the three daily shifts, the inpatient statistics are compiled from counts taken some time between 8 am and 9 am. By this time patients have started to move around and it is likely that the data on inpatient days are not very accurate.

It was not possible to find average length of stay for different types of patient (eg obstetric, medical, surgical) because the necessary records are not kept. In particular the number of beds and the census for each type of patient is not recorded. The bed allocation in January 1992 was:

FEMALE BEDS		71
ENT and Dental	4	
Obstetrics & Gynaecology	30	
Eyes	4	
Medical	12	
Surgical	19	
"E" beds (VIPs, critical cases)	2	
PAEDIATRIC	41	45
Under-12s in Male Medical	4	
MALE BEDS		67
Eyes	4	
Surgical	31	
Medical	31	
"E" bed	1	
TOTAL BEDS		183

### OPERATIONS AT AL THOWRA HOSPITAL, 1991

	Working days	Minor	Med-ium	Minor+ Medium	Major	Average per day	
						Minor	Major
January	26	8	34	42	110	1.62	4.23
February	24	26	9	35	79	1.46	3.29
March	26	8	27	35	119	1.35	4.58
April	21	50		50	97	2.38	4.62
May	24	35		35	130	1.46	5.42
June	22	18		18	99	0.82	4.50
July							
August	26	76		76	146	2.92	5.62
September	24	33		33	149	1.38	6.21
October	26	37		37	154	1.42	5.92
November	24	35		35	127	1.46	5.29
December	27	35		35	151	1.30	5.59
Total 1991	270			431	1,361	1.60	5.04
excluding July (27 working days)							
Weighted for 12 months	297			474	1,497	1.60	5.04

Minimum

Maximum

### OUTPATIENTS AT AL THOWRA HOSPITAL, HODEIDA

Departments with the largest number of patients in the year are shown first.

	Male	Female	Total	Percent	Average Patients per day*	Days Open
Paediatrics	30,578	26,077	56,655	20%	155	365
Injections	24,522	15,543	40,065	14%	135	297
Internal Medicine M & F	20,731	18,478	39,209	14%	132 a	297
Dressings	19,110	9,918	29,028	10%	98	297
Surgery	16,994	10,205	27,199	10%	92	297
Eye Clinic	13,761	11,068	24,829	9%	94	263
Obstetrics		14,565	14,565	5%	49	297
Ear Nose & Throat (ENT)	7,376	7,098	14,474	5%	71	203
Acupuncture	5,832	6,617	12,449	4%	42	297
Dental	6,382	5,624	12,006	4%	43	281
Cardiology (ECG)	3,560	2,673	6,233	2%	21	297
Psychiatric & Neurology	2,515	2,084	4,599	2%	25	185
Sonography	349	1,598	1,947	1%	12	157 b
Total	151,710	131,548	283,258	100%	954 *	

53.6%      46.4%

- \* The average number of patients per day was calculated from the exact number of days for which each department was open in 1991, shown in the last column. The number of working days (excluding Fridays and official holidays) was 297 days.
- a Internal Medicine is organized as two separate outpatient clinics: IMC Male, and IMC Female. Average number of patients per day is 73 men (open on 285 days) and 62 women (open 297 days).
- b The Sonography Department was closed in October, November and December 1991.

al

## Revenues from Special Clinics in the Afternoon at al Thowra Hospital

Ticket	214,080	8.7%
Blood type	322,547	13.1%
Retainer fees paid by Companies	345,960	14.1%
Xray, Lab, Inj, Minor surg	442,813	18.0%
Admissions & Operations	225,850	9.2%
Delivery & ANC	65,000	2.6%
Sonography	249,600	10.2%
Traffic	590,207	24.0%
<b>Total</b>	<b>2,455,057</b>	<b>100.0%</b>

### DRUGS AT AL THOWRA HOSPITAL SEPTEMBER - DECEMBER 1991

	Cost/ Quantities						Total Rials			
	unit	Sept	Amount in Rials	Oct	Amount in Rials	Nov		Amount in Rials	Dec	Amount in Rials
1 Rehydration drip	35	120	4,200		0	232	8,120	480	16,800	29 120
2 Ringers	36	150	5,400	120	4 320	428	15,408	200	7 200	32 328
3 Glucose 5% drip	35	480	16 800	640	22,400	709	24,815	463	16,205	80,220
4 Novalgine	5	650	3,250	800	4,000	730	3,650	900	4,500	15 400
5 Syringes	2 28	2600	5,928	2000	4,560	2000	4,560	2500	5,700	20 748
6 Valium	10	127	1,270	224	2,240	286	2,860	31^	3,100	9,470
7 Bilargin	6	20	120	150	900	70	420	50	300	1 740
8 Cortigin B6	9	165	1,485	200	1,800	350	3,150	150	1,350	7 785
9 Vitamin k	6	100	600	80	480	150	900	100	600	2 580
10 Aminophaline	2	100	200	300	600	330	660	100	200	1 660
11 Chlorbram	3 83	175	670	200	766	250	958	50	192	2 585
12 Spazboman/No-sp	5 96	500	2,980	400	2,384	400	2,384	400	2,384	10 132
13 Atropine	0 66	275	182	300	198	400	264	500	330	974
14 Plaster	41	0	0	25	1,025	30	1,230	60	2,460	4 7,5
15 Cotton	29 15	0	0	160	4,664	50	1,458	60	1,749	7 87,.
16 X-ray films (100)	3400	0	0	6	20,400	4	13,600	3	10,200	44 200
17 Alzurafin	6		0	100	600	230	1,380	150	900	2 880
18 Tetracycline	UNICEF		0		0	1000	0		0	0
19 ORT pkts	UNICEF		0		0	800	0	250	0	0
20 Sodium lactate	UNICEF		0		0	430	0	730	0	0
21 Gauze large	300		0		0	20	6,000	47	14,100	20 100
22 Lignocaine	UNICEF		0		0	10	0		0	0
23 Centicycn	6 2666		0		0	150	940	190	1,191	2 13,.
24 No-sp	5 5333		0		0		0	150	830	830
25 Small gauze	48		0		0		0	45	2,160	2 160
<b>TOTAL RIALS, in four months</b>			<b>43,085</b>		<b>71,337</b>		<b>92,756</b>		<b>92,450</b>	<b>299 625</b>

APZ

Appendix 10 Fee Schedules from Three Sources (in Yemeni Rials)

Fees for Services	al Thowra Hospital		LCCD	Private	
	1989	?1991?	mid 1990	Minimum	Maximum
1 Clinic ticket	20		25	-	
2 Stool analysis	10		10	30	40
3 Urine analysis	10		75	30	40
4 Blood test (Hb,WBC,T&D,ESR)	20		30	200	250
Haemoglobin			10	30	30
5 Malaria smear	10	with Blood	25	80	100
6 Biopsy	50	100		-	
7 Pregnancy test	30	60	60	120	150
8 Widal test (typhoid)	30	60	100	200	200
9 Liver function	30	40	150	500	600
10 Blood urea	30		60	100	
11 Chest x-ray	50	70	60	-	
12 Odelca (small chest x-ray)	30	70		-	
13 ECG	50		50	-	
14 X-ray screening	15	-		-	
15 Acupuncture	15			-	
16 Fee for Driving Licence	130			-	
17 Sonography/Ultrasound	200		75	-	
18 Antenatal Card (5 visits)	100		100	-	
19 Blood grouping fee	30	34	50	100	100
20 Audiogram	100			-	
21 EEG	300			-	
22 D & C	200			-	
23 Minor operation (incl. Dental)	200			-	
24 Major operation	600			-	
25 Medium operation	400			-	
26 Urine in bladder endoscopy	100			-	
27 Surgical dressing	5		5	-	
28 Injection	2		5	-	
29 Blood sugar	30	50	50	100	120
30 Urine sugar	10		50	25	30
31 Barium meal	50		120	-	
32	30			-	
33 Gynaecological exam	200			-	
34 Plaster cast fee	50			-	

The following are not on al Thowra's list:

Semenalysis (Sperm count)			75	100	120
Cholesterol			60	100	100
Triglyceride			60	100	100
ASO Antistreptolycine			60	200	200
RBS Random blood sugar			60	100	120
Creatinine (kidney)			50	1000	1000
CRP C-Reactive protein			50	200	200
Rheumatoid factor			50	200	200
Protein			50	100	100

a LCCD Liver Function includes GPT, GOT, Alkaline phosphatase, Bilirubin)

b LCCD Blood Urea is Kidney Function with creatinine.

\* This information was obtained from Health Office staff.