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REACH

RESOURCES
FOR CHILD
HEALTH

TRIP REPORT:

**REVIEW OF EPI ACTIVITIES IN THE
NORTHERN GOVERNORATES**

SANA'A, REPUBLIC OF YEMEN

JULY 21-AUGUST 17, 1990



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July 21-August 17, 1990

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ACKNOWLEDGEMENTS

The Accelerated Cooperation for Child Survival Project has a complex and difficult history. The hard work and commitment of its many workers has not yet been reflected in program success. It would be impossible to claim a complete understanding in a brief three week visit such as the author's. In those areas where comments and criticisms have been made, this writer requests the same patience and understanding which was extended to him during the visit.

The author would like to thank REACH COP, Noel Brown, for his generosity and hard work in making arrangements. Special thanks should be given to the REACH ACCS governorate coordinators, Mr. Maghdi Al Kahana (Saadah) and Ahmed Kahara (Hajjah) for their hard work and openness.

ACRONYMS

ACCS	Accelerated Cooperation for Child Survival Project
A.I.D.	United States Agency for International Development
CHL	Central Health Laboratory
COP	Chief of Party
CPO	Central Planning Office
DG	Director General
DPT3	Diphtheria-Pertussis-Tetanus, third dose
EPI	Expanded Program on Immunization
GTZ	German Technical Assistance
HTC	Health Training Centers
JICA	Japanese International Cooperative Agency
LCCD	Local Council for Cooperative Development
MOH	Ministry of Health
MSF	Medecins Sans Frontieres
NNT	Neonatal Tetanus
PHC	Primary Health Care
PHCU	Primary Health Care Unit
PHCW	Primary Health Care Worker
PL480	Public Law 480
PVO	Private Voluntary Organization
REACH	Resources for Child Health Project
SOW	Scope of Work
TB	Tuberculosis
TT	Tetanus Toxoid
UCI	Universal Childhood Immunization
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The purpose of this consultancy was to review MOH/ACCS immunization activities in Yemen, to assess the current status of EPI by reviewing coverage data and interviewing key informants and to collaborate with field staff in planning future activities to support EPI as it moves from a campaign to a maintenance phase. REACH participation in the Accelerated Cooperation for Child Survival Project began in the last quarter of 1985. The original Project Identification Document called for REACH to provide technical support for the national immunization campaign originally scheduled for 1987. With the cooperation of UNICEF, this national immunization campaign was replaced by governorate level immunization campaigns to occur over three years. REACH support changed from assisting in EPI campaigns to supporting PHC development in rural governorates.

In the past three years, the Yemen EPI has produced remarkable results and Yemen may now achieve 80% coverage at the end of 1990. The ACCS Project, meanwhile, has suffered continued delays and disappointments in its efforts to train PHCWs and equip PHCUs. It is now expected that the first group of PHCWs will begin training in late 1990 and end their training one year later. Well coordinated, UNICEF-supported governorate level campaigns have been the backbone of EPI in Yemen (see planning document in Appendix 2). These have resulted in a "minor miracle" of rapidly increased coverage (see Appendix 3). The calculated national coverage for DPT3, according to MOH/UNICEF routine reports, has increased from less than 20% nationally in 1987 to 73% for DPT3 in July, 1990. The effort required to achieve these results has exhausted the health workers and strained governorate resources. There is already some indication that this high coverage is not sustainable. Saadah Governorate, which had a DPT3 coverage of 56% in 1989 (94% in the second six months during its campaigns), has only achieved a coverage of 33% for the first six months of 1990 without campaigns. There are similar indications from other governorates.

The disease reporting system is not sufficiently developed to draw conclusions about disease trends. Anecdotal evidence suggests that EPI diseases are being controlled in areas with high reported coverage.

An external review has been planned and subsequently postponed three times. Current plans based on discussion with the UNICEF representative are for a review after December, 1990 and before May, 1991 (Ramadan is in March, 1991). UNICEF will not encourage cluster surveys if WHO agrees to accept routine reports of coverage. UNICEF seems satisfied to report routine data for UCI. In those provinces in which the ACCS is active, it may be desirable to have coverage surveys to validate the routine reporting and evaluate the quality of immunization services.

Recommendations

1. REACH/ACCS will need to work rapidly and effectively in EPI to establish its credibility with MOH, UNICEF and WHO.

2. ACCS should focus its EPI activities in the four governorates (Saadah, Hajjah, Hodeidah and Mareb) in planning, cold chain management and surveillance.
3. Coordination with UNICEF, MOH and WHO should become a priority of ACCS to avoid duplication of effort and to develop trust and visibility among all EPI supporters.
4. The focus of UNICEF and WHO supported EPI activities has been successfully decentralized to the governorate level. This should be supported by ACCS in that all activities should be done at the governorate level whenever possible (as ACCS currently does).
5. Current USAID plans to support surveillance are not well coordinated with the MOH. There is also a surveillance system being developed in the southern governorates by MSF. The activities of the USAID surveillance consultant, Dr. Kassira, should be designed to support MOH plans and not proceed independently. This is complicated by the fact that there are no formal MOH plans for surveillance. There is a need for governorate level workshops on surveillance, to include participants from the sentinel reporting sites. REACH/ACCS may proceed independently on this while awaiting arrival of Dr. Kassira for his long term assignment. This would require active coordination by the REACH COP.
6. Coverage surveys in ACCS governorates should have a low priority at this point. While there is a need for validation of the routine reporting and assessment of the quality of immunization, coverage survey activities would be too disruptive at a crucial time in the Yemen EPI. A review would best be scheduled after the second quarter of 1991. This review should focus on the quality of immunization services as a basis for sustainability. Such a review would serve as the catalyst for continuing quality immunizations following UCI. The existing coverage reporting system is sufficient for the purposes of management. The other important issue is whether this will satisfy the requirements of UCI for WHO. This is a UNICEF/WHO/MOH issue. REACH is ready to provide technical assistance as and if requested.

Follow-up Actions Required

1. Coordination is ultimately an MOH responsibility, yet the REACH COP could instigate and coordinate meetings between REACH and other players in EPI in the target governorates.
2. REACH/Washington should identify a consultant to advise planning for the maintenance phase in all four target governorates.
3. REACH COP should coordinate this planning consultant's visit with each governorate management team prior to the consultant visit. An agreement should be produced in which the governorate identifies the EPI planning needs, EPI targets, EPI resources and the role of REACH technical support vis a vis other donors and technical agencies.

4. REACH COP should investigate the possibility of in-country consultants (e.g., German volunteers) to teach cold chain management to EPI/MOH staff in ACCS governorates.
5. With REACH/Washington input, REACH COP should identify potential training courses for cold chain, such as the WHO cold chain training offered in-country or in Cyprus and make arrangements for selected students from each governorate to attend.
6. REACH COP should identify prospective participants for a Cyprus cold chain training course and make appropriate arrangements for their matriculation.
7. REACH COP should identify a mechanism to access UNICEF-supplied refrigerators and other cold chain equipment currently in-country for use in PHCUs.
8. REACH COP should insure that ACCS coordinators in target governorates provide an inventory of all disease reporting sites in the governorates which are currently collecting and/or reporting morbidity and mortality statistics. Results of this reporting for recent reporting periods should be collected. The collection of this information should be a high priority by REACH COP and ACCS coordinators. It is essential that it be collected before the arrival of the planning consultant.
9. Prior to surveillance consultant's visit, REACH COP and/or ACCS governorate coordinators should contact every identified reporting unit and assess their willingness to participate in a surveillance system. These should be the units currently reporting or identified by Dr. Kassira as target sentinel sites.
10. REACH COP should remain informed and keep REACH/Washington informed as to the status of MOH plans for coverage surveys.

II. PURPOSE OF THE VISIT

The purpose of this consultancy was to review MOH/REACH/ACCS immunization activities in Yemen, to assess the current status of EPI by reviewing coverage data and interviewing key informants and to collaborate with field staff in planning future activities to support EPI as it moves from a campaign to a maintenance phase.

The specific tasks undertaken under this assignment were:

1. Meet with ACCS/REACH Project staff, MOH (PHC/EPI) officials, and UNICEF and WHO officials to discuss consultancy, background documents and governorate workplans.
2. Make field visits to ACCS target governorates and MOH health training centers to assess status of training and supervision, PHC

service delivery, and community participation for this intervention, and prepare appropriate recommendations.

3. Identify areas and locations where REACH might profitably provide technical assistance to the Yemen EPI.

III. BACKGROUND

REACH participation in the Accelerated Cooperation for Child Survival Project began in the last quarter of 1985. The original Project Identification Document called for REACH to provide technical support for the national immunization campaign originally scheduled for 1987. With the cooperation of UNICEF, this national immunization campaign was replaced by governorate level immunization campaigns to occur over three years.

In the past three years, the Yemen EPI has produced remarkable results and Yemen may now achieve 80% coverage at the end of 1990. The ACCS Project, meanwhile, has suffered continued delays and disappointments in its efforts to train PHCWs and equip PHCUs. It is now expected that the first group of PHCWs will begin training in September, 1990 and end their training one year later.

ACCS has so far had minor and peripheral impact on EPI consisting of providing some project personnel and transport in campaigns in Hajjah and Saadah governorates. It should be kept in mind that REACH support for immunization is separate from the main focus of ACCS, which is training PHCWs and equipping PHCUs.

IV. TRIP ACTIVITIES

A summary of trip activities is in Appendix 1.

V. METHODOLOGY AND APPROACHES

The methodologies and approaches used during this assignment in Yemen were:

- a) interviews with key persons at MOH, UNICEF, WHO, USAID and governorates including staff of training centers and PVO sites;
- b) observation of EPI activities during field visits to clinics and immunization centers; and
- c) debriefing sessions with UNICEF, WHO, USAID and REACH/ACCS staff.

VI. FINDINGS: SITUATION ANALYSIS OF EPI

1. Immunization Coverage

Well coordinated, UNICEF supported governorate level campaigns have been the backbone of EPI in Yemen (see planning document in Appendix 2). These have resulted in a "minor miracle" of rapidly increased coverage (see Appendix 3). The national coverage for DPT3, according to MOH/UNICEF routine reports, has increased from less than 20% nationally in 1987 to 73% in July, 1990. The effort required to achieve these results has exhausted the health workers and strained governorate resources. There is already some indication that this high coverage is not sustainable. Saadah Governorate, which had a DPT3 coverage of 56% in 1989 (94% in the second six months during its campaigns), has only achieved a coverage of 33% for the first six months of 1990 without campaigns. There are similar indications from other governorates.

Health officials at all levels are actively concerned about the "maintenance phase" of EPI which is to start in 1991. It is recognized within the MOH and UNICEF that as campaigns end, more of the population will need to receive EPI services from fixed and temporary sites rather than the currently used campaigns. Currently, only about 30% of the population uses fixed or temporary sites. In theory, ACCS will contribute to this by the establishment of PHCUs which will also serve as fixed immunization and outreach sites. However, outside of the cities, only a minority of Yemeni population currently has access to a fixed site. In Saadah Governorate, this is probably less than 20% of the population.

There are currently no formal plans for the maintenance phase, yet there seems to be a widespread understanding within Yemen that the campaigns are not sustainable. The challenge for Yemeni EPI is to design and implement a strategy for EPI which can maintain recently achieved coverage levels in a less exhausting manner.

2. Disease Reduction

The disease reporting system is not sufficiently developed to draw conclusions about disease trends (Appendix 4). Anecdotal evidence suggests that EPI diseases are being controlled. Discussion with a wide variety of clinicians supports the conclusion that EPI diseases have fallen rapidly over the past two years. No clinician visited reported seeing a case of poliomyelitis in the past year. Measles cases are very few and most are occurring in children older than five years of age. There are outbreaks of pertussis and a few cases of diphtheria and TB in infants. Very little neonatal or adult tetanus is reported. A physician who has worked in other Arab countries (Egypt, Jordan) reports much less NNT than in these areas and very few recent cases. The DG of Saadah governorate, which has had a rapid increase in EPI coverage to high levels, reports no measles cases since August, 1989. Since there are no accurate surveillance figures, it is not clear if this is a consequence of immunization or a hiatus in the measles infection cycle.

3. Quality of Immunization Services

It is critical for the maintenance phase that the clients of EPI services recognize that they are receiving a quality health service. This perceived value is crucial to sustaining demand. During the rapid acceleration, level of coverage was emphasized to the disadvantage of quality. There is a perception among EPI workers at all levels that the quality of immunizations is low. It is likely that there were decreases in the quality of cold chain, injection practices, attention to age at immunization and intervals, counselling, missed opportunities for immunization, etc. The failure to provide a high quality of service will result in a higher rate of vaccine failures which will further erode confidence in EPI services.

4. Disease surveillance

Surveillance of EPI diseases is weak. The reporting that does exist is from only a few sites and is of uneven quality. MOH is generally uninformed as to the few existing governorate level surveillance activities. There are no functioning national standards for case definition, case investigation or outbreak control. The MOH has recognized this shortcoming and has made the development of a disease surveillance system a priority of the MOH. The strategy calls for monthly reporting by district of EPI diseases as part of a more comprehensive disease reporting system. This information will be collected by the MOH and analyzed and reported as a supplement to the monthly EPI newsletter.

USAID has hired Dr. Edward Kassira, a highly trained Arabic speaking epidemiologist, to design and be resident advisor for a disease reporting system. He is currently awaiting security clearance. He made a preliminary visit and report (see Appendix 5) in which he correctly states: "Registry of diseases is primitive or nonexistent. A full picture of incidence, prevalence and distribution of endemic diseases are not known. There is no formal policy for infectious disease reporting to the MOH or CHL by hospitals, clinics, private laboratories and other private physicians."

Dr. Kassira has proposed a sentinel reporting system which has two sites (a hospital and a health center) for each of the four reporting units (Sana'a City, Sana'a Governorate, Hajjah Governorate and Hodeidah governorate) with two additional sites for Hodeidah Governorate. Data will also be collected from the national laboratory and the three TB institutes (which are supported by the Japanese International Cooperative Agency (JICA)). This system has the advantage of using existing facilities with relatively well trained staff.

The system proposed by Dr. Kassira has several shortcomings which were discussed with USAID, the most important of which is that it has not been coordinated with governorate and national level EPI surveillance plans. Governorate level reporting systems in at least two governorates, Hodeidah and Saadah, currently receive reports from more than the number of sites proposed (Saadah currently has six sites). The system does not include reporting from all ACCS target governorates (this could be easily corrected). It is physically located at the Central Health Laboratory rather than the MOH, while the central laboratory has no counterparts at the governorate level to manage

reporting. The planned counterpart for Dr. Kassira is Director of the CHL, rather than an EPI official or an epidemiologist at the MOH.

This proposed system places heavy and, for the purposes of EPI, unnecessary emphasis on a central laboratory and laboratory diagnosis. Dr. Kassira states that "Reporting is inadequate or nonexistent for all of viral diseases of children and infants due to lack of virus diagnostic capability in the central health laboratory." However, it appears that reporting is inadequate because of inadequate management at peripheral levels not because of inadequate laboratory at the central level. The quality of the central laboratory will have little influence on the quality of data received from the periphery.

Some of the lab tests proposed are unnecessary. Measles antibody testing is virtually useless as a diagnostic tool in the Yemen setting and culturing measles virus is useful as a research tool only. Polio antibody testing is no longer recommended by WHO. Growing poliovirus for typing would be a useful and needed tool for polio eradication. This should be coordinated with WHO/EPI laboratory for polio eradication and certification of lab. Unaddressed issues are the establishment of a reverse cold chain, training in laboratory specimen collecting at the peripheral level and feedback of epidemiologic information.

A sentinel surveillance system as proposed is probably inadequate for the purposes of polio eradication and neonatal tetanus elimination. This system is best used as an adjunct to an epidemiologic reporting system rather than as the focus of the system.

An epidemiologic surveillance system for Yemen should aim to collect data from all sites able to report. As more sites are able to report they will be added to the system. The goal should be to have monthly reporting by district. For this system, planning will begin with implementation. The MOH experience in collection and feedback of coverage reporting data will serve as a model for the collection and feedback of disease surveillance data. An ACCS supported system should be completely consistent with this system.

5. Cold Chain

The cold chain appears to be adequately equipped (by UNICEF) in all areas of the ACCS Project. There are appropriate numbers and types of freezers and refrigerators at health centers.

UNICEF supplied immunization cards and TT cards are attractive, well designed and technically correct. The infant records are printed on durable waterproof stock. They are a model of their kind. However, the TT cards, which need to last a lifetime, are printed on paper. Future TT cards should be printed on the same stock as the infant records.

Some problems were observed. Some of the smaller cold boxes were of inadequate size for Yemen. This is being addressed at a local level by using more than one cold box. Disposable needles and syringes are being used and were in generally adequate supply. There were temporary shortages of

disposable needles caused by the campaigns. It could not be explained why there was a shortage of needles and not syringes if they were being supplied in the same amount. This may indicate that syringes are being reused. Records of temperature monitoring were not being kept at any cold rooms or freezers inspected. Central level supervisors were aware of the need for this and log books were seen next to most of the freezers. Automatic temperature recording devices were not functioning. There were no logs of vaccine supplies. The cold chain storage rooms were generally in a state of disarray. Paper wrappings of needles and syringes, broken vials and empty boxes were strewn about at almost all sites. Meticulous attention to the cold chain is warranted, particularly at peripheral levels in Hodeidah which is an area of constant high temperatures.

There are competent German volunteers at the MOH who are skilled in cold chain maintenance and who assist the MOH in cold chain management. They do not have Yemeni counterparts who will be able to continue their work if and when these volunteers leave. There is a WHO training course in cold chain maintenance and management. At the peripheral level, there was no apparent plan for cold chain maintenance or in-service training in cold chain management.

6. Polio eradication

A polio eradication plan has been written but has not been fully implemented. Yemen holds an important geographic position for global polio eradication (see Appendix 6). Neighboring states have polio eradication plans in place. Yemen remains endemic. Present polio surveillance is inadequate for polio eradication. Based upon the number of newborns (400,000), the proportion of susceptible (.45) and the rate at which infections become clinical (.5/100 infections), Yemen can expect to have roughly 800 cases of polio per year. Yemen reported 674 cases of polio in 1989 through routine reports. It is not clear to what extent this congruence is due to a combination of under- and over-reporting.

7. Training Materials for PHCWs

ACCS has recently had a three-person team support MOH in developing training curriculum for the PHCWs. This discussion is based on interviews with one of the consultants (Sereen Thaddeus) rather than on reading the Arabic curriculum. The curriculum has sections on training for EPI, immunization practices and the six EPI diseases. This is based on information contained in the existing MOH training materials which were written by the MOH EPI officers.

In the training plan, the trainer/supervisors will teach EPI with the option of using EPI workers as a resource. These trainer/supervisors have probably not worked in EPI and may not be familiar with its operation in the locality where the PHCWs will be working. It will be important for the trainees to be exposed to experienced EPI workers and understand their local EPI services.

There is a possibility that existing training materials from the southern governorates for EPI and PHCWs may be generalized for use in the north. It is not clear what effect this would have on ACCS planning.

8. Immunization coverage surveys and external review

An external review of EPI has been planned and subsequently postponed three times. Current plans based on discussion with the UNICEF representative are for a review after December, 1990 and before May, 1991 (Ramadan is in March, 1991). UNICEF will not encourage cluster surveys if WHO agrees to accept routine reports of coverage. UNICEF is willing to report routine data for UCI if it is accepted by WHO.

The routinely collected EPI coverage information seems reliable. The denominators are based on a 1986 census and have been confirmed by UNICEF and UNDP. There may be local discrepancies at the district level but it appears that the national figures are accurate. The numerators are collected as routine service statistics by EPI workers and reported monthly. As discrepancies in these figures appear they are investigated by UNICEF-supported field personnel. There is a high degree of internal consistency and the numerators appear to be reliable.

Cluster surveys are a current topic of debate within MOH, UNICEF and WHO. UNICEF and MOH have sufficient confidence in the routine reports that they see no need for coverage surveys at this time. The monthly reports are a more useful and less intrusive management tool as long as the mass campaigns are the primary delivery mechanism. A national review would most usefully focus on quality of service indicators, to serve as a basis for sustainability and the maintenance phase. Planning for a national review is ultimately in the hands of the MOH.

9. Coordination of Donors

There is no coordination of donors in Yemen and no person in the MOH responsible for it. There appears to be duplication of effort in cold chain, training and surveillance activities. Information on these activities is only serendipitously exchanged between agencies. Coordination should be an MOH initiative, but at this time does not appear to be forthcoming. Following a meeting of donors in January, 1990 organized by UNDP, it was agreed to form focused technical working groups of which REACH would participate. There have been no subsequent meetings of any of these groups.

VII. RECOMMENDATIONS

General

1. Improve REACH/ACCS credibility

REACH/ACCS will need to work rapidly and effectively to establish its EPI credibility with MOH, UNICEF and WHO. As REACH becomes a player in EPI in Yemen, it should make extra efforts to coordinate activities (planning, training, consultants visits, provision of commodities, etc.) with MOH and other donors, to understand the role of other players, and to keep them informed of REACH activities. REACH will assume a role where its performance is important, visible and measurable: The EPI coverage in the target governorates in 1991. It will be a difficult transition from the campaigns to the maintenance phase. With professional and assertive actions by REACH COP with support from REACH/Washington, the Project has the possibility of proving itself.

2. Coordinate with UNICEF, MOH and WHO.

There has been a continued lack of truly effective coordination of ACCS with UNICEF, WHO and MOH activities and plans. REACH COP should redouble his efforts in this area, including coordinating the necessary meetings to activate the PHC working groups, etc.

3. ACCS should focus its EPI activities in the four governorates (Saadah, Hajjah, Hodeidah and Mareb) in planning, cold chain management and surveillance.

ACCS should start small and should not expand until there is proven success in these governorates. This could reasonably take a minimum of two three years. All ACCS activities should be directed at and coordinated at the governorate level whenever possible.

4. Support Decentralization.

The focus of UNICEF and WHO supported EPI activities has been successfully decentralized from the central to the governorate level. This should be supported by ACCS in that all activities should be done at the governorate level whenever possible, as ACCS currently does.

5. Strengthen the existing ACCS coordinators.

There are capable Yemeni ACCS employees working in Hajjah and Saadah governorates. They are motivated, informed and accepted by the MOH. These employees should be tightly integrated in all planning.

Planning

6. The ACCS Project should provide a consultant to support planning the maintenance phase of EPI in target governorates.

The planning for the maintenance phase of EPI should be supported as a governorate level activity. This should be supported by REACH with an external consultant working in collaboration with MOH and Governorate counterparts. These three person teams will need approximately one week per governorate to develop a governorate-level plan.

Further planning at the district level, under the guidance of the governorate operations officer should be supported. Workshops for LCCDs and other local organization to increase local support and ownership should be supported.

Cold Chain

7. ACCS should provide support to the cold chain in target governorates.

One person from each governorate should be trained externally in refrigerator and generator maintenance. There should be central level training of trainers for cold chain logistics and quality of EPI. There should be governorate level workshops by trainers for cold chain logistics.

Surveillance

8. Coordinate and support surveillance activities.

Current USAID plans to support surveillance are not well coordinated with MOH plans. The activities of Dr. Kassira should be designed to support MOH plans and not proceed independently. This is complicated by the fact that there are no formal MOH plans for surveillance and MSF is installing a separate surveillance system in the southern governorates. Failure to coordinate these activities will detract from the effectiveness of nationwide surveillance. There is a need for governorate level workshops on surveillance, to include participants from the sentinel reporting sites. It is suggested that Dr. Kassira take the lead role in coordinating these activities.

Feedback should be an integral and fundamental component of the surveillance system. It should have as its minimal goal to be as effective as the feedback for immunization coverage. This monthly document is presently a model of its kind. ACCS should support distribution and publication of a surveillance newsletter.

Ultimately, there will be a need for computerization at the governorate level and thus an assessment of governorate level needs for computer hardware, software and training. This should not begin until after the system is functioning in the governorates.

Coverage surveys in ACCS governorates should have a low priority until the demands of campaigns lessens. An evaluation exercise should focus on the quality of immunization services as a basis for sustainability. This will require a full review with specific emphasis on cold chain, management, training, immunization practices and disease surveillance. It should fully

involve the MOH at every level. Such a review would serve as the catalyst for continuing quality immunizations following UCI. The existing coverage reporting system is sufficient for the purposes of short term management of campaigns. USAID can offer to support this activity through REACH, if invited by MOH to participate in a review of MCH, UNICEF and WHO activities. The other important issue is whether this will satisfy the requirements of UCI for WHO. This is a UNICEF/WHO/MOH issue.

The training curriculum for PHCWs in the ACCS HTC's should include explicit sections on disease reporting, including case definition for reporting and methods of outbreak control. Specific mention should be made of polio eradication and NNT elimination initiatives. Collaboration with the local EPI system should be made a part of PHCW training as they will be dependent on it for logistics and strategy.

Commodities

9. Provide necessary (supplementary) commodities.

All necessary cold chain equipment in all governorates is being supplied by UNICEF. Any procurement of cold chain equipment should be coordinated with UNICEF with an eye towards using existing stocks. USAID should supply gas refrigerators (RCW 42) for all new PHCUs in target governorates as they are built and staffed.

Supervision

10. Enhance EPI supervision in target governorates.

Supervision for EPI will be integrated with PHC supervision. A PHC supervisor should be equipped with a vehicle and per diem from the project in the three governorates. This issue will not need to be directly addressed until PHCWs graduate from training which will not be until September, 1991.

VIII. FOLLOW-UP ACTIONS REQUIRED

REACH should provide technical assistance in planning for EPI maintenance phase, cold chain and surveillance in the four ACCS governorates in cooperation with MOH and UNICEF. The success of the activities outlined here will be critically dependent upon the follow-up actions of REACH COP and ACCS governorate coordinators. If it proves difficult or impossible to complete these recommendations, then specific reasons should be catalogued as lessons learned.

The following previously recommended follow-up actions (from Dr. Claquin's consultant report of February 2, 1990) are still desirable:

1. Prepare a memorandum on the specific issues raised by the Tihama PHC project and what measures have been identified to address them (REACH COP and/or consultant).

2. Work actively at having the first meeting of the PHC Task Force (REACH COP).

New follow-up actions are:

General

3. Coordination is ultimately an MOH responsibility, yet the REACH COP could instigate and coordinate meetings between REACH and other players in EPI in the target governorates to coordinate activities. These meetings should include at a minimum MOH, UNICEF, WHO, relevant PVOs and governorate personnel. Empowering a governorate-level working group and giving ownership of REACH activities to such a group may be initially difficult but is crucial to long term success.

4. The role of REACH governorate coordinators in the upcoming activities should be clarified. A list of responsibilities and specific activities should be drawn up by REACH COP and discussed with governorate coordinators.

Planning

5. REACH/Washington should identify a consultant to advise planning of maintenance phase in the four target governorates. His counterparts should be the EPI central zonal supervisors and a representative from the target governorate, to be identified by REACH COP. The SOW should include 1) reviewing governorate demographic data, coverage data and EPI resources, 2) set coverage targets, 3) producing a governorate plan for the maintenance phase for the period 1991 to 1994, 4) identify REACH/ACCS inputs to achieve these goals, and 5) coordinate these activities with other donors.

6. REACH COP should coordinate this planning consultant's visit with each governorate management team. This meeting should occur prior to the consultant visit. An agreement should be produced in which the governorate identifies the EPI planning needs, EPI targets, EPI resources and the role of REACH technical support vis a vis other donors and technical agencies.

Cold Chain Support

7. REACH COP should investigate the possibility of in-country consultants (e.g., German volunteers) to teach cold chain management. This would consist of a one week course at the central level with students selected from the target governorates.

8. REACH COP should investigate the WHO cold chain training offered in-country and make arrangements for selected students from each governorate to attend.

9. REACH/Washington should investigate the cold chain training course in Cyprus and communicate these findings to REACH COP.

10. REACH COP will identify prospective participants for a Cyprus cold chain training course and make appropriate arrangements for their matriculation.

11. REACH COP should identify a mechanism for accessing UNICEF supplied refrigerators and other cold chain equipment currently in country for use in PHCUs.

Disease Surveillance

12. REACH COP should ensure that ACCS coordinators in target governorates provide an inventory of all disease reporting sites in the governorates which are currently collecting and/or reporting morbidity and mortality statistics. Results of this reporting for recent reporting periods should be collected. This is the fundamental information required to begin work on improving surveillance and will serve as a basis for any future consultancy in surveillance. This information should be transmitted to REACH/Washington as soon as it is available. The collection of this information should be given a high priority by REACH COP and ACCS coordinators. It is essential that it be collected before the arrival of the surveillance consultant.

13. As discussed with USAID/Sana'a, REACH/Washington will discuss with Dr. Kassira plans for development of a surveillance system in Yemen. It may be possible and desirable for Dr. Kassira to coordinate the planning and training activities for surveillance. If it is not possible to use Dr. Kassira for this then another candidate should be identified. It may be possible to combine this with the consultancy for planning the maintenance phase coverage activities. The SOW for this consultant should include:

- 1) identify current reporting units and facilities capable of reporting,
- 2) coordinate surveillance activities between MOH, USAID, UNICEF and WHO,
- 3) explain the system to the responsible parties at the reporting units,
- 4) identify constraints to reporting, and
- 5) identify what ACCS assistance is necessary to overcome these constraints.

14. Prior to surveillance consultant's visit REACH COP should contact each identified reporting unit and assess their willingness to participate in a surveillance system.

15. REACH COP should remain informed and keep REACH/Washington informed as to the status of MOH plans for coverage surveys.

16. REACH/Washington should be willing to participate in a national EPI review if invited by MOH.

IX. PLACES AND PERSONS VISITED

Places Visited

Sana'a
Amran Health Project
Hajjah
Hodeidah
Abs Training Center
Razeh Training Center
Al Shaghadra Training Center
Az Zaydiyah Training Center

Persons Visited

Ministry of Health (Sana'a)

Dr. Abdul Halim Hashem, Director PHC Services
Mr. Ali Ahmed Al Makradi, PHC Directorate
Mr. Ahmed Said, EPI Director
Dr. Ahmed Maky, Assistant Under-Secretary
Mr. Abdul Raquib Tarboosh, Operation Officer, EPI

Hajjah Governorate

Dr. Abdul Karim Nassar, Director General of Health
Dr. Ismael Homaied, Director PHC
Mr. Ahmed Al Hokari, ACCS Coordinator
Mr. Ahmed Kahara

Saadah Governorate

Dr. Md Sohail, Director General of Health
Dr. Ali Jahaf, Director PHC
Mr. Maghdi Al Dalla, ACCS Coordinator
Mr. Md Shamlan, Director Razeh District
Mr. Md Al Ayzer, Director of Health Center, Razeh
Mr. Maghdi Al Kahana

Amran Health Project

Dr. Ahmed Telha, Director

UNICEF

Mr. Stewart McNab

USAID

Mr. John Wiles

WHO

Dr. Zamil Al-Alowii, WHO Representative

ACCS

Mr. Noel Brown, COP

Dr. Yassin A. Wareth Hazza, Deputy COP

SEATS

Ms. Sereen Thaddeus

APPENDIX 1

Itinerary

Itinerary

July 21

Arrived Sana'a

July 22

Met with COP

Reviewed documents

July 23

Met with USAID

Discussed nature of project and future consultant plans

Met with UNICEF

Briefed on UNICEF activities

Informed that there will be no review in December, UNICEF will probably report routine figures, if WHO accepts.

July 26

Met with UNICEF rep

July 28

Met with Ahmed Said and Abdul

Briefed on central level EPI

Planned for visits

July 29

Travelled to Hodeidah by car with Abdul

July 30

Visited central level EPI

Visited Two Health Centers

Examined Cold Chain facilities

Observed Immunization Session

Briefed on Governorate level EPI program

Met Governorate EPI person

July 31

Travelled by car to Sana'a

August 4

Met with Ahmed Said at MOH

August 5

Met with UNICEF, DG Saadah

August 6

Met with Ahmed Said, discussed first field trip report

Met with WHO WR, discussed cold chain consultants and training plans of WHO

August 7

Visited GTZ Amran

Travelled to Saadah

August 8

Travelled to Razeh

August 9

Visited LCCD and Training center in Razeh

Travelled to Hodeidah

August 10

Travelled to Hajjah

August 11

Hajjah

Met with DG, ACCS coordinator, LCCD Coordinator

Visited HMI training center

Travelled to Sana'a

August 12

Prepared trip report in Sana'a

August 13

Met with Ahmed Said for debriefing

August 14

Debriefed with UNICEF, Mr. Stewart McNab

August 15

Debriefed with USAID, Mr. John Wiles

August 17

Departed Sana'a

APPENDIX 2

MOH/UNICEF EPI Planning Document

Guidelines for Directors General of Health from the Governorates on preparing draft Plans of Action for the Acceleration of EPI in their Governorates.

A number of basic requirements must be accepted before preparing the plan of action in each Governorate.

- i. The immunization schedule, vaccine storage requirements, injection sites and techniques remain as in the EPI manual. The basic document prepared as the foundation for acceleration in Yemen remains valid.
- ii. The cold chain must be effective and used at all times and at all levels for the storage of EPI vaccines. No vaccine of doubtful potency is to be used in the accelerated programme.
- iii. Staff giving immunizations must be adequately trained and supervised so that standards of work and especially of hygiene can be guaranteed.
- iv. Reporting of immunizations will continue to be on standard forms, compiled and checked at each level before being forwarded.
- v. All EPI acceleration aspects developed must have the capacity to lead to a sustained programme of immunization and, preferably a capacity also to lead to broader PHC services.
- vi. The plan for EPI acceleration must be targeted for levels of full coverage, i.e. DPT and OPV, three doses, BCG and measles before the child reaches the age of twelve months and for all women of child bearing age to receive two doses of tetanus toxoid at least a month apart. These objectives remaining the highest priority, even though initially, the accelerated programme will aim to immunize all children aged less than 36 months.
- vii. The plan must include a timetable for implementation of its activities, phased in a reasonable manner, but aimed at full coverage, i.e. all infants must be reached in all communities before the end of 1990 and they must receive all scheduled vaccines.

- viii. All agencies in the Governorate providing health services should be included in the plan and should be involved in its development from the start.
- ix. All Ministries, organizations, etc., likely to be of use in facilitating public awareness, support assistance in immunization should be involved in planning and collaboration from the start, especially Governors and other senior officials should be made aware of the programme and, preferably be involved in it and give it their strong endorsement.
- x. Communities, especially those living in remote areas should be actively involved in assisting the provision of health services to their people, with organization, staff provision, transport, vaccine storage and the conduct of sessions.
- xi. Plans must include estimated needs for vaccines, training cold chain equipment, forms finance. Even in a carefully phased programme, it may not be possible to meet all requests and programme planners must establish reasonable priorities, attempt to obtain local resources and support, be adaptable to provide innovative solutions without in any way compromising standards.

The EPI Central Unit will act as a support unit to Governorate programmes. Authority for the implementation of the programme and responsibility to see it carried through successfully will rest solely with the Governorate staff.

- xii. Directors General are advised to familiarize themselves with the EPI manual and the Basic Document of the EPI plan of Operation, produced by the Central EPI unit.

They are advised to use fully the service of the Operations Officer in preparing Governorate Plans of Action, to nominate a senior official at both the Governorate and District level to be responsible to them for preparing the Acceleration plan, the deadline for submission of which is 1st May 1988.

Guidelines for preparing a Regional plan of Action for the Acceleration of Immunization in Yemen.

(Item numbers refer to the corresponding section in the draft plan)

Item

1.2 Regional plan is the responsibility of the Director General of Health and his name should be first on the list. However, he will probably have to delegate actual preparation to one of his officials and he should be named also. There is no limit to the number of names that might be included.

2.1.1 Maps of towns and villages.

This can be a simple outline sketch and strict accuracy is not essential, so long as the main features, towns, roads are included.

Towns and large villages should be named, smaller villages may be indicated by a mark where they are situated, without a name.

In order to standardize maps, please consider using the following symbols:

District Capital

Populations of 10,000 or more

Populations of 9,000 to 9,999

Populations of 1,000 to 4,999

Populations of 500 to 999

Populations below 500

Major tarred road

Good, non-tarred road

Poor road

Track only, not passable by 4 wheeled vehicle

H	Hospital
HC	Health Centre
SC	Health Sub-centre
HP	Health post
PHC	Primary Care Unit

1.1.2. Cold Chain map.

Again, a simple outline map will be adequate, marking the sites of fixed cold chain units, such as refrigerators, freezers, cold rooms.

If it is proposed to utilise refrigerators not in health facilities, e.g. in commercial firms, shops, private individuals, other Ministries of organizations, these might be marked in a different colour. The objective of the map is only to show to which areas and how close to the communities, vaccine can be safely transported and stored.

Again, for uniformity, use the following symbols in the map.

CR (-20)	Cold Room, freezer
CR (4)	Cold Room, refrigerator
R	Refrigerator
F	Freezer
RF	Combined refrigerator-freezer
RCW	RCW 25, with freezer attachment

Indicate on the map, in the line of vaccine supply, the distance between units of the cold chain and the time normally taken to travel by the vehicle that will be delivering the vaccines, e.g.,

CR(4) 55 Kms - 2 hours R

- 2.2.1. Total population. This should be accurate as possible and should indicate the source, e.g. census and year.
- 2.2.2. Indicate the number of communities living in populations of 5,000 and more and the total population that these communities add up to.
- 2.2.3. Estimate, as accurately as possible, if possible, the people, including those in the urban areas living within 5 kms of any fixed health unit, whether hospital or PHC unit.

2.2.4. District Populations.

- i) Population aged less than 12 months can be taken as the number of births a year, which will be an over-estimate.

To get this figure, multiply the total district population by the birth rate. If the latter is not known locally, use the national figure, i.e. per 1,000 population.

Therefore, population aged less 12 months = district population x.

- ii) In the first and second year, a number of children will die.

To estimate the population aged less than 36 months, add the figure for children aged under 12 months plus the same figure multiplied by .9 plus this latter figure multiplied by .95.

This will give a somewhat high figure, but this will be compensated for by children aged over 36 months arriving to be immunized.

- iii) If the number of women aged 15 to 45 years is not known from sources such as the census, it may be assumed to be 20% of the total population.

- 2.2.5. The objective of listing the larger urban areas is to define a population, easily reached, with many young children, possibly already with health facilities. This population may form the target for the first phase of any acceleration. Therefore list such villages, giving more priority to their place in acceleration than their actual population.

25

2.3 Health Status.

2.3.1, 2.3.2., 2.3.3. These figures may not be available, or at best be best guesses.

2.3.4. These data will be available from your records.

In the 7th column, the target population, which is the basis for this figure is the number of newborn in 1987 in the Region.

Similarly, the target population for tetanus toxoid is the number of women aged 15 to 45 year.

2.4 Health Resources.

2.4.1. These data should be readily available.

In 2.4.1. v) list any staff likely to be useful in implementing the plan of acceleration.

2.4.2. Again these data should be readily available. In the list and in your planning detail any buildings either already under construction or likely to be finished during the course of the EPI acceleration.

Vehicles is intended to include all vehicles belonging to the Ministry, which, even for short periods, could be available to assist the EPI acceleration. It is doubtful if vehicles such as trucks or ambulances would usually fall into this category. At the same time, during this important activity, vehicles allocated or used by medical officers, but not all the time, should be available.

2.4.3. Supporting organizations indicates those such as the Red Crescent, aid supported and voluntary organizations already concerned with health matters, which could be used to strengthen EPI, at least during the initial phase of acceleration.

2.4.4. Concerned Ministries, etc.

In this section list all those Ministries and organizations likely to be useful in any way in accelerating immunization services, whether in practical help, support through their own staff, spreading information and publicity etc.

It is possible that Education through the use of schools, schoolchildren for registering eligible children, information for use of local media, the LCCD system for publicity, practical assistance in organizing clinics, in transporting staff of vaccine, Religious affairs by informing the people at Friday prayers concerning immunization, the police and Army by assistance with information and transport to remote areas, Agriculture by use for their staff to inform and educate people might all be involved.

2.4.5. Training.

List all relevant training during the past 3 years, e.g. EPI specific, PHC worker training, nurse training on immunization etc.

3. Plan for acceleration.

3.1.1. Phased plan.

By 1990, all areas and all communities should have easy access to immunization services and planning at this stage should target at providing such services.

Provided that the 1990 target is met, any number of phases can be conducted, e.g. District by district completing services before starting on a new district, or initially concentrating on urban areas only.

It is logical and probably essential that all health facilities in the Region should offer full immunization services to a high level of effectiveness with very low drop-out rates and this aspects should probably be part of the first phase of acceleration.

It is important to establish reasonable targets for starting and completing each phase of acceleration, and that these targets form the basis for evaluation of progress.

- 3.1.2. Certain activities, either Regionally or in the districts in each phase of geographical expansion, can also and should be targeted for starting and completion. These include the planning and preparation of Regional and District plans, development and extension of the cold chain, vaccine calculations and ordering, training etc.

These activities should be defined, phased and targeted.

3.2 Responsible Staff.

- 3.2.1. and 3.2.5. A structure of responsible staff should be created at the District level, with clearly defined duties for each official. It may be preferable to create new, possibly temporary terms of reference or job descriptions for the staff during this planning phase.

It will be certainly be necessary to delegate authority and responsibility to various officials, ensuring their accountability to the Director General of Health.

During the planning and acceleration phase of EPI it is probable that a number of officials will need to be full time at both the Regional and District levels.

- 3.2.2. At the District level, designate one official to be responsible for all EPI activities. He will be the person to whom the various officials at the Regional level relate and report on their plans and activities in the Districts.

3.2.3. Other concerned officials.

These are likely to be pediatricians, obstetricians, private practitioners, medical storekeepers, repair technicians, etc.

3.2.6. Supervision.

For each level, it is desirable to nominate one official who is directly responsible for the acceleration of EPI in his area and who is also responsible for the quality of work and the performance of staff under his supervision.

He should be expected to know all that his staff are doing and have a programme for supervising their EPI activities. He should be expected to report himself on these activities and will need some form of checklist and report form to provide the basic data.

3.3. Committees.

3.3.1. Coordinating committee.

This committee ideally should be chaired by the Governor and should consist of those people and Ministries who are likely to be helpful in the EPI acceleration.

It should monitor progress, identify problems and use all the resources available to it to produce solutions and to facilitate the work of the Ministry of Health.

The Director General of Health should, ideally be the Secretary responsible for reporting on progress and informing of successes and problems.

The committee probably needs to meet monthly initially, but less often as the acceleration proceeds.

3.3.2. Technical Committee.

This committee should be composed of Regional officials responsible for EPI, plus others such as MCH, PHC, and representatives of assisting agencies.

It should be chaired by the Director General of Health.

It will need to meet monthly to promote planning, review progress, identify problems and solutions, etc.

It is possible that a similar committee will be necessary at the District and even at the sub-district level.

3.4. Cold Chain

The data required on existing cold chain equipment should be available and straightforward to list, including its condition and what is needed to strengthen or repair it.

From the start, it will be necessary to define how the cold chain is to be extended to the more remote areas of the Region, and a policy will need to be defined. The main options are:

- to use any available refrigerators, e.g. shops, privately owned at the community level, only storing vaccine just before the clinic is to be conducted and transporting it in vaccine carriers.
- using outreach clinics with vaccine brought daily in a vaccine carrier.
- using mobile teams using cold boxes able to keep vaccine cold for several days.
- use cold boxes to transport frozen ice packs to vaccine carriers used peripheral staff
- to use local staff to provide services to several villages once a month, transporting vaccines in a cold box or vaccine carrier and if possible returning the vaccine to a refrigerator at night.
- other locally appropriate ideas.

Once the policy has been decided, the needs to make it function can be calculated.

3.4.6. Timetable.

All stages of developing and extending the cold chain can be targeted for activity and completion, e.g., developing a policy, ordering additional equipment, establishing fixed units, getting delivery of ordered equipment, training staff, etc. While some of these targets, e.g. receipt of ordered equipment will depend on the Central level, it is essential to target them from the Regional point of view.

In order to assist the Central level in its supply situation, it might be helpful to phase your cold chain needs in line with programme expansion, e.g. it will probably not be necessary to have delivery of all refrigerators all at the start of the programme, but only when that district starts work.

3.5.1. Vaccine needs.

For each quarter a target figure for coverage should be established and, based on that target, vaccine requirements can be calculated.

As an example, if a Region has 100,000 children aged less than 36 months, of whom 10% are already fully immunized and establishes a target of 35% full coverage in the first quarter, vaccine needs will be calculated:

Target population this quarter + $100,000 \times .35 = 35,000$

Already fully immunized $100,000 \times .1 = 10,000$

to be immunized this quarter $35,000 - 10,000 = 25,000$

vaccine needs DPT/OPV $25,000 \times 3 \times 1.3 = 100,000$

Measles/BCG $25,000 \times 1.3 = 33,000$

Similar calculations are needed for TT in adult women.

For each successive quarter, calculations will be needed, basing requirements on targets minus those already fully immunized.

It is not important that in each quarter, it will be different children who receive the vaccines, e.g. many children receiving DPT and OPV will not require measles vaccine until a later quarter.

3.5.2. District needs.

Similar calculations will be needed to establish requirements for each district and in the district for each sub-district.

Important. It is quite likely that, once public awareness on the subject of immunization is increased that demand will be higher than either expected or targeted for. To help meet such a situation, each level of the EPI system should have a reserve of vaccine. Regions can determine at what level this reserve should be. It is suggested that Regions should have at least a 3 month reserve stock and districts at least a 1 month reserve. The needs to establish these stocks need to be calculated for the first quarter, i.e. probably the first quarters estimated use of vaccine should be doubled.

3.5.3. Vaccine supply system.

Plans for Regional acceleration must define the system by which vaccines will be delivered down the cold chain to different levels.

This system will need to define who orders vaccine, when, how it is to be transported, on what date and who is responsible at each level for ensuring that the system works.

3.5.5. Indicators of the cold chain and vaccine supply.

These may be worked out locally but might include, the order for vaccines to be received on time, no delays of vaccine from one unit to the next, twice daily temperature recording on all fixed cold chain units, weekly stock registers of vaccine stocks in each unit, these last two to be displayed on a form on the unit, correct storage of vaccines, the use of vaccines only within their expiry dates.

3.5.6. Timetable for vaccine.

A timetable for vaccine or ring, receipt, staff training, etc. should be prepared, phased to meet and correspond to the phased expansion of the programme.

3.6.1. Syringes.

Once vaccine needs are calculated, a corresponding syringe order can be made.

As with vaccines, a reserve stock must be established at each level and a stock register system established so that at any one time, staff are fully aware of their stock position.

3.6.2. A policy on disposal, i.e. destruction of once used disposable syringes and designation of the official responsible for ensuring the policy is followed at each level is essential.

3.7. Conduct of Immunization clinics.

Two policies have to be decided.

i) That each health facility will have an immunization service, with clinics conducted as often as is needed. In urban areas, health centers and hospitals, this will certainly need to be daily, while in PHC units with a well defined population whose immunization status is known, it might be weekly or even monthly. In each unit, the responsible official should be defined.

ii) How to ensure that all eligible children are immunized. Experience has suggested that pre-registration of eligible children, based on house to house visits, either by health staff or local school children, or possibly the LCCD representative ensures high attendance both initially and for repeat visits. It also allows easy recognition and follow-up of defaulters.

While in urban areas, this policy may difficult and time consuming, it remains a preferred policy. If not followed, other measures will be needed and it is very unsatisfactory for staff to wait in a clinic and only immunize those who walk through the door, who are usually the lowest risk group.

iii) How to reach remote villages without existing health facilities. Again experience has shown that the best results are being obtained where a local member of the community is trained to give immunization, training that may only need a on month course. If this system is to work, it will demand close supervision and a guarantee of the efficacy of the cold chain. It has the advantage of local knowledge of eligible, easier transport, especially if the local community will fetch vaccines and greater reliability in ensuring the conduct of the clinic.

Other options are to create mobile teams, with the drawbacks of expense and difficulty of ensuring continuity and of how to inform villagers in advance of the teams arrival, to extend the outreach system, with problems of transport and high allowances and to expect people to travel to the nearest clinic.

Other ideas will be welcome as this is a problem that has to be solved.

3.7.2. Whatever clinic system is adopted, it is necessary to define the minimum cold chain needs and to establish practices that ensure that vaccine is out of the cold chain for the minimum amount of time.

3.7.3. Immunization schedules.

The national schedule for immunization is clearly defined. In accelerating EPI, however, including immunization of children up to 36 months of age, certain modifications will be necessary.

It is probable that measles causes the most mortality of the 6 diseases and that children attending for the first time aged over 9 months should receive this vaccine first, along with DPT and OPV if they are eligible.

PCG may be given last at a later attendance.

Policy on TT for adult women should be clearly defined.

3.7.4. Contraindications.

For all levels of staff, the contraindications should be clearly defined.

Generally only children so ill that they should be in hospital are normally not to be vaccinated. Where eligible children are so well known that they can easily and certainly be followed up, it may be possible to relax this rule but it is not necessary to do so.

Note: Under-nutrition is a positive indication for immunization since these children are at increased risk especially from measles.

3.7.5. A timetable for establishing additional immunization points is essential, phasing their creation by geographical area as necessary.

3.8. Training

- 3.8.1. An assessment is needed for staff training requirements, detailing the staff to be trained, the numbers grade, cost and need for external support. These needs may also be phased to correspond to expansion of the programme.

Summaries of total needs will have to be assessed at the central level to match needs to the resources available and it may be necessary for Regional staff to identify local solutions.

3.12.1. Map showing phased expansion.

The Regional plan should include a map showing the target for each district to start and complete acceleration of its EPI.

- 3.12.2. The same data, to the subdistrict level should be tabulated both for geographical area and for target dates.

- 3.12.3. For each District, targets for full coverage of children aged under 12 months should be established for each quarter, through to the end of the second quarter of 1989.

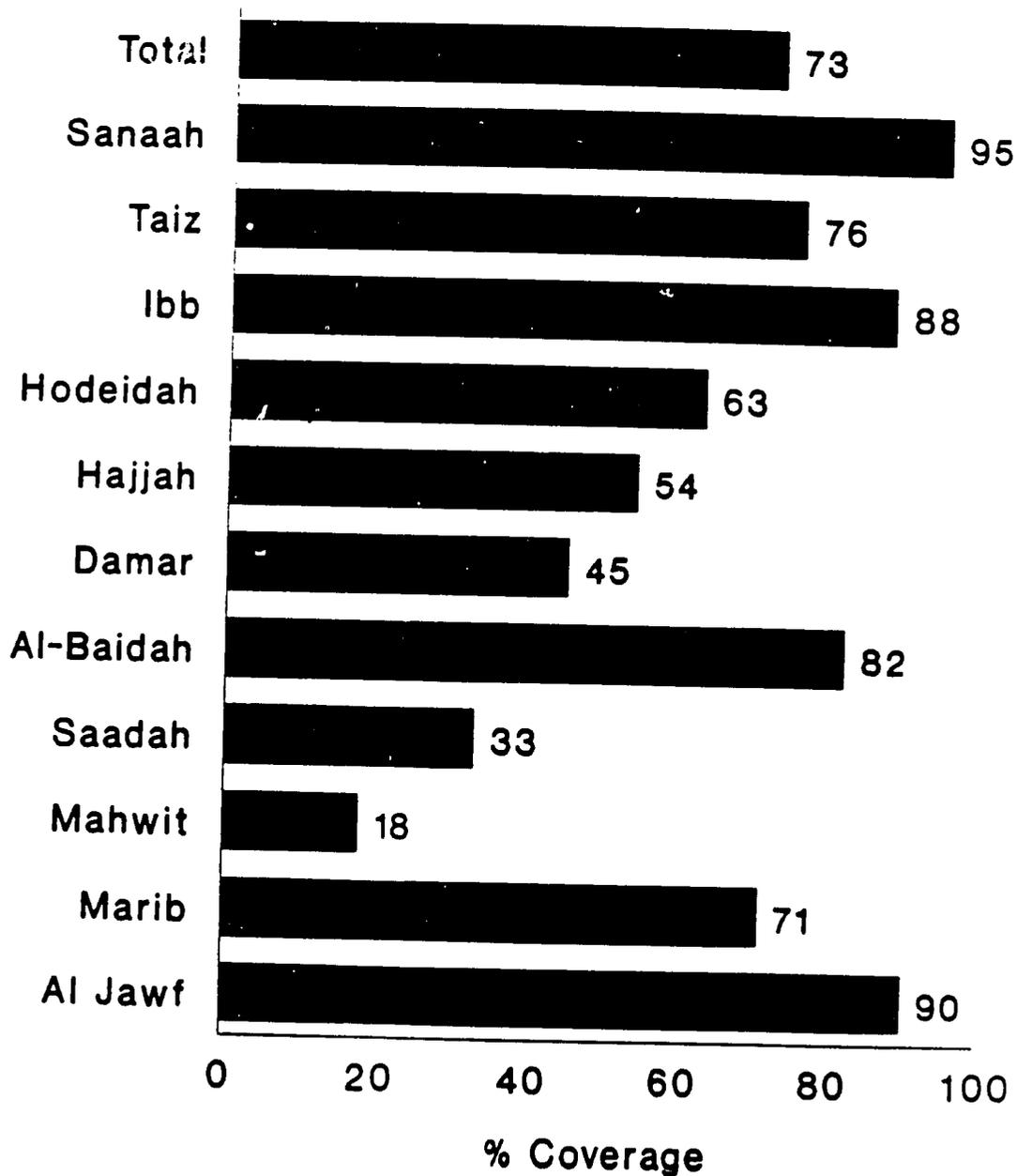
APPENDIX 3

MOH/UNICEF Coverage Data

DPT3 Coverage, Yemen

First Six Months, 1990

Governorate



FIRST HALF YEAR 1990

GOVERNORATE	POPULATION UNDER 1 YEAR	OPT 1/ OPV 1	COVERAGE %	OPT 2/ OPV 2	COVERAGE %	OPT 3/ OPV 3	COVERAGE %	MEASLES COVERAGE %	ESG	COVERAGE %	
SANA'A	44181	53215	120	41824	95	41974	95	37775	86	58-91	100
TAIZ	40479	30724	76	30719	76	30941	76	24858	61	23267	57
IBB	24777	48578	196	31147	90	20509	83	27831	80	4591	100
ADEN/DAH	27319	25289	93	7775	28	17206	63	16757	61	21518	79
HADRA	15078	32651	217	32393	215	7701	51	21737	120	105-7	59
SAMAR	17717	16753	94	7254	41	7744	43	9324	53	15952	89
AL-BAIDAH	7950	5735	72	6233	78	6491	82	5233	66	7525	95
SANAAH	7286	3047	42	2419	33	2395	33	1763	24	3971	54
MAHUT	5504	1710	31	1291	23	1159	21	1045	19	2142	39
MARIB	2354	1670	71	1441	61	1524	71	1263	53	19-3	31
AL JAWF	1041	1086	104	1180	114	938	90	1050	101	1374	131
YEMEN TOTAL	207726	221146	106	175730	85	151041	73	148685	72	170840	82

MICHIGAN
 POPULATION 1172499
 URBAN 450000
 RURAL 722499
 DISTRICTS 32
 REPRESENTATIVES 131
 HOUSE 131
 SENATE 66

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
REGISTRATION P.M.	4553	4553	4553	4553	4553	4553	4553	4553	4553	4553	4553	4553
REGISTRATION CUM.	4553	9106	13659	18212	22766	27319	31872	36425	40979	45532	50085	54639
REGISTRATION P.M.	4098	4098	4098	4098	4098	4098	4098	4098	4098	4098	4098	4098
REGISTRATION CUM.	4098	8196	12294	16391	20489	24587	28685	32783	36881	40979	45077	49175
REGISTRATION P.M.	2725	2725	2725	2725	2725	2725	2725	2725	2725	2725	2725	2725
REGISTRATION CUM.	2725	5450	8175	10900	13625	16350	19075	21800	24525	27250	29975	32700
REGISTRATION P.M.	107	107	107	107	107	107	107	107	107	107	107	107
REGISTRATION CUM.	107	214	321	428	535	642	749	856	963	1070	1177	1284
REGISTRATION P.M.	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817	3817
REGISTRATION CUM.	3817	7634	11451	15268	19085	22902	26719	30536	34353	38170	41987	45804
REGISTRATION P.M.	17308	17308	17308	17308	17308	17308	17308	17308	17308	17308	17308	17308
REGISTRATION CUM.	17308	34616	51924	69232	86540	103848	121156	138464	155772	173080	190388	207696
REGISTRATION P.M.	3173	3173	3173	3173	3173	3173	3173	3173	3173	3173	3173	3173
REGISTRATION CUM.	3173	6346	9519	12692	15865	19038	22211	25384	28557	31730	34903	38076
REGISTRATION P.M.	17221	17221	17221	17221	17221	17221	17221	17221	17221	17221	17221	17221
REGISTRATION CUM.	17221	34442	51663	68884	86105	103326	120547	137768	154989	172210	189431	206652
REGISTRATION P.M.	9893	9893	9893	9893	9893	9893	9893	9893	9893	9893	9893	9893
REGISTRATION CUM.	9893	19786	29679	39572	49465	59358	69251	79144	89037	98930	108823	118716
REGISTRATION P.M.	12504	12504	12504	12504	12504	12504	12504	12504	12504	12504	12504	12504
REGISTRATION CUM.	12504	25008	37512	50016	62520	75024	87528	100032	112536	125040	137544	150048
REGISTRATION P.M.	76	76	76	76	76	76	76	76	76	76	76	76
REGISTRATION CUM.	76	152	228	304	380	456	532	608	684	760	836	912
REGISTRATION P.M.	42	42	42	42	42	42	42	42	42	42	42	42
REGISTRATION CUM.	42	84	126	168	210	252	294	336	378	420	462	504
REGISTRATION P.M.	5735	5735	5735	5735	5735	5735	5735	5735	5735	5735	5735	5735
REGISTRATION CUM.	5735	11470	17205	22940	28675	34410	40145	45880	51615	57350	63085	68820
REGISTRATION P.M.	21488	21488	21488	21488	21488	21488	21488	21488	21488	21488	21488	21488
REGISTRATION CUM.	21488	42976	64464	85952	107440	128928	150416	171904	193392	214880	236368	257856
REGISTRATION P.M.	67	67	67	67	67	67	67	67	67	67	67	67
REGISTRATION CUM.	67	134	201	268	335	402	469	536	603	670	737	804
REGISTRATION P.M.	16881	16881	16881	16881	16881	16881	16881	16881	16881	16881	16881	16881
REGISTRATION CUM.	16881	33762	50643	67524	84405	101286	118167	135048	151929	168810	185691	202572
REGISTRATION P.M.	62	62	62	62	62	62	62	62	62	62	62	62
REGISTRATION CUM.	62	124	186	248	310	372	434	496	558	620	682	744

Best Available Document

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
MEMBERS P.M.	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214
MEMBERS C.M.	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266	7266
MEMBERS D.M.	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644
MEMBERS E.M.	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941	3941
MEMBERS F.M.	317	317	317	317	317	317	317	317	317	317	317	317	317	317	317	317	317
MEMBERS G.M.	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047	3047
MEMBERS H.M.	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
MEMBERS I.M.	162	162	162	162	162	162	162	162	162	162	162	162	162	162	162	162	162
MEMBERS J.M.	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419
MEMBERS K.M.	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
MEMBERS L.M.	253	253	253	253	253	253	253	253	253	253	253	253	253	253	253	253	253
MEMBERS M.M.	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395	2395
MEMBERS N.M.	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
MEMBERS O.M.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
MEMBERS P.M.	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147
MEMBERS Q.M.	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
MEMBERS R.M.	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
MEMBERS S.M.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MEMBERS T.M.	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214
MEMBERS U.M.	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971	3971
MEMBERS V.M.	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
MEMBERS W.M.	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
MEMBERS X.M.	312	312	312	312	312	312	312	312	312	312	312	312	312	312	312	312	312
MEMBERS Y.M.	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763	1763
MEMBERS Z.M.	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21

Best Available Document

DATE
 PERIOD
 FROM
 TO
 MONTHS
 YEARS
 WEEKS
 DAYS

	1	2	3	4	5	6	7	8	9	10	11	12
APRIL 1974	337	337	237	237	337	337	337	337	337	337	337	337
APRIL 1975	337	735	1132	1530	735	2334	3781	3178	3775	3775	3775	3775
APRIL 1976	337	337	337	337	337	337	337	337	337	337	337	337
APRIL 1977	337	1330	151	1837	1330	2264	2642	2019	2775	2775	2775	2775
APRIL 1978	337	735	1330	151	502	1730	1320	1320	1320	1320	1320	1320
APRIL 1979	337	510	735	318	1330	1730	1320	1320	1320	1320	1320	1320
APRIL 1980	60	45	50	51	55	55	47	43	37	33	33	33
APRIL 1981	317	132	102	106	451	1053	1053	1053	1053	1053	1053	1053
APRIL 1982	317	377	499	572	1053	1053	1053	1053	1053	1053	1053	1053
APRIL 1983	55	44	41	37	53	44	38	33	29	27	27	27
APRIL 1984	337	272	132	110	307	1137	1137	1137	1137	1137	1137	1137
APRIL 1985	337	522	716	830	1137	1137	1137	1137	1137	1137	1137	1137
APRIL 1986	53	72	60	52	57	48	41	36	32	29	29	29
APRIL 1987	-12	29	57	-6	125	0	0	0	0	0	0	0
APRIL 1988	-12	-43	--	-12	132	132	132	132	132	132	132	132
APRIL 1989	-37	12	30	-5	37	37	37	37	37	37	37	37
APRIL 1990	-37	-12	-1	-1	14	14	14	14	14	14	14	14
APRIL 1991	237	273	180	101	477	1314	1314	1314	1314	1314	1314	1314
APRIL 1992	237	520	735	315	1314	1314	1314	1314	1314	1314	1314	1314
APRIL 1993	60	67	60	51	55	55	47	41	37	33	33	33
APRIL 1994	178	152	100	51	350	736	736	736	736	736	736	736
APRIL 1995	178	361	500	522	736	736	736	736	736	736	736	736
APRIL 1996	50	45	42	37	47	37	34	27	26	24	24	24

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APPENDIX 4

Disease Surveillance Data: 1989

INFECTIOUS DISEASES REPORTED DURING 1988
 AND THEIR DISTRIBUTION BY GOVERNORATES

الجمهورية العربية اليمنية
 وزارة الصحة
 إحصاءات الأمراض المعدية

GOVERNORATES	Population	M	Syphilis	Gonorrhoea	Leprosy	Rabies	Puerperal	Tetanus	T.B	Malaria	G.S Hemangitis	Diphtheria	Polio-myelitis	Measles	Chickencox	Scarlet fever	Etiolation	Typhoid and Paratyphoid	Respiratory		
Sana'a	4376	5577	7	291	82	154	1537	396	9921	4665	1636	640	3052	11473	3049	4577	798	1073	4493	5807	76
Taiz	24821	3602	38	552	10	100	542	80	1551	51109	291	302	87	2020	567	1794	3739	3026	940	526	108
Ibb	1996	1603	73	34	22	57	517	55	1707	4584	398	164	299	2487	2503	32820	3593	3345	1390	784	39
Hodeida	295	328	22	64	28	13	61	99	742	29104	2262	73	133	955	174	10121	374	2105	883	180	267
Hajja	1964	2353	28	64	-	5	53	20	994	2835	248	9	110	928	729	2867	1069	1511	857	93	33
Dhamar	764	688	687	60	17	27	269	59	519	9818	2459	566	121	1548	675	4835	10310	781	529	272	75
Saada	3508	3494	-	3	6	43	303	82	565	5239	155	11	576	1332	331	4024	4425	1226	282	381	23
El-Beida	5	-	-	-	-	-	3	-	2	165	6	-	-	17	-	44	1282	1	6	-	-
El-Mahweet	671	1245	9	19	17	18	73	18	484	8365	327	-	30	883	460	5764	1229	1000	439	259	17
Marab	186	427	13	20	18	24	155	122	365	9758	38	35	17	487	31	5687	9122	1302	297	650	61
El-Jauf	166	119	74	142	67	-	166	6	167	1963	148	-	30	1108	24	1922	3404	163	701	90	92
Total	38752	19432	951	1269	267	441	3679	937	17017	199205	7968	1800	8835	33238	8543	56253	24214	25200	10714	9042	791

APPENDIX 5

**Trip Reports on a Disease Surveillance System
for Yemen by Dr. Edward Kassira**

March 16, 1990

Edward N. Kassira, M.D., M.P.H., MSc in Hygiene, Ph.D.
Epidemiologist, AIDS Administration
201 W. Preston St.
Baltimore, Md. 21201

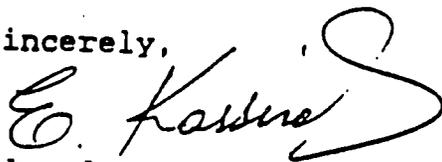
Mr. Andrew Agle
Assistant Director for Operations, IHPO
F03
Centers for Disease Control
1600 Clifton Rd., N. E.
Atlanta, Georgia 30333

Dear Mr. Agle:

Enclosed are two copies of my trip report to Sanaa in regard to the development of National Epidemiology and Disease Surveillance Activity in Yemen. I have discussed my impression and findings with John Wiles and Kenneth Sherper, USAID and they seemed to be pleased with the outcome of my trip.

Thank you for your help and cooperation. Please call me if you need any additional information or briefing about my trip.

Sincerely,



Edward N. Kassira, M.D., M.P.H., Ph.D.
Epidemiologist

ENK/by

Enclosure

Date: March 15, 1990

To: Andrew N. Agle
Assistant Director for Operations, IHPO

From: Edward N. Kassira, M.D., M.P.H., MSc in Hygiene, Ph.D.
Epidemiologist, AIDS Administration
Maryland State Health Department

Subject: Foreign Trip Report

I. Date and Place

February 9-17, 1990, Sanaa', Yemen Arab Republic

II. Purpose

To meet with USAID and Yemen Arab Republic (YAR), Ministry of Health (MOH) staff to review activities of the Central Health Laboratory (CHL) and identify activities related to disease surveillance in Yemen and to discuss possibility of assignment to USAID, Sanaa under the CDC-AID Technical Assistance for Child Survival Program (TACS).

III. Principle Persons Contacted

Mr. Kenneth H. Sherper, Mission Director, USAID
Mr. John W. Wiles, Health Development Officer, Office of Health USAID
Mr. Mohamed Hussein Al-Fadheel, Director, Central Health Laboratory
Mr. Abdul-Wahab, Saif Saleh, Administrative Deputy Director, CHL.
Mr. Hamood Hamodane, Project Assistant HPN/USAID
Dr. Andrea Mero, Consultant, CHL, WHO
Dr. Khalid Shbani, Serology Unit, CHL
Mr. Total Shebani, Microbiologist, Serology Unit, CHL
Dr. Khalid Rashad, Team Leader, Yemen TB Control Project, (Japan International Cooperation Agency)
Mr. Charles Knight, Office of the Executive Officer, USAID
Dr. Ahmad Maky, Assistant Under-Secretary, MOH, YAR
Mr. Noel Brown, Chief of Party Reach (JSI)
Mr. Leslie Perry, Administrator, Reach (JSI)
Miss Aisha Jumaan, UNDP
Mrs. Kathryn Schmeding, Ph.D., Microbiologist
Mr. Woyo Mahomadu, Health Statistician WHO, CHL

I was not able to meet with either the Director General of Health and Medical Services and the MOH's AIDS Coordinator because they were not present in Sanaa.

C. PARTY REACH

I talked to Noel Brown, Chief of Party REACH and Leslie Perry, Administrator, to get a sense of REACH activities and training of health providers. They feel the need for the development of disease information system in Yemen and that any disease registry should be incorporated with training and understood at both the central and field levels.

D. INTERVIEWED STAFF POSITIONS

I reviewed the CV of Dr. Kathryn Schmeding and later interviewed her for the future microbiologist position. Also I met and reviewed the CV of Wayo Mahamadu, a Ghanian citizen who is currently employed in the CHL as a UNDP volunteer health statistician. I feel that the education and experience of Dr. Schmeding both in the U.S. and abroad would make her a favorable choice for employment in the program. Her presence will assist in improving and upgrading the CHL capability.

Al-Fadheel expressed his satisfaction with the current performance of Wayo. I feel that although he lacks the technical computer capability, he can be employed as a data entry clerk.

IV. OBSERVATIONS

A. Central Health Laboratory (CHL)

On February 12, 1990 I visited the CHL and met with the Director, Muhamed H. Al-Fadheel and his staff to be acquainted with the functions and activities of the laboratory which is intended to be the location for a National Epidemiology and Disease Surveillance Program.

The CHL represents the MOH laboratories and Blood Bank in YAR. There are 2 branches to the CHL, one in TAIZ and one in Al-Hudaydah governorates. Future planning will include more local laboratory branches in other governorates. Supervision, training, and preparations of reagents, manuals and supplies are done by the CHL. According to Al-Fadheel these two branch

labs are primitive in their functions with no serology capabilities. Some specimens are sent to the CHL for microbiological testing or for confirmation of test results.

Currently the CHL is under the Directorate of Health and Medical Services of the MOH which is one of the six directorates connected to the Under-Secretary of Health. Al-Fadheel stated that it is within the plan of the MOH to upgrade the CHL into a directorate level.

The CHL is made up of the following units:

1. Microbiology

Minimum methodologies for the different bacteriological tests are used including food and water bacteriology. There's no virology test capabilities. The food and water section is financed by FAO and UNDP, but advise and technicians in food chemistry and food microbiology is needed.

2. Serology

Serological tests are limited to syphillus, brucellosis, HIV and hepatitis infections.

3. Parasitology

Blood, stool and urine can be tested for Malaria, Schistosomā, Leishmania, E. histolytica and Geardia infection.

4. Blood Bank

There is a proposal to separate the Blood Bank from the CHL and develop it as an independent body as a National Blood Transfusion Service. Currently blood donors are tested for HIV and Hepatitis infections.

5. Training

The CHL is used as the site for practical training for;

- a. Medical and BSC students of Sanaa University College of Medicine. The students spend two years in the

laboratory for training in the fields of microbiology, parasitology, hematology and biochemistry.

- b. Students of Health Manpower Institute (HMI) are trained for 3 years towards a laboratory technician degree which is equivalent to a high school diploma. Ten to twenty technicians graduate yearly. Many of the 248 graduates have left government employment and currently work in other more profitable careers.
- c. The lab also supervises training of "lab aids" in Taiz and Al-Hudayda. This training was established because of the shortage and maldistribution of laboratory technicians in the country.

6. Other

CHL has also units of Hematology, Biochemistry, Histopathology and recently established Occupational Health Unit to test for air and industrial hygiene problems.

B. Human Immunodeficiency Virus (HIV) Infections

1. Policy

MOH of YAR & WHO signed an agreement on November 1, 1988 for prevention and control of AIDS in YAR. A technical AIDS Committee (TAC) was appointed by MOH. Up to date there is no agreed strategy on HIV infection and AIDS prevention in YAR but TAC which is chaired by the Assistant Undersecretary (MOH) drafted the following preliminary suggestions for HIV/AIDS policy:

a. Screening:

- 1) Screening of blood donors in big cities.
- 2) Voluntary screening of exposed groups such as migrant workers, returning students

from other countries, and patients receiving blood or blood products (hemophiliacs, and leukemia patients) as well as patients treated abroad.

- b. Notification and reporting:
- 1) All HIV seropositives should be sent to the Central Health Laboratory for confirmation.
 - 2) All confirmed HIV seropositive infections and AIDS cases should be reported to the TAC Coordinator who will in turn report anonymously to EMRO.
- c. Prepare a health education work plan on AIDS.
- d. Establish and improve laboratory facilities for HIV serology in the Central Laboratory.

2. IMPLEMENTATION OF HIV TESTING

Andrea Mero, M.D., a microbiologist and a WHO representative in the CHL helped in establishing the hepatitis and HIV serology testing. Since March, 1989, 7000 to 8,000 blood specimens were tested by ELISA for HIV infections. No Western blot testing is available, and ELISA positive specimens are sent to NAMRO III, Naval Research Unit in Cairo, Egypt by the WHO for supplemental test (Western blot) for seropositive confirmation. Kits and equipments for ELISA testing were supplied by the WHO and NAMRO III. The majority of specimens tested originated from blood donors (all males and Yemenis). None of these blood donor specimens were positive.

One of the twenty people tested because of foreign travel HIV Certificate requirement was positive (a hemophiliac) who was treated previously in Saudi Arabia.

1

Three of the sixty two prisoners in Al-Hudayda because of illegal immigration from Africa (prostitutes) were confirmed seropositive for HIV infection.

Yemeni citizens who live abroad are voluntarily tested for HIV infections. Out of the fifty people tested two were confirmed positive by both ELISA and Western blot. One of these positives was related to previous exposure in Poland and the other one in Kuwait.

C. NATIONAL TUBERCULOSIS INSTITUTE (NTI)

I visited the Tuberculosis Center in Sanaa which was established in 1983 with the assistance of WHO and Japan International Cooperation Agency (JICA). There are also two subcenters one in Taiz and one in Al-Hudaydah. According to Dr. Khalid Rashad, Project Team Leader, 1,200 TB cases were diagnosed and treated in 1989. Thirty percent of these cases were confirmed by laboratory diagnosis. Treatment and follow up of patients is on an outpatient basis but Thowra and Kuwait Hospitals in Sanaa admit TB patients. Registry and statistical information in the institute are automated.

D. DISEASE REPORTING

Registry of disease in YAR is primitive or non existant. A full picture of incidence, prevalence and distribution of endemic diseases are not known. The most recent statistical report was published by the Statistic Administration of MOH in 1986. However, when I looked at the figures of infectious diseases that were diagnosed by the CHL for the period 1987-1989, there appears to be some discrepancies in disease incidence. Although some health statistics are collected by the National Tuberculosis Institute, CHL and other institutions that report to the MOH, these are not analyzed and they lack essential epidemiological parameters.

There is no formal policy for infectious disease reporting to the MOH or CHL by hospitals, clinics, private laboratories and other private physicians. Reporting is inadequate or non existant for all of viral diseases of children and infants due to the lack of virus diagnostic capability in the CHL.

ES

V. CONCLUSION/RECOMMENDATIONS

In my short visit to Sanaa I have gathered information resulting from meetings with USAID, MOH and CHL staff and other groups involved with child survival activities and primary health care. I reviewed available disease registry and statistics of CHL, together with MOH published reports and the Project Grant Agreement between the YAR and USAID for Accelerated Cooperation For Child Survival (Project No. 279-0082).

As a first step in the planning for the development of the National Epidemiology and Disease Surveillance Program (NEDS). I was able to identify some pragmatic concerns about the needs of our target population. Some of these concerns should be translated into project impact objectives in order to:

1. Change the disease registry status and start surveillance program for diseases which contribute to high morbidity and mortality in infants, children, and women of child bearing age.
2. Establish a system of routine reporting of health data to NEDS program.
3. Upgrade CHL staff capabilities by providing training and technical assistance.
4. Application of standardized statistical methodologus and computer entry of disease.
5. Integrate NEDS into EPI and other child survival programs.

1. 7/21/90
2. NEDS Reports

Date: June 14, 1990
To: Andrew N. Agle
Assistant Director for Operations, IHPO
From: Edward N. Kassira, M.D., M.P.H., MSc in Hygiene, Ph.D.
Subject: Foreign Trip Report

7/30

ACC	
ADM	
CON	
EXT	
GEN	
INFO	
INT	
LAB	
LEG	
PLN	
PRO	
REP	
RES	
SEC	
TRAIN	
UNIT	
USE	
WORLD	
YOUTH	

ACTION TAKEN? NAN
DATE 7/14/90
BY [Signature]

I. Date and Place:
May 18, 1990- June 2, 1990, Sanaa: Republic of Yemen

II. Purpose of Visit:

To meet with USAID and Republic of Yemen MOH staff in order to:

- Prepare detailed workplan for the National Epidemiology and Disease Surveillance Program in Yemen.
- Obtain approvals and initiate actions that can be followed by MOH/USAID until the permanent assignment is approved.
- Prepare job descriptions for other staff members of NEDS.

III. Principle Persons Contacted:

- Mr. Kenneth H. Sherper, Mission Director, USAID
- Mr. John W. Wiles, Health Development Officer, Office of Health USAID
- Mr. Mohamed Hussein Al-Fadheel, Director, Central Health Laboratory (CHL)
- Mr. Abdul-Wahab, Saif Saleh, Administrative Deputy Director (CHL)
- Mr. Abdul Aziz, Project Assistant HPN/USAID
- Dr. Andrea Mero, Consultant, CHL, WHO
- Mr. Charles Knight, Office of the Executive Officer, USAID
- Dr. Almad Maky, Assistant Under-Secretary, MOH, Rep. of Yemen
- Mr. Noel Brown, Chief of Party Reach (JSI)
- Dr. Khalid Gilan, Director General of Health Services MOH
- Dr. Abdul Halim Hashim, Director General of Primary Health Care (PHC), MOH
- Dr. Abdula Muharam, Director General of Preventive Medicine, MOH
- Mr. Ali Ismail Al-Oulofi, Deputy Minister of Health, Rep. of Yemen
- Dr. Zamil Al-Alowi, WHO Representative in Yemen
- Mr. Abdul-Wahab Al-Kahlani M.P.H., Director of TB Prevention, MOH
- Mr. Abdul Raqib Tarboush, Operation Officer Expanded Program for Immunization (EPI), MOH
- Mr. Ismail Salih Al Ghimani, Assistant Director General of Statistics, MOH
- Dr. Khalid Al Saqaf, Director General, International Relations, MOH
- Dr. Abdula John, AIDS Coordinator, MOH

A. USAID

On the first day of my visit to Sanaa I met with John Wiles and was briefly updated on the MOH activities, personalities and matters relative to NEDS planning and staffing needs. We also discussed the format and guidelines relative to the preparation of a draft workplan for the next two years.

I met twice with Mr. K. Sherper, in the presence of John Wiles on the second day of my visit and at the end for briefing and updating on the activities accomplished during my stay in Yemen. My impressions on the meetings of MOH staff and the accomplishments of my visit was reviewed in my last meeting with Mr. Sherper. Mr. Sherper expressed continuous support and help towards the establishment of the NEDS program and to my forthcoming assignment.

I discussed with the Executive Office (Charles Knight), some logistics and other issues such as availability of housing, furniture, etc. All procedures seem to be in place once the employment procedures for the permanent position are completed.

I took the advantage of being in the Country to meet with Noel Brown, Chief of Party Reach (JSI) and discussed the training needed for the MOH staff for collecting the demographic and diagnostic data needed for reporting periodically to NEDS. Mr. Brown expressed his cooperation for future coordination of NEDS with their training programs.

B. MOH

Several meetings with MOH counterpart staff and decision makers were scheduled by Mr. M. Al Fadheel, Director of the CHL, who sat with me in all of these meetings. Information on the diseases selected for reporting in the initial phase of the surveillance, the reporting sources (hospitals, primary health care centers and government laboratories), were explained in these meetings and the reporting process from the selected sites (3 governorates and Sanna City) was described in detail. This information was shared with Dr. Khalid Ghilan, DG of Health Services, Dr. Abdul Halim Hashim, DG of PHC and Dr. Abdula Moharam DG of Preventive Medicine. The MOH, especially Dr. Ghilan, expressed their support and approval on the process objectives.

I had the opportunity for the first time to meet Mr. Al Oulofi, Deputy Minister of Health and discussed the impact objectives and activities of NEDS. I met twice with Dr. Ahmad Maky, Assistant Under-Secretary of Health who expressed his interest and help to make NEDS program a success. I took advantage of my visit to Sanaa to meet with Dr. Z. Al-Alowi, WHO Representative in Yemen; Mr. Al-Kahlan, Director of TB prevention; Mr. Tarboush, Operation Officer, EPI; Mr. Ismail Al Ghimani, Assistant D.G. of Statistics and Dr. Abdulah John, AIDS Coordinator for future coordination of NEDS and the MOH programs. All of these persons expressed their readiness for cooperation.

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IV. Activities and Accomplishments

1. Workplan For NEDS Program:

During my stay in Sanaa a draft workplan was developed for the program based on background, goals and purpose of the program. Anticipated deliverables and outputs were spelled out together with inputs in the forms of training, commodity requirements and MOH inputs. (Attachment A) The workplan budget (Input/Cost Matrix) for the monetary qualifications of the specific inputs and associated costs are prepared by John Wiles.

2. Job Description For NEDS

I prepared job descriptions for NEDS technical personnel positions. (Microbiologist, Biostatistician, and Programmer/Data Entry). The opening of these positions are now advertised by the USAID Mission in Yemen. (Attachment BI, BII, & BIII)

3. Selection Of Diseases For Surveillance

For the initial phase of NEDS Program, the following sixteen diseases were selected for surveillance, including the six vaccine preventable diseases (Measles, Pertussis, Diphtheria, Tetanus, and Polio) of the EPI Program:

Diarrhea	Poliomyelitis
Diphtheria	Rabies
Gonococcal infection	Rubello (German measles)
Hepatitis (viral)	Shigellosis
HIV (Human Immunodeficiency Virus)	Syphilis
Measles (rubeola)	Tetanus
Meningitis	Tuberculosis
Pertusis	Typhoid fever

4. Selection Of Sites And Reporting Sources

The following health facilities were selected for reporting from Sanaa City, and the governorates of Sanaa, Hajja and Hudiedah in addition to the government laboratories and TB institutes. (Appendix I)

1. Sanaa City

- a. Sabeen Hospital
- b. Al Thowra Health Center

2. Sanaa Governorate

- a. Twenty Six September Hospital in Matna
- b. Amran Health Center

3. Haja Governorate

- a. Al Jumhourí Hospital in Hajja City
- b. Abs Health Center

4. Al Hudiedah Governorate
 - a. Al Oulifi Hospital
 - b. Al Thowra Hospital
 - c. Zabeed Health Center
 - d. Al Tahreer Health Center
5. Government laboratories and 3 TB institutes are also included in the disease surveillance.

5. Morbidity Card Report

Morbidity card report was developed for reporting demographic and diagnostic information needed for disease surveillance. (Attachment AII)

Morbidity reports will be printed in both English and Arabic languages in a form of booklet that will be completed by designated MOH personnel at the PHC sites.

6. Human Immunodeficiency Virus (HIV) Infections

As I indicated in my previous report, the WHO was considering Yemen as a non-priority country for HIV screening and no confirmatory tests (Western blot) was available. Currently all HIV screening has stopped due to the lack of ELISA kits. The MOH still feels the importance of having a program for HIV screening in the CHL with USAID support.

On my meeting in Washington, D.C., last April with Dr. Harris AID, AIDS Coordinator and Peter Lamptly, AIDSTECH, the possibility of using alternative testing strategy for a country like Yemen was suggested. These new HIV tests are currently applied in several countries by the WHO which proved to be rapid, less expensive, and reliable as far as sensitivity and specificity. I discussed this matter thoroughly with Mr. Al Fadheel and Dr. Miro, the WHO representative in the CHL.

It was finally concluded that for the most logical HIV testing plan for Yemen could be determined by a request from MOH for a Needs Assessment visit to help in the HIV program design.

MOH Organizational Structure

My visit coincided with the unification of Yemen Arab Republic (YAR) and Peoples Democratic Republic of Yemen (PDRY) into the Republic of Yemen. The new government is now in place and the Minister of Health of YAR was selected as the current minister of health and a new organizational structure for the MOH was drafted (Appendix II). Up to the time of my departure from Yemen, there seems to be no changes in the policy as it relates to NEDS Program.

V. Conclusions

In my visit to Sanaa I was able to:

1. Draft a workplan for the National Epidemiology and Disease Surveillance (NEDS).
2. Draft job description for the technical staff of NEDS.
3. Reestablished rapport with MOH counterpart and others involved in ACCS project for coordination.
4. Select the reportable diseases, the site and reporting sources for the disease surveillance.
5. Defined MOH inputs and approvals needed.
6. Accomplished contacts with MOH decision makers for approvals and inputs needed for NEDS program.

WORK PLAN

National Epidemiology and DiseaseSurveillance (NEDS) Program

ACCS Project No. 279-0082

I. Background:

The National Epidemiology and Disease Surveillance Program is one component of Special Activities of Accelerated Cooperation for Child Survival (ACCS) Project. This program has been approved to support activities that will contribute to the success of the National Primary Health Care (PHC) Plan and overall project.

Epidemiologic data on incidence and prevalence of disease of Yemen are essentially non-existent and the data which are available have little utility in supporting primary health activities or child survival initiatives.

Present sources of epidemiologic data are very limited and represent health statistics compiled by the MOH in the Yearly Statistical Report. Essentially the data reflects total cases of diseases and generally represent gross under reporting of other significant infant and childhood illnesses. The latest health data

was published in 1986 in the National Statistical Yearbook published by Yemen Central Planning Organization. There appears to be some discrepancies in disease incidence between the data reported in these publications and data on infectious disease incidence as presented from the Central Health Laboratory (CHL) records.

Some health statistics are also collected by the three National Tuberculosis Institutes and the Expanded Program for Immunization (EPI) which compiles health statistics on immunization coverage in Yemen Republic. The EPI statistics fall short of meeting the needs of primary health care programs, or the ACCS project in terms of planning, implementation, evaluation and outcome measures. The establishment of a National Epidemiology and Disease Surveillance Program is intended to serve that purpose.

GOALS OF THE PROGRAM:

To establish support activities that contribute to the success of the National Primary Health Care (PHC) Plan and overall project goal to improve the quality of life of the population in the Republic of Yemen through the application of health measures that will reduce disease morbidity and mortality and improve the health status of people at highest risk of disease.

PURPOSE OF THE PROGRAM:

To support activities of the National PHC plan by developing health information system through systematic collection, analysis, and interpretation of health data that will be provided to the MOH and

primary health directors for planning, implementing, and monitoring health care activities and to assess the effectiveness of programs.

OUTPUT:

Establish the National Epidemiology and Disease Surveillance Program.

ACTIVITIES:

1. Provide reliable and timely disease related statistical information on total number of cases, incidence and prevalence.
2. Help in future planning and monitoring activities of PHC programs of the Ministry of Health.
3. Establish a system for disease registry which is characterized by simplicity and flexibility (ease of operation and can adopt to changing information needs).
4. Assess the effectiveness of EPI and other ACCS programs.
5. Develop strategy for epidemiological investigation and disease outbreaks.
6. Develop biostatistical and data management capability.
7. Improve and upgrade the laboratory diagnostic and serologic capability of the MOH Central Health Laboratory.
8. Initiate a computer-based surveillance system for the transmission and analysis of national morbidity data.

INPUT:a. Personnel requirements:

Epidemiologist and program director

Biostatistician

Microbiologist

Data Entry/Programmer

Secretary/Admin/Acct

Driver

b. Other resources:

Cost of travel and transportation

Training

Office supplies

Office equipment

Services: mail, telephone, etc.

Car

Office furniture

Publications

Printing

Laboratory equipment and reagents

Computer equipments, printer, software

Computer supplies

MINISTRY OF HEALTH INPUT

1. Provide office space in the Central Health Laboratory (CHL).
2. Provide laboratory space in the CHL.
3. Appoint and assign personnel needed for disease registry and collection of morbidity reports.
4. Delegate the Director of the Central Health Laboratory as a National counterpart for the program.
5. Approval of the MOH on the activities to be implemented at Sanaa City Health Department and the governorates selected for the initial phase of the program.

OUTPUT:

Determine incidence and prevalence of diseases which contribute to high morbidity and mortality in infants, children, and childbearing women.

ACTIVITIES:

1. Select the diseases to be reportable for the surveillance for the initial phases of surveillance. (Accomplished-See Attachment AI)
2. Develop a standard disease morbidity report card for the selected disease which includes when completed demographic, clinical and laboratory diagnosis. (Accomplished-See Attachment AII)
3. Identify the type and number of reporting sources e.g. hospitals, laboratories etc., and the governorates that will be initially selected for disease surveillance.

4. Assign the personnel at the potential reporting sources for the completeness and collection of the morbidity reports and specify when these reports are collected.
5. Develop biostatistical analysis capability for the data collected utilizing a computerized system.
6. Periodic reporting on incidence of reportable diseases.
7. Feedback and dissemination of information showing trends of disease incidence over time based on age, sex and other demographic variables. These information to be shared on periodic basis or in an annual report with all participants, counterparts of the program and the MOH directorates for planning, and evaluation of disease control strategies.

INPUT:

1. Printing of morbidity report cards.
2. Training of personnel and workshops on the reporting process.
3. Hospitals, health centers, and PHC units were selected as reporting sources in the governorates of Sanaa, Haja and Hudiedah and Sanaa City. (Appendix I)

OUTPUT:

To support and improve the scientific capability of the Central Health Laboratory.

> Activities:

1. Expand laboratory capability to determine etiology of diarrheal diseases in infants and children.
2. Enhance the capability to detect serotype or biotype infections agents causing morbidity and mortality primarily in infants and children.
3. Develop capability to conduct seroprevalence surveys as needed to determine prevalence rates of infections diseases for regions and governorates. Examples are Hepatitis B surface ontigen in children, and women of child bearing age; rubella antibody in women in child bearing age; and antibody surveys for vaccine preventable diseases in children.
4. Surveillance of resistance patterns to chemotherapentics and antibiotics for selected infections disease agents such as Mucobacterium tuberculosis, and Neisseria meningitides by serotype.
5. Serve as a central reference laboratory for problems in identification of infections agents.
6. I institute quality control practices in all laboratories which provide data or laboratory - based surveillance.

Input:

1. In service training for laboratory technicians (graduates of Health Manpower Institute) X 10
-
2. Inservice training of laboratory technologists (BSc. graduates) X 10

3. Equipments and reagents: e.g. Lypholizer, FA microscope, diagnostic antigens and antisera and diagnostic kits for different serological tests.
4. Audio visual equipment and materials for workshops and training.

OUTPUT:

Assist in the investigation of infectious disease outbreaks or disease epidemics.

ACTIVITIES:

1. Develop a systematic method to rapidly and comprehensively analyze the demographic characteristics of disease surveillance data.
2. Apply efficient diagnostic laboratory test.

INPUT:

1. Laboratory equipment and reagents.
2. In service training of laboratory technicians.
3. Provide training of MOH staff in epidemiologic methods in outbreak investigation.
4. Application of computer equipment and software in investigation of disease outbreak.

OUTPUT:

Expand activities for Human Immunodeficiency Virus (HIV) screening in the CHL, regional and peripheral blood bank units.

ACTIVITIES:

1. Testing all blood donors at the central, regional and peripheral blood banks utilizing ELISA and other screening tests.
2. Voluntary screening of exposed groups such as immigrant workers and returning students from other countries.
3. Test all patients who receive blood or blood products for treatment ex: hemophiliacs, and hemodialysis patients.
4. Conduct surveys for HIV seropositivity for the different risk groups categories.

INPUT:

1. Needs assessment visit by a consultant to recommend the type of HIV testing.
2. ELISA test kits are provided by WHO.
3. Accessories and Western blot (WB) equipment and reagents.

ATTACHMENT AI

REPORTABLE DISEASES AND CONDITIONS

Diarrhea (Hospitalized or Death)

Diphtheria

Gonococcal infection

Hepatitis-Viral

Human Immunodeficiency Virus infections (HIV)

Measles (Rubeola)

Meningitis

Pertussis

Poliomyelitis

Rabies

Rubella (German measles)

Shigellosis

Syphilis

Tetanus

Tuberculosis

Typhoid fever

Republic of Yemen
 Ministry of Public Health (C.H.L.)
 National Epidemiology and
 Disease Surveillance Program

ATTACHMENT A11

MORBIDITY CARD REPORT

Name of Patient		Date of Birth	Sex M <input type="checkbox"/> F <input type="checkbox"/>	Nationality	Registration No. Governorate Site
Address		City or Town		Governorate	
Telephone No.		Occupation		Workplace	
Disease or Condition		Date of Onset	Hospital		
			Date of Admission		
Pertinent Clinical Information			Laboratory Tests		
			Specimen		
			Test Performed		
			Results		
			Date		
Reported By		Address		Telephone No.	Date of Report

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ATTACHMENT BI

MISSION NOTICE
Sanaa, Yemen Arab Republic

SUBJECT: Position Available NO. 90-67
DATE: June 5, 1990
DISTRIBUTION: A, B, F, K, L, M
Title: Microbiologist (Child Survival Project)
Location: Central Health Laboratory, Sana'a
Hours: 40 hours per week
Starting Date: Approximately September 1, 1990
Closing date: Open
Salary and Benefits: Negotiable, depending on experience, education, and training

DUTIES AND RESPONSIBILITIES:

- Collaborate with the Team Leader of the National Epidemiology and Disease Surveillance Program, the Ministry of Public Health Counterpart and the WHO Project Manager in investigating disease outbreaks as well as performing and supervising different microbiological laboratory tests necessary for disease surveillance.
- Manage and perform routine microbiological and serological tests in the Central Laboratory for diagnostic and survey purposes.
- Collaborate with the Counterpart and the WHO Project Manager in raising the scientific standards of ongoing activities at the Central and regional public health laboratories.
- Provide guidance and technical advice on the further development of the departments of microbiology at the Central and regional public health laboratories.
- Collaborate with the WHO Project Manager in standardizing and upgrading the quality of scientific work in microbiology, and assist in coordinating the identification of bacterial, fungal and viral isolates with international or Central for Disease Control (CDC) reference laboratories.
- Assist in planning and implementing training and educational programs for laboratory technicians, microbiology students, and other health personnel.
- Assist in preparing lists of equipments, supplies and reagents needed for diagnosis and disease surveys that are of interest to the program.
- Prepare informative reports on program accomplishments.

MINIMUM QUALIFICATIONS:

Education: Possession of a Doctorate degree in microbiology from an accredited university, with three years experience in a public health laboratory
OR
Possession of a Master's degree in microbiology with six years experience in a public health laboratory subsequent to receipt of the Master's degree.
Language: Level IV (fluent) English is required; Arabic is an asset.
Salary: Negotiable depending upon education and experiences.

Apply through the USAID Personnel Office.

drafted: NEDS, ERennira: (draft) E. K.
approved: EXO. JJohnston:

ATTACHMENT BII

MISSION NOTICE
Sanaa, Yemen Arab Republic

SUBJECT: Position Available NO. 90-69
DATE: June 5, 1990
DISTRIBUTION: A, B, P, K, L, M
Title: Biostatistician (Child Survival Project)
Location: Central Health Laboratory, Sana'a
Hours: 40 hours per week
Starting Date: Approximately September 1, 1990
Closing date: Open
Salary: Negotiable, depending on experience and education

DUTIES AND RESPONSIBILITIES:

- Develop methods and procedures for collection and evaluation of data for routine and special reports.
- Plan and organize required procedures for coding, tabulating, and analyzing disease surveillance data.
- Apply standard descriptive and other statistical techniques in data analyses.
- Design, organize and execute studies of limited scope.
- Establish and maintain an administrative data base to monitor surveillance activities, and evaluate completeness and timeliness of reporting using epidemiologic and biostatistical techniques.
- Produce periodic and annual reports.
- Participate and consult in studies needed for the Ministry of Public Health programs.

MINIMUM QUALIFICATIONS:

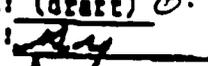
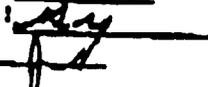
Education: Possession of a Master's degree in a Public Health discipline from an accredited college or university; working knowledge and understanding of the principles involved in designing and executing statistical studies in the field of public health, data collection instruments and procedures including sampling techniques and assessments of accuracy of reporting.

Experience: Minimum of 3 graduate courses in Epidemiology and 3 graduate courses in Biostatistics. 2 years full-time experience as a statistician, or health services researcher subsequent to receipt of Master's degree.

OR

Possession of a Master's degree from an accredited university with minimum of nine semester hours, or the equivalent in research methodology, theoretical applied statistics, or measurement theory.
Language: Level IV (fluent) English required. Arabic is an asset.

Apply through the USAID Personnel Office.

drafted: NEDS, EKassira: (draft) E. K.
approved: EXO, JJohnston: 
clearance: HPN, JWiles: 

ATTACHMENT BIII

MISSION NOTICE
Sanaa, Yemen Arab Republic

SUBJECT: Position Available NO. 90-68
DATE: June 5, 1990
DISTRIBUTION: A, B, F, K, L, M
Title: Programmer/Data Entry (Child Survival Project)
Location: Central Health Laboratory, Sanaa
Hours: 40 hours per week
Starting Date: Approximately September 1, 1990
Closing date: Open
Salary: Negotiable, depending on experience, education, and training

ESSENTIAL REQUIREMENT OF WORK AND DUTIES:

- Determine method of programming in relation to machine capabilities and output requirements.
- Write computer programs for disease surveillance and epidemiological studies.
- Analyse problems and apply computer logic to their solution.
- Prepare other computer programs which specify exact instructions to computers to produce required results.
- Plan and implement optical scanning, data entry, cleaning, and establishment of analyses files.

MINIMUM QUALIFICATIONS:

Education: Graduation from a secondary school or holder of high school equivalency certificate. Working knowledge of electronic data processing equipment and the principles of computer operation.

Experience: 1 year experience in programming solutions for computer application.

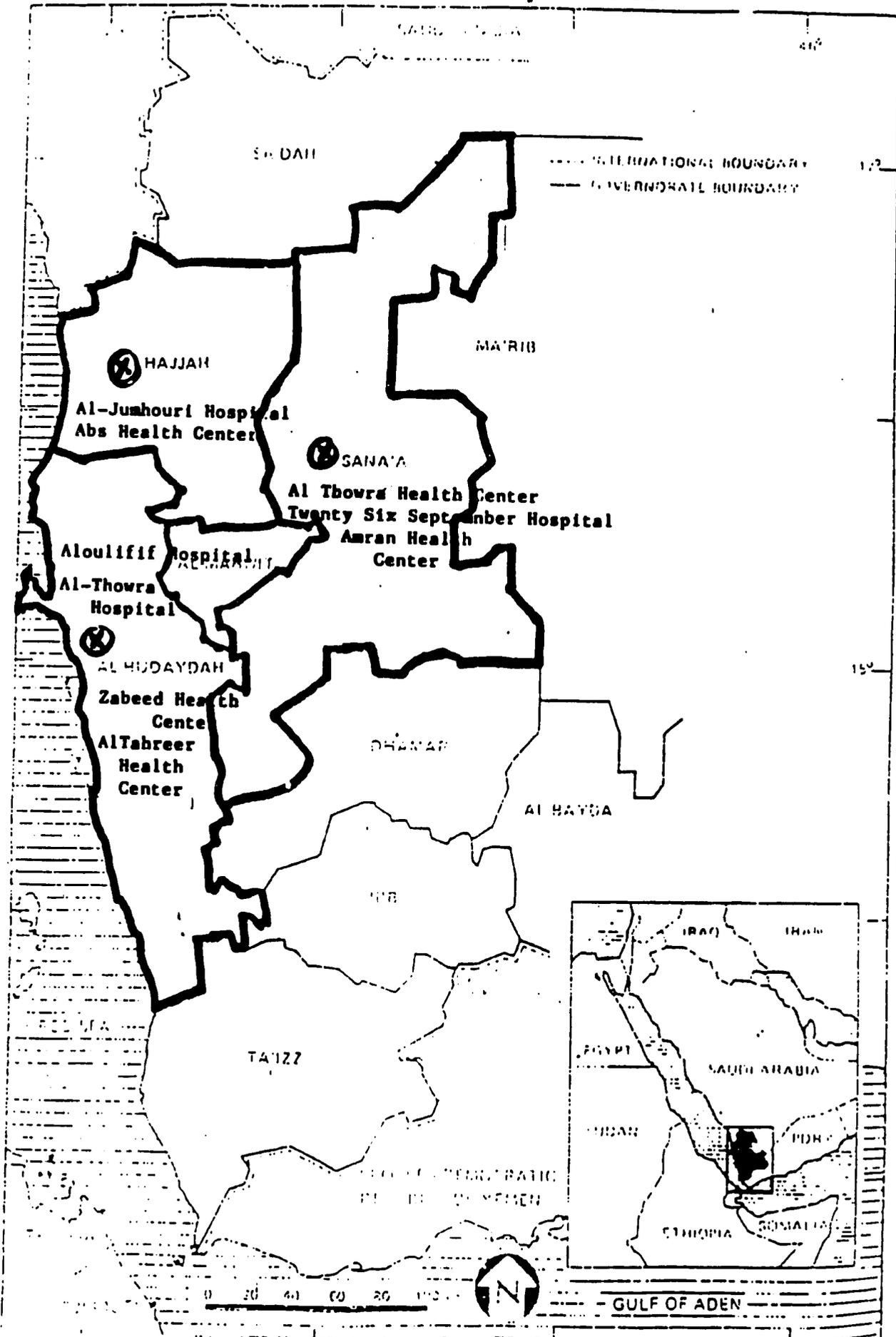
Language: English (level IV) required; Arabic is an asset.

Salary: Negotiable depending upon education, and experiences.

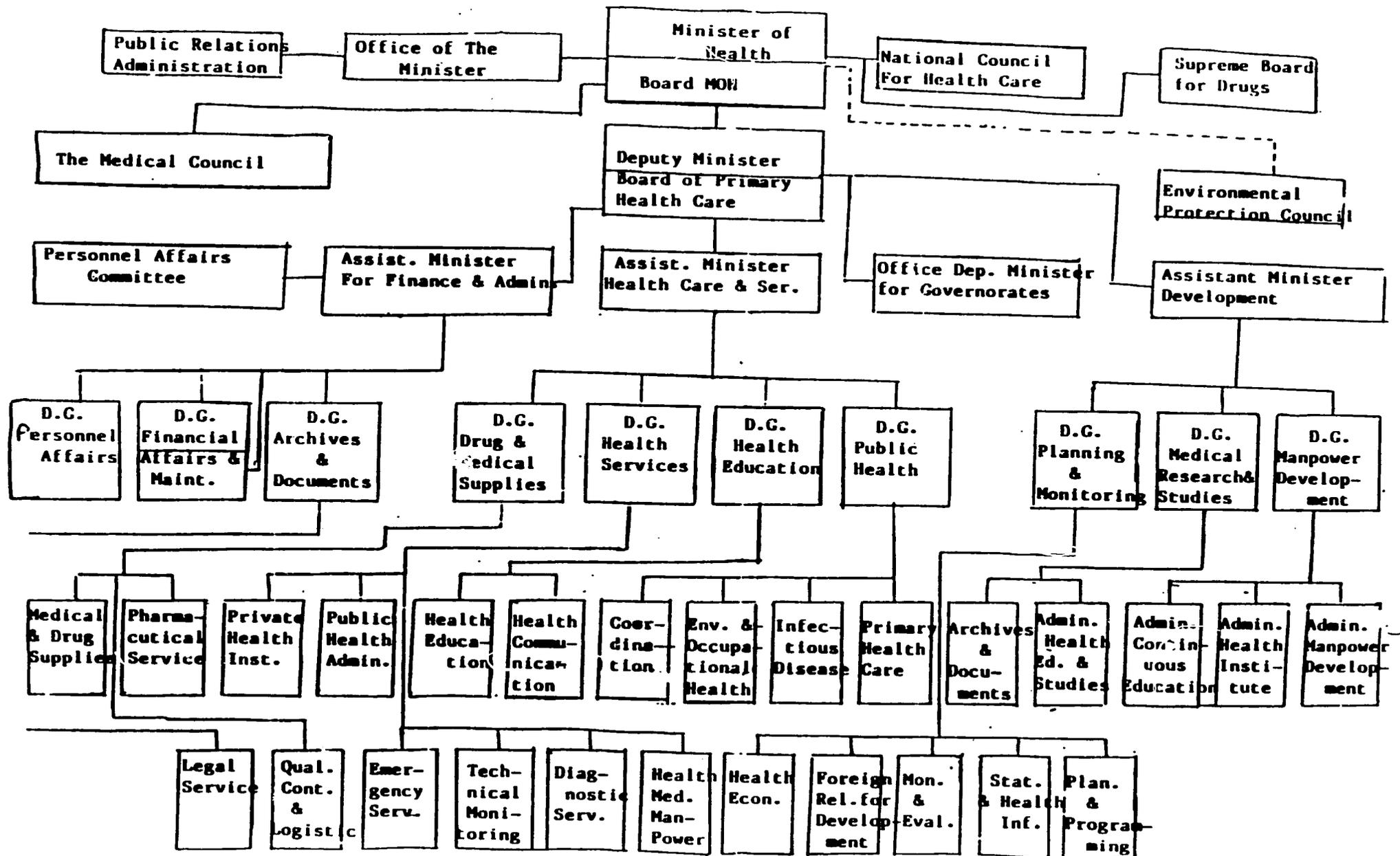
Apply through the USAID Personnel Office.

drafted: MEDS, EKassira: (draft) E.K.
approved: EXO, JJohnston: [Signature]
clearance: HFN, JWiles: [Signature]

REPUBLIC OF YEMEN
NEDS REPORTING SOURCES
Governorates of Sanaa, Hajja
and Al-Hudieda, and the City of Sanaa



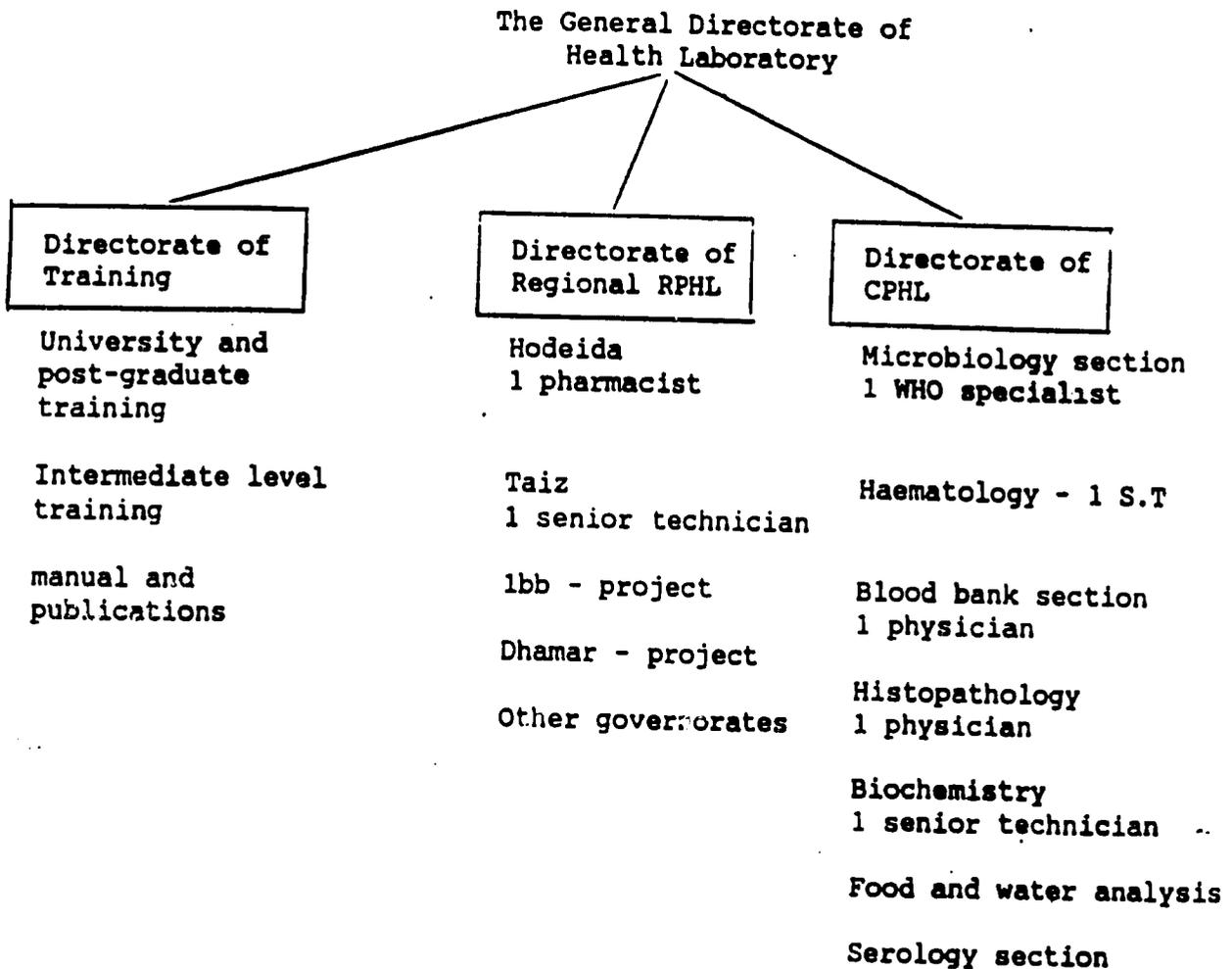
ORGANIZATIONAL STRUCTURE
The Ministry of Health In Unified Yemen



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CENTRAL PUBLIC HEALTH LABORATORY

- The laboratory started in 1978.
- Financial sources are: Y.A.R. Government;
W.H.O.
Saudia Arabia Fund.
- The objective is to use the laboratory as a referral centre and to strengthen the central and regional branches.



APPENDIX 6

Yemen Polio Eradication Plan of Action

FIRST DRAFT

YEMEN ARAB REPUBLIC

PLAN FOR THE ERADICATION OF POLIOMYELITIS

CONTENTS

- I. INTRODUCTION
 - II. OBJECTIVES:
 - a) Long Term 1996 - 2000
 - b) Medium Term 1991 - 1995
 - c) Short Term 1989 - 1990
 - III. STRATEGIES:
 - a) Immunisation Schedule/Vaccines
 - b) Immunisation Coverage
 - c) Surveillance
 - d) Containment
 - e) Laboratory Services
 - f) Rehabilitation Services
 - g) Organisational Chart
-
- ANNEX - 1. a) : Basic Data
 - b) : MOH Organogram
 - c) : Central Laboratory
 - ANNEX - 2. : EPI STAFF, Organograms
 - ANNEX - 3. : Reported Polio 1980 - 1988
 - ANNEX - 4. : Forms For Polio Surveillance and Immunisation
 - ANNEX - 5. : Training Schedule and Needs
 - ANNEX - 6. : Public Health Laboratory, Sana'a

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ADDENDUM TO THE EPI NATIONAL PLAN TO INCLUDE ACTIVITIES AIMED AT
THE ERADICATION OF POLIOMYELITIS

I. INTRODUCTION

Principles Involved in Poliomyelitis Eradication:

The adoption by the 41st World Health Assembly of Resolution WHA 41.28 has placed certain obligations on member states concerning the eradication of poliomyelitis (polio).

The Resolution declares the objectives of the global eradication of polio by the year 2000 and emphasizes that eradication should be pursued through strengthening of National EPIs. It further urges member states to formulate eradication plans, to pursue the objectives of obtaining 70% coverage of target populations with full course of polio vaccine, to intensify surveillance for acute polio cases and to develop rehabilitation services.

The Ministry of Health in the ^{Republic of Yemen} ~~Yemen-Arab-Republic~~ has accepted the challenge of polio eradication, in the dual context of protecting its children from a preventable crippling disease and in the understanding of the need to eradicate polio within geographical areas in keeping with the epidemiological spread of the disease.

The basic principles on which eradication will be based include:

- i) Activities will be developed through strengthening the management and operational effectiveness of the Expanded Programme on Immunisation, within the context of Primary Health Care, raising coverage levels of immunisation of children with a protective course of polio vaccine to the highest possible level.
- ii) By improving surveillance at all health units, for cases of acute poliomyelitis with specific activities developed for case detection and control, based on the EPI Central Unit and at certain sentinel sites throughout the country.

- iii) By strengthening the national laboratory capacity to assist EPI staff and clinicians in the diagnosis of poliomyelitis.
- iv) By developing appropriate immediate response containment/control activities when cases or suspect cases are detected.
- v) To develop and further extend the surveillance and disease control skills, which will be developed as an integral part of polio eradication, to assist in monitoring and control of other diseases, notably measles and other communicable ^{NTV} diseases of public health importance.

II. OBJECTIVES

2.1 Long Term [1996 - 2000]:

- 1) To eradicate poliomyelitis by the year 2000.
- 2) To document and certify its eradication by demonstrating that all cases of acute paralytic disease in children are fully investigated and by positively excluding a diagnosis of acute poliomyelitis.
- 3) To demonstrate that, in spite of effective sampling, and laboratory procedures, circulation of wild polio virus has ceased and the virus cannot be recovered from people or from the environment.

2.2 Medium Term [1991 - 1995]:

- 1) By 1995, to have an effective immunisation system and service as a part of Primary Health Care, predictably and reliably able to reach all families living in all areas of the ^{R.D} Yemen Arab-Republic.
- 2) By the start of the year 1991 to have 75% full coverage of children reaching 12 months age with all EPI vaccines; By 1992, to reach ^{80%} such coverage; and by 1992 to reach ^{95%} such coverage and to maintain at least this level.
- 3) By 1991, to have developed a surveillance system able to detect and report all cases of acute poliomyelitis visiting any hospital or other ^{sectorial} health facility ^{or} in the country with

- 4) By 1991, to have developed a system for detection and diagnosis of poliomyelitis using national and international reference laboratories.
- 5) By 1992, to have developed a national laboratory capacity to independently and reliably diagnose acute poliomyelitis.
- 6) By 1991, all outbreaks of 5 or more cases in one district to be investigated by a specialist team and control measures instituted.
- 7) By 1992, all cases of acute poliomyelitis to be intensively investigated by a specialist team, able to confirm the diagnosis, investigate sources of infection, the reasons for immunisation failure and to institute control measures.
- 8) By 1992 to have prepared a national plan to strengthen rehabilitation services for the young people disabled by crippling diseases including poliomyelitis.

2.3 Short Term [1989 - 1990]:

- 1) By the start of the year 1990, to have achieved over 60% full coverage of all EPI vaccines in children reaching 12 months age.
- 2) By ~~June~~ ^{October 1990} 1989, to have established ³⁰ ~~5~~ sentinel sites for reporting poliomyelitis, measles and neonatal tetanus.
- 3) By the start of 1990, to have established monthly reporting of cases of acute poliomyelitis and the other EPI diseases, from all health facilities.
- 4) By 1990, to have established 'prompt' reporting of poliomyelitis from hospitals and health centres using standard proforma.
- 5) By ~~June~~ ^{October 1990} 1989, to have established a surveillance unit as an integral part of the Central EPI, staffed by appropriately trained personnel.

^{Oct 1990}
 6) By ~~June 1989~~, to have assessed the capacity of laboratories in Yemen to support activities related to poliomyelitis and to have prepared plans for their phased development to meet the needs for the eradication programme.

^{Oct 1990}
 7) By ~~June 1989~~ 1989, to have developed, approved, distributed to and trained medical and paramedical staff on a clear definition of acute poliomyelitis for treatment and reporting purposes.

III. STRATEGIES

3.1 Immunisation Schedule and Vaccines:

The immunisation schedule will remain as before:

AGE	VACCINE
At birth	OPV ₀ BCG
^{40-75 days} 6 to 12 weeks	OPV ₁ DPT ₁
^{2.5ms 3.5ms} 10 to 16 weeks	OPV ₂ DPT ₂
^{3.5 - 4.5} 14 to 20 weeks	OPV ₃ DPT ₃
9 months	Measles

For the present, at least, oral polio vaccine (OPV) will remain the polio vaccine of choice, although the situation will be regularly reviewed by the EPI Task Force based on experience in Yemen and elsewhere and on advice received from the Global Technical Advisory Group of the Global EPI.

While priority will be aimed at obtaining coverage with at least ^{from 1991} 4 doses of OPV for all children before they reach 12 months age, efforts will be made to ensure that all children aged under ³⁵ months have received protective courses of vaccine. Research will be conducted to ensure that even older age people are immune against the disease and that the vaccines being given are producing immunity against all 3 serotypes in the recipients.

update
 3 years
 S.C.H.

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TABLE 2. IMMUNISATION COVERAGE, YEMEN, 1980 - 1989
(UNDER ONE YR. AGE)

YEAR	BCG	OPV DPT 1	OPV DPT 2	DPT OPV 3	Measles	T.T ₁	T.T ₂₊
1980	33820	27936	9277	4728	6569		
1981	43606	35581	13861	8029	12258		
1982	48190	39381	20030	12210	13376		
1983	58849	48304	26093	17163	20705		
1984	65770	53695	34986	24270	28797		
1985	85877	75274	53752	43564	44789		
1986	84202	85757	59674	48563	55564		
1987							
1988	185487	191709	149262	128591	126771	58565	25766
1989	300023	281866	235236	223072	193677	143020	90305

TABLE 3. IMMUNISATION COVERAGE BY GOVERNORATE, 1988 - 1989
(UNDER ONE YR. AGE)

GOVERNORATE	BCG	DPT OPV	DPT 2 OPV	DPT 3 DPT	Measles	T.T ₁	T.T ₂₊
SANAA	88/89	88/89	88/89	88/89	88/89	88/89	88/89
Ibb	4254	44162	5749	5555	4693	4725	22411
Dhamar	1503	1994	1956	8700	537	574	1322
TAIZ	5250	5802	5837	4424	4045	5287	5863
Hajjah	6898	6217	6455	6751	4022	3271	3852
Saddah	5376	5765	5494	4106	2958	1143	2145
Hodeidah	5078	5249	22016	57297	1168	3521	5548
Al-Beidah	3144	2855	7345	9110	6358	1213	5309
Mareb	1305	1798	1283	1731	1061	737	1240
Mahwit	4862	4022	5832	2291	4937	6930	3200
Al-Jouf	123	1499	124	1297	35	861	732
	24199				1706	12818	

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National:

Improving immunisation coverage in infants will be the highest operational priority for polio eradication in the period 1989 - 1990, inclusively. The policies to be further developed will remain those already adopted by the National EPI Unit and as defined in the National Plan for Immunisation.

Certain aspects of this policy will be emphasised to ensure the smooth development of the programme and to secure a reliable improvement in immunisation coverage of infants.

These aspects will include:

- i) The EPI Task Force, under the Chairmanship of the Director General of ~~Medical Services~~ ^{PUBLIC HEALTH}, will continue to monitor progress, coordinate activities and advise the EPI Manager on policy issues, including in the future, the eradication of poliomyelitis.
- ii) The Director General of ~~Medical Services~~ ^{PUBLIC HEALTH} will assume responsibility as the national focal point for poliomyelitis eradication.
- iii) EPI policy will remain to decentralize to the Governorates to the District and to the health unit level, the authority and responsibility for implementing immunisation services, with technical and operational support from the Central EPI Unit. The basic unit for assessing immunisation activity including polio vaccine coverage, will be the District. The objective will be to secure uniform coverage through out the country based on district reporting.
- iv) The EPI Unit will be managerially strengthened to improve its monitoring, surveillance and outbreak/case investigation capacities.
- v) During 1989, major efforts will be made to ensure that all health facilities are delivering effective EPI services and ~~that~~ ^{DURING LAST QUARTER 3/1990} all physicians are aware of their immediate responsibility in supervising preventive care services, including immunisation. Additional specific EPI/PHC

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Once immunisation services are well established in health facilities, plans will be drawn up to implement

reach mobile systems to reach those areas of outreach systems to reach those areas of Yemen where communities live with difficult or remote access to health facilities. by defining the catchment area for each H.F.

- vi) During 1989, efforts will be made to ensure that all Governorates are meeting national targets, with careful monitoring of performance on a monthly basis. Special attention and central level support will be directed at improving services in the most populous Governorates, where coverage returns will show the greatest impact from programme inputs.
- vii) The programme on health education will be further intensified especially using radio and TV services. Public health education and information will accurately reflect programme needs and the health facilities capacity to deliver services. Information on polio eradication will be included.

ix ~~viii~~) Acceptable standards of vaccine potency and cold chain management will be maintained.

x) *gt* progress in immunisation coverage, through routine PHC services, proves disappointing, serious considerations will be given to conducting an accelerated ~~EPI~~ *through NATIONAL IMMUN. day,* campaign, especially for OPV, possibly using people attending summer youth camps.

3.2 Surveillance:

Definition: The following definition of acute poliomyelitis will be used for surveillance propose:

"Any patient with an acute flaccid paralysis, including any child aged less than 15 years diagnosed as having Guillain-Barre' syndrome, for whom no other cause can be identified."

- 1) A surveillance unit will be created at the Central EPI, consisting of staff trained in basic outbreak and case investigation. (*EPI Zonal* *epidemiology & prevention*)

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Initially, after appropriate training, they will be expected to investigate epidemics of poliomyelitis, i.e., clusters of reported cases, assess vaccine efficacy, reporting completeness and to ^{case assess} institute control measures when needed. A case investigation form will be developed.

- ii) Responsible staff at all hospitals and health centres will be trained in the use of "prompt notification" forms to report the occurrence of cases of EPI diseases and a limited number of other diseases of public health importance. These forms will be for individual patients and will include basic epidemiological data.
- iii) All health facilities will report monthly on the numbers of defined communicable diseases including poliomyelitis which were and will include zero reporting if no cases have been seen. Both these forms will include acute poliomyelitis and other EPI diseases.
- iv) Reporting to WHO on the incidence of acute polio will be by Governorate and will be done monthly.
- v) A system for monitoring receipt of expected monthly report forms will be established at the Central and Governorate level, with receipt and date of receipt of individual forms clearly marked.
- vi) In ^{LAST Q. 1970, 30} ~~1969~~, 8 sentinel sites for reporting EPI target diseases, including poliomyelitis, will be established. Each unit will be in a major health facility, which will be expected to report weekly on cases seen, with details of age, sex and the date of onset of the disease. *Local EPI staff will be responsible for ensuring that accurate data are collected and reports received.
- vii) When the number of reported polio cases reaches 10 per year or less, an advisory committee, consisting of clinicians and public health specialists will be convened. Its terms of reference will be to examine data from each reported case and classify it as polio, confirmed or probable, or as not being polio.

3.3 Containment of Poliomyelitis Epidemics:

- i) Initially no attempt will be made to trace sources of infection or cases. The occurrence of a number of cases occurring as a cluster in a small locality will be assumed to reflect low or ineffective immunisation coverage and containment activities will be directed largely to improving coverage within the affected district and, if appropriate, neighbouring districts.
- ii) Containment immunisation will be using trivalent OPV given to the appropriate age group, usually children up to 5 years of age.
- iii) Once containment is started, a full 3 rounds will be given with one month interval between doses.
- iv) Initially, for individual cases, major containment activities would not be appropriate and this activity will only be intensified when polio cases are being reported below a rate of 20 per year.

3.4 Laboratory Services:

- i) Initially, activities concerning laboratory services related to poliomyelitis eradication will be confined to three aspects:
 - assessing the capacity of laboratories in Yemen to diagnose poliomyelitis serologically, by serotype and by virus isolation;
 - developing a system, and training its use, for specimen collection, transmission and testing;
 - testing specimens from patients when outbreak of more than 5 clustered patients occur.
- ii) The WHO laboratory advisor, working with his counterpart, will be asked to develop a National Plan for laboratory support to polio eradication, based on existing and potential national capacity and future programme needs.

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- iii) A stock of specimen collection kits will be established before 1990 and staff training/manual entries on their use conducted.
- iv) By 1992 it is hoped that laboratories in Yemen will be able also to monitor the quality of OPV used in the country.

3.5 Rehabilitation Services:

- i) Meetings will be arranged, in ¹⁹⁹⁰~~1988~~, with physical medicine, orthopaedic and rehabilitation specialists, to define a plan to provide rehabilitation services for crippled children, including polio victims.
- ii) Subsequently and with due publicity to the success of polio eradication, other concerned Ministries, organisations and community representatives will be involved in discussions to plan a national rehabilitation service, community based and possibly supported, with referral services to and from specialist units.

SUMMARY OF COUNTRY DATA

Geography - Demography

Area:	537000 195,000 sq. km.
Total population:	13 12 million (1990)
Population resident in YAR	11 7.8 million
Population density:	40 24
Population in rural areas:	88% 84

Female (15 - 49) 46 % of all

Average household size 6.14

Capital - Sana'a:	427,000
Major towns: ^{ADEN} Taiz:	155,000
Hodeidah:	178,000

Vital Statistics

Population growth rate:	2.7 3 %
Infant mortality	136 - 162 per 1000 live births (1986)
Crude birth rate:	51.0 per 1000 (1986)
Change 1960-1978:	- 2.0 %
Crude death rate:	18.2 per 100 (1986)
Change 1960-1978	- 13.8%
Life expectancy at birth:	male 46 years female 49 years

to be up ~~to~~ 4.1

Economy and labour market

GNP per capita:	510 US\$ (1986) Annual growth 1960-81 5.5%
Labour force (1983):	Agriculture: 40%
	Services: 10%
	Industry: 6%
	Emigrant workers: 44%

42'

NOTES ABOUT HEALTH SITUATION IN YAR
-1987 19901. Hospitals and other health centres

- hospitals = 34 }
- } total beds = 5245
- dispensaries = 51 }
- health centres = 184
- rural health units }
- and primary health } 299
- units }
- pharmacies = 72
- drug stores = 366

2. Health manpower

- doctors = 1 176
- dentists = 45
- training nursing = 1 394
- assistant nurses = 1 308
- midwives = 120

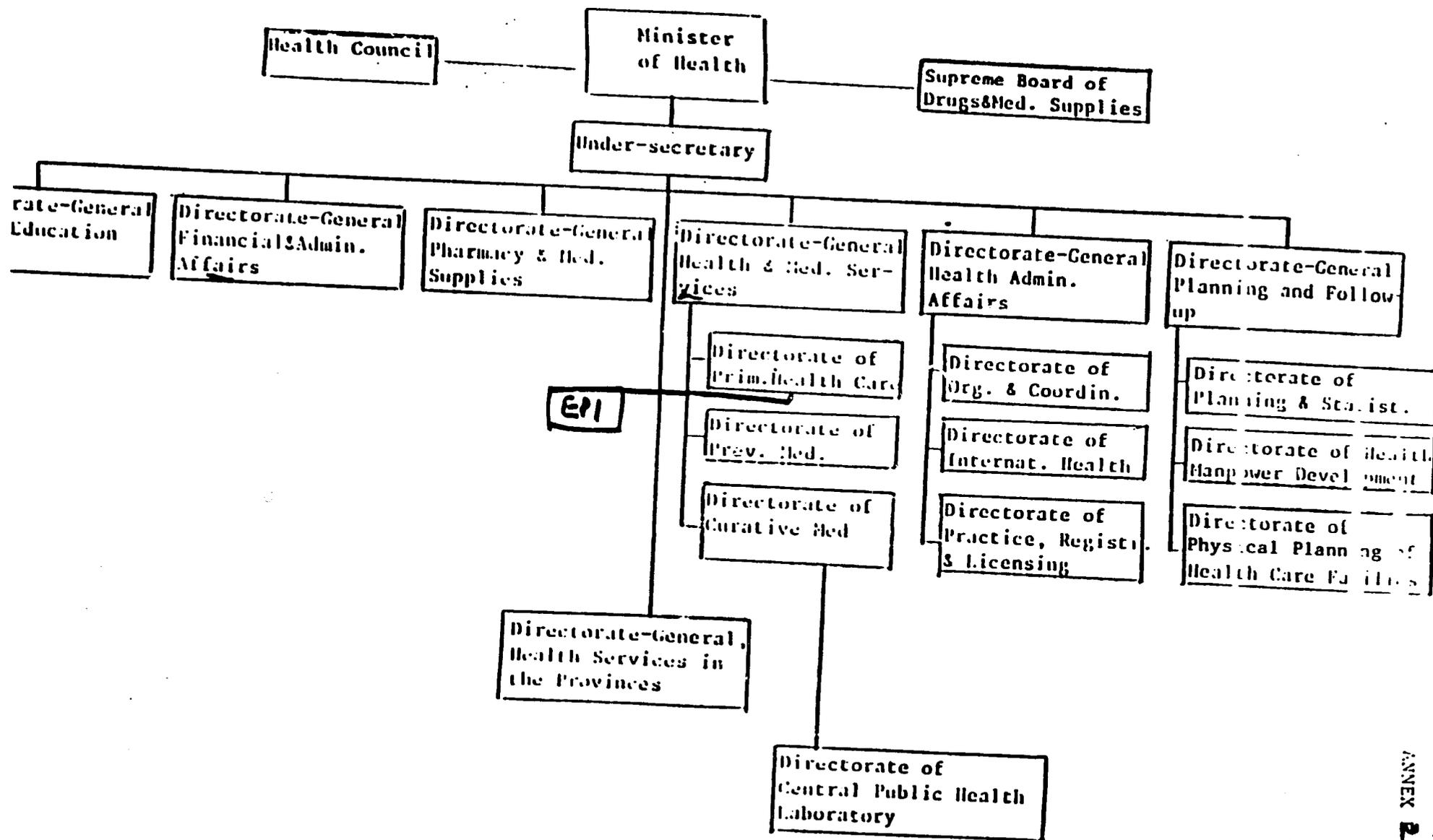
3. Laboratories

- Level 3 = 1 central laboratory in Sanaa (annex F)
 2 regional laboratories in Hodeida and Taiz

In addition, hospital - 200 beds - laboratories = 9.
Sanaa-Taiz-Hodeida

Level 2 = intermediate laboratory = 60

Level 3 = rural health laboratory = 79.



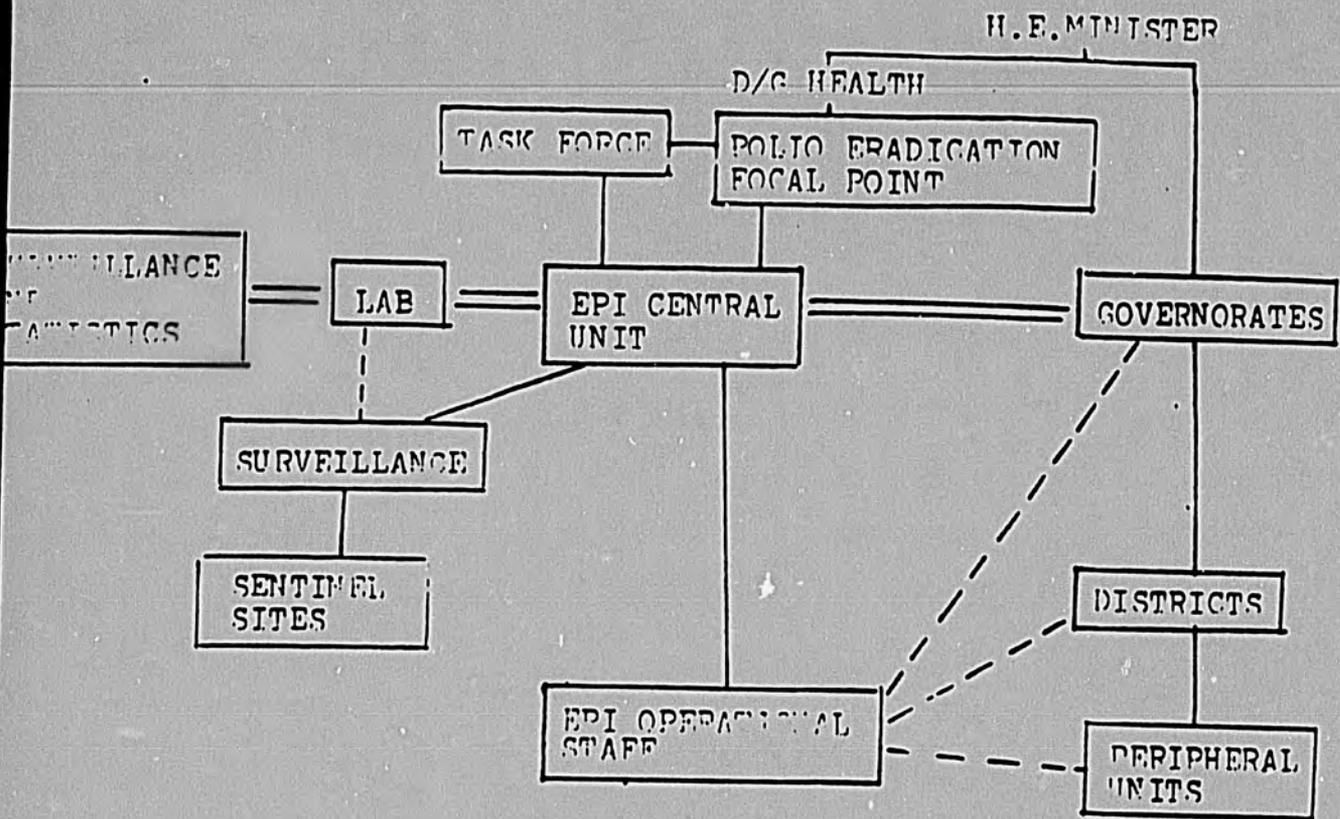
PH

Staff at central level

Organogram of the EPI Central Unit

Organogram of the Governorate Health System

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PRIMARY HEALTH CARE

Type of course	Date	Place	Staff	Number of participants	Length of training	Cost	
						Govt	Ext.
1. Surveillance techniques							
2. Physicians training in EPI & polio eradication							
3. Mid-level management							
4. Cold chain management							
5. Communication and H.Ed.							
6. Lab staff							

Forms

Prompt Notification Form

Monthly Communicable Disease Reporting Form

Case Investigation Form

Immunisation Reporting Form

AS

Polio

Reported cases by Governorate 1980 - 1989

1980

1981

1982

1983

1984

1985

1986

1987

1988

1989