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BACKGROUND AND ANALYSIS  
OF  
PROPOSED HEALTH SECTOR ACTIVITY  
IN  
CENTRAL TUNISIA\*

Central Tunisia Rural Development Sub-project/Rural Community Health  
(664-0296) P.P. Amendment Design: Phase One, Nov. 9-Dec. 8, 1979

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## A. Summary and Recommendations

The government of Tunisia (GOT) is committed to a policy of delivering basic integrated health care services nationwide. The concept of how this is to be accomplished has emerged through the efforts of health planners in the Ministry of Public Health (MOPH) assisted by external consultants, and has been developed and tested in Tunisian- and donor-sponsored pilot projects.

In 1976, Family Health Care, Inc. (FHC), at the request of the GOT and USAID took a hard look at the existing health system of health care delivery in Tunisia. With the MOPH, they developed a model to serve as the basis of a national program of providing basic integrated, effective, and accessible services to the scattered populations of rural Tunisia. Siliana and Sidi Bouzid provinces, identified as among Tunisia's most impoverished areas, most bereft of health infrastructure, were chosen as the sites for implementation of the AID-funded program. In 1977, the Rural Community Health Project (RCH) was approved. Its goal is to enhance the quality and coverage of health services in Siliana and Sidi Bouzid, through:

- (1) A restructured health manpower system for non-physician personnel, including redefining the role and tasks of such personnel and in-service training
- (2) The integration of preventive and curative primary care services (including family planning)
- (3) An improvement and expansion of the outreach components of the primary care system (both capital and technical) to the community level
- (4) Revising and strengthening community planning and health management capability through the in-service training and orientation of supervisors, managers, and community leaders as well as improving the medical records system
- (5) Strengthening preventive medicine internships
- (6) Evaluation design and implementation

To summarize, the RCH Project is intended to contribute significantly to the establishment of national standards for the broader, more effective use of (at present) under-utilized non-physician personnel at the local level, while, at the same time, establishing a field practice setting where medical students and interns can be educated in the principles of community medicine.

Except for construction, implementation of the RCH Project has been delayed. However, hopefully, a technical assistance team will be fielded and the other project activity underway in the next 8-9 months.

On November 6, 1979, AID/W officially endorsed amending the RCH project to extend the project area to include the part of Kasserine province which is under the AID-funded Central Tunisia Rural Development Project (CTRD), as a sub-project of CTRD. This approach was taken to facilitate a more comprehensive technical assistance program and to speed up the documentation and approval process. Ideally, such an amendment should build flexibility into the project design to serve as a tool for early-course correction, to supply needed supplementary inputs, and to act as a means to extend successful project elements into a wider geographic area. Minimally, the amendment should reflect the most current assessment of needs, resources and the thinking and interests of the people responsible for health planning and implementation.

The team was sent to Tunisia in mid-November to make the above assessment and initiate the process of preparing the necessary documentation and designing the proposed amendment. The next phase will be to draft the actual amendment. The team recommends that this take place:

- (1) If possible, 6 months after the RCH TA team has arrived in order to ensure that among other reasons, the amendment (a) reflects the current needs and requirements of an ongoing project, and (b) does not put a strain on existing resources; or
- (2) If time constraints and/or funding obligation deadlines prohibit waiting the length of time suggested above, the second best scenario would be to hold off design until the TA team is in country and has linked up with their Tunisian counterparts. Any need to supplement the TA/counterpart team could be more readily identified and the team's and the counterparts experience drawn upon for the amendment design. Design could then go ahead with the collaboration of USAID and AID/W and should be in time for FY 81 obligation; or
- (3) if not in time, the third best scenario would be to design the amendment (a) after a contractor has been selected for the RCH Project (TA component) and (b) with the active participation of the Tunisian counterparts. In all cases, the MOPH should play an active role and indicate when it feels the time is most appropriate.

Programming recommendations can take one of two courses:

1. On a larger scale, the PP amendment can extend RCH project activity to include the 5 delegations of Kasserine province under the CTDA with modifications/additions where necessary to reflect the larger project area, the existing conditions in Kasserine and recent Tunisian health outreach program experience. This means some additional technical assistance and capital inputs (supplies and equipment for new/renovated facilities and perhaps some transport support). Program modifications will more likely be considered by the MOPH once the

technical assistance team for Siliana and Sidi Bouzid is in place;

2. On a smaller scale, the amendment can be limited to specific interventions that would serve to support RCH and MOPH national program goals. Such interventions may include:
  - (a) U.S. participant training (long and short term) in public health management and statistics;
  - (b) Providing further TA support to the internship program in community medicine;
  - (c) Short term technical assistance in blindness prevention as part of primary care training;
  - (d) Supporting a program of "internships" in rural areas for midwives;
  - (e) Providing funding for the MOPH's National Infant-Maternal Morbidity/Mortality Survey.

The following report accomplishes three tasks. First, in the text and the appendices, it summarizes the team's assessment of current needs and resources relevant to the design and execution of RCH in Kasserine province. Second, it analyzes the impact of project delays and the intervening policy and program changes of the MOPH on the implementation of RCH and its extension to Kasserine. Finally, although circumstances surrounding the project are historically unique to Tunisia, the report raises the larger issues these circumstances and challenges suggest as they might apply to any health project. The body of the report is organized around four such issues:

- I. Health Planning as a Process
  - A. National Commitment of Basic Integrated Health Care
  - B. Medjez el Bab: Pilot Project in Integrated Medicine
  - C. Implementation of a National Basic Health Care Program
  - D. RCH and the National Program
- II. Uneven Implementation of Project Components
- III. Limited and Shifting Resource Allocations
  - A. Budget and Finance
  - B. Transport

III. (Continued)

C. Health Manpower

IV. Health and Regional Development

The appendices give current data on health needs and resources for Central Tunisia and are intended as a resource for the framers of the amendment and for use in project implementation.

## I. Health Planning as a Process

A. National Commitment to Basic Integrated Health Care: Tunisia expressed its national commitment to basic integrated health care in the Fifth Five Year Economic and Social Development Plan (1977-81). The major thrusts presented were:

- 1) Development of preventive medicine and the integration of preventive and curative services;
- 2) Maximize cost-effectiveness of health expenditures by increasing utilization of health infrastructure and material;
- 3) Promote a more equitable distribution of facilities and medical and paramedical personnel.

National commitment is clear and has recently been reiterated by Prime Minister Nouira and the new Minister of Public Health.

The evolution of these objectives into a national program is a complex and dynamic process. To date there have been multiple pilot projects and experimental programs. Several foreign donors and various MOPH actors have participated in the ongoing process of defining the form that integrated medicine is taking and will take in Tunisia. As Design Study II emphasized, "The Tunisian rural health care delivery system is both dynamic and progressing." Many important issues, such as the integration of family planning and the job profile of basic health care workers, have not been resolved. There are, in addition, alternative models of how the rural health infrastructure will look (Appendix I). It is unlikely that a single uniform national program will be defined, but that the national profile of integrated health care will emerge out of the continuing process of health planning and programming.

Current MOPH planning and policy are benefiting from the success of several rural-based ongoing health delivery projects. A Tunisian-Belgian project on Cap Bon is extending preventive services including vaccination and family planning education in rural areas using public health auxiliaries. In Le Kef, a Dutch-sponsored project is based on extending services out of two maternal and child health centers through the use of mobile teams and extension workers including aides familiales. The Medjez el Bab Project in Integrated Medicine provides the most comprehensive model of a working Tunisian program of integrated health care delivery operating within existing financial, infrastructure and personnel constraints.

B. Medjez el Bab: Pilot Project in Integrated Medicine: This project, fostered by the MOPH and building on a moribund WHO project, is considered as the most important model for a national program for the following reasons:

- 1) It is staffed and has been developed entirely by Tunisians using Tunisian resources.

- 2) The project has functioned within existing budgetary allocations, with existing personnel allotments and with no additional infrastructure. It benefits from the fact that unlike other rural health facilities, it administers its own budget.
- 3) It has been successful in reaching the community and extending services. Notably, since the beginning of the project, hospital occupation rates have increased markedly while length of stay has dropped; almost half of the births now take place in maternity wards; and vaccination coverage has increased to more than 80%.
- 4) It has retrained paramedical workers to work as polyvalent health workers and has served as a training ground for medical students, interns and midwives from the University of Tunis.

The project functions out of the circumscription hospital of Medjez El Bab, which serves a population of 70,000, 65% rural and 35% urban. In addition, there are two maternal and child health centers, one of which has maternity beds, and 12 dispensaries. Mobile teams and itinerant polyvalent nurses go out, further, to community gathering points (P.R.) to perform both preventive and curative services for rural populations.

Physicians and midwives play a key role, administering the program, training paramedical workers, redefining the tasks of and supervising paramedical personnel, as well as delivering clinical services which back up the extension services. Training is accomplished through group sessions and in-service training.

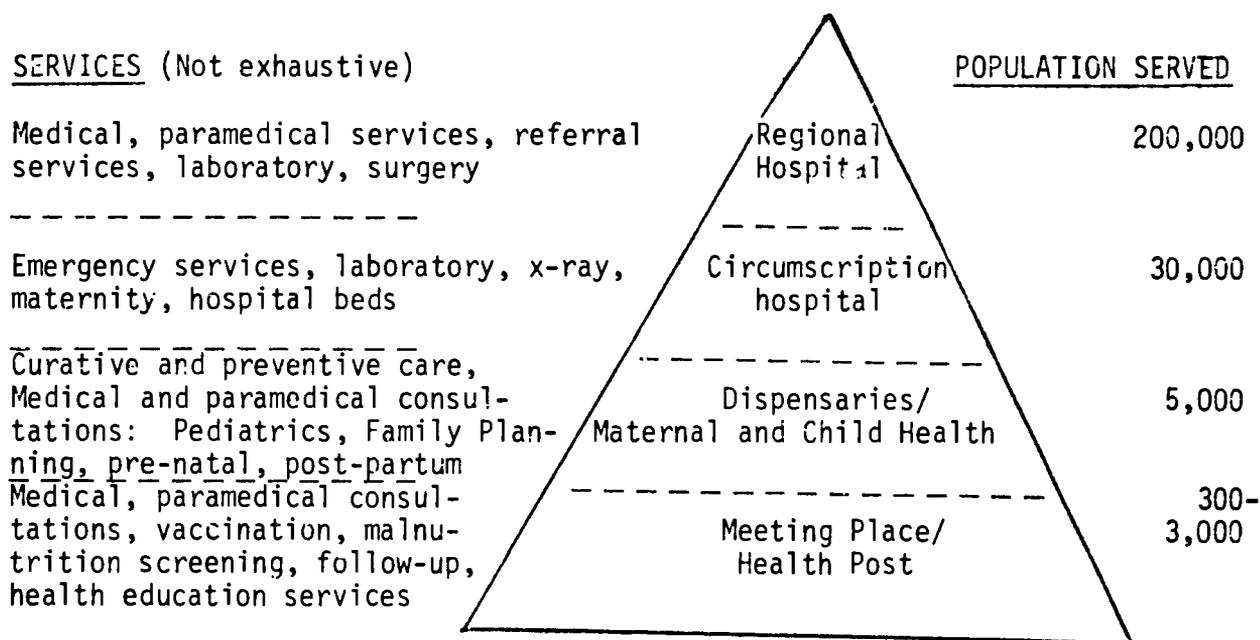
In addition, medical students and interns in public health from the University of Tunis and student-midwives have participated in the program. Two of the first interns will be replacing a Dutch team in Le Kef.

Maintenance of medical records and supervision of the daily schedules of paramedical workers is conducted at the dispensary level to ensure adequate medical coverage and supervision.

Community outreach has been accomplished by itinerant nurses and mobile medical and paramedical teams at central meeting places (shops, schools, houses, religious shrines, and so on), as well as at the household level to follow up on specific cases. Social workers (assistantes sociales) from the Ministry of Social Affairs have been assigned to dispensaries and maternal and child health centers. They play an active role in the health care team as educators and provide some services. The project recognized the need for a further outreach component and proposed a pilot project, using aides familiales, female health workers, to extend services to women in rural peripheral areas. This project has not been accepted by the Ministry of Health because of the expense and difficulty of developing such a new cadre of workers nation-wide.

Community participation has also begun to develop within the project area reflecting the increasing interest in and demand for health services. Two communities participated in enlarging their local dispensary, supplying both material and labor. Private citizens in Medjez El Bab (and in the Cap Bon-Nabeul project), offer their homes and shops as meeting places for the itinerant health worker and as places to post health-related information. There has also been some cooperation in supplying transport to patients to supplement the limited ambulance and vehicle capacity.

C. Implementation of a National Basic Health Care Program: Experience in Medjez El Bab, Cap Bon-Nabeul and in other projects has led to development of a model for a national program which was proposed for funding to the World Bank in November 1979 (Projet Démographique II). A four-tiered system was designed to serve populations on the provincial level:



The World Bank, through a proposed loan of some 10 million dinars (approximately \$25 million), would help the GOT realize the extension of this national program of basic health care delivery on a large scale. This program, not yet formalized, is envisioned to begin in early 1981. As an initial stage, the project would support the extension of the above model in the health regions of Sousse and Jendouba (excluding the province of Siliana) and in the province of Zaghuan through the construction of dispensaries and health posts, the improvement of existing circumscription hospitals, the construction of necessary lodging for medical and paramedical personnel and the supply of vehicles.

At the same time, the Bank's support is expected to be directed at the national level; to the support of training and curriculum development, development of an integrated Information, Education and Communication component,

and the strengthening of management and administrative capabilities, especially through improved data gathering, monitoring, evaluation and planning capabilities (MIS).

D. RCH and the National Program: Tunisian MOPH officials emphasize, and the team agrees, that the RCH Project, based on Design Study II, is consistent with Tunisian commitment to, and objectives and goals for, rural health care delivery. Because of this and the reasons discussed below, there is little interest within the MOPH in reopening the discussion of basic policy issues; modifications proposed now might only serve to further delay the implementation of the project. The MOPH believes and the team concurs that the most important step is to get RCH underway. Updating and re-examining planning criteria and derivative program proposals would best take place in the context of an ongoing project with the personnel who are responsible for implementation as active participants.

This section raises areas where changes have occurred or policies have been clarified in the two years of experience since the FHC team conducted its survey. These areas of change need to be considered in designing the implementation and extension of RCH.

The nature of outreach which was left, perhaps purposefully, undefined in Design Study II, has been clarified by experience in pilot projects and emerging national policies. The current alternative models of rural health infrastructure are compared in Appendix I.

Experimentation with job restructuring is leading to a redefinition of the role for paramedical workers. On November 30, the Minister created a Commission on Integrated Medicine to address the bureaucratic, educational and legal issues implicit in redefining the tasks of integrated health personnel. The Commission's report will certainly be completed by the time the technical assistance team arrives and will help to define the scope of needed curriculum and in-service training.

Because an essentially cautious approach to the delivery of curative services by non-medical personnel is followed, the role of physicians in basic health care delivery is stressed. Further, because of the increasing numbers of medical students, increased medical involvement in rural areas is a more immediate possibility. Therefore, the intern program planned in RCH should emerge as a central element of the project. Additional technical assistance personnel may be required through the amendment to strengthen this aspect of the project.

Because of the great national interest and activity in integrated medicine, RCH will have a more clearly defined but nonetheless important role to play. In fact, RCH will be the first province-wide approach as pilot outreach activity is currently on a limited scale. In addition, most of the current outreach programs have been carried out in the coastal regions which have different socio-economic and demographic characteristics. They are characterized by a more extensive and dense community structure in the form of towns, villages and agricultural cooperatives. The population

of central Tunisia is more dispersed, inaccessible, impoverished and bereft of health services and infrastructure than the northern and coastal areas. Fertility and infant mortality rates, among other indicators of health status, are higher. Since central Tunisia is similar to a large part of the country which is presently underserved, the lessons learned in basic health services provision will be directly relevant to the national program.

## II. Uneven Implementation of Project Components

Because of delays, budgetary contingencies, programming errors, changing policies and other unanticipated factors, the sequence and timing of the implementation of any project may bear no relation to programming needs or goals. However difficult it is to predict what delays and problems of implementation will occur, uneven implementation of project components of some kind is virtually inevitable. There can be important consequences of this for any project, i.e.:

- 1) Loss of momentum, reflected in hesitancy to implement other project elements and reluctance to commit additional human or material resources.
- 2) Loss of interest in project activities, problems and results; disinterest in innovative (sometimes time-consuming), solutions.
- 3) Isolation of a project from national planning. Whereas representatives of foreign donors are external to a national planning process, they may participate and act as catalysts for new approaches. The advantages of participation are lost, however, when continuity of personnel and program implementation are broken.
- 4) Public interest in and involvement with a project diminishes when there is uneven implementation and a project gets off to a "bad start".

In the case of RCH, considerable delays in identifying a contractor, fielding an acceptable team and prolonged negotiations leading to host country contracting have resulted in an uneven implementation of project components with construction far out-stripping technical assistance, curriculum development, research and other project elements. The first phase of construction in Siliana and Sidi Bouzid will be completed by June 1980. The second will begin in January 1981.

In developing plans for the project amendment, the team encountered some of the consequences outlined above: a disinterest in innovation, isolation from the mainstream of the planning process, shift of interest to other donors and programs. The strategy for amendment design needs to take into account this situation and take steps to ameliorate it. The main burden of correcting the situation, however, must fall on the Mission and on the technical assistance team when it is fielded.

### III. Limited and Shifting Resource Allocations

Health resources in rural Tunisia are limited and subject to reallocation and change from influences that are often external to on-going activity and current need.

Budgetary, manpower and transportation resources are most critical to basic rural health services development and will have profound impact on the direction and role of the RCH project (including its amendment) in central Tunisia. For that reason, the following is an overview of current trends in (1) MOPH budgetary and financial management, (2) available transport and (3) health manpower training, policies and staffing patterns.

#### A. Budget and Finance

The MOPH is cognizant of its limited budgetary resources (particularly foreign exchange) and is attempting to redress inequities in the health service delivery system through more cost-effective programming and a reallocation of resources.

To get an understanding of the existing MOPH system of budget and finance, a brief overview is outlined below. Following is a discussion of incremental expenditure associated with AID-financed project activity in the health sector and the impact of additional expenditure on the MOPH's budget. In addition, an overview is given of recent events affecting the MOPH's finance and budgetary management that could influence the direction and level of future resource flows in the health sector.

The GOT's annual budget is divided into three categories:

Title I - The functional or operating Budget (personnel, supplies, materials, some transport related expenditure), administered by the Ministry of Finance;

Title II - The investment or Capital Budget (construction, renovation, new equipment, equipment replacement, special programs - includes vaccination programs and health education campaigns) administered by the Ministry of Plan;

Title III - The corrections budget (not necessarily an annual occurrence).

The budgetary process of the MOPH involves the Director of the Office of Planning and Statistics along with the Directors and Administrators of the Institutes and the University and Provincial Hospitals. To draw up the next year's budget, a negotiating process begins between the Planning Office and the various Directors; next year's estimated requirements are based on last year's budgetary allocation. Since information on

program and facility costs as well as potential consumer demand for services (based on morbidity data) is not available, only a rough idea of what estimated requirements might be, exists.

According to the Director of Planning, the budgets drawn up on the provincial level (Title I) are badly done. Instructional information is now being distributed to Administrators in order to improve the quality of the estimate and standardize budgetary procedures. In addition, in order to properly justify budgetary requirements and prioritize need, the Office of Planning is in the process of setting up the capacity for ascertaining, (1) trends in morbidity and mortality by province, and (2) costs of operating health facilities (especially dispensaries and salles de soins).

Budget increases for all sectors are strictly set by the Prime Minister's Council which has final approval. Due to the GOT's severe foreign exchange constraint, allocations for the Title II budget are especially strict and increases difficult to get. The Title II fund is closely monitored by the Ministry of Plan. On the provincial level, the governor's office plays an important role in its administration.

On the provincial level, disbursements for Title I funds are the responsibility of the provincial hospital administrator. This includes personnel payments, transport and equipment maintenance, supplies and drugs (through the provincial hospital's central pharmacy). Because the administrator does have control over disbursements, this often means the provincial hospital will monopolize funds. If a conflict of need arises between the provincial hospital and some of the outlying facilities (i.e., circumscription hospitals, dispensaries, salles de soins), the former gets first priority to the detriment of the latter. This bias is indicative of the entire health delivery system: Institutes and University and Provincial Hospitals located in urban areas, absorb 74 percent of the total Title I budget.

Unfortunately, a complete picture of allocations by province (Title I) cannot be learned from the budget as not all expenditure is covered by the provincial hospital's budget (the largest and most important health facility in the province). Some commodities, personnel and other miscellaneous expenditure are included under general headings not broken down by province. Nor can it be ascertained what percentage of funds are absorbed by the various health service facilities located in the rural and urban areas.

Any budgetary analysis of the impact of incremental expenditures due to the implementation of the RCH project in Siliana and Sidi Bouzid or the impact of extending project activity into Kasserine is premature. The RCH project has not yet begun implementation (with the exception of construction) and project components for an add-on have not yet been defined. An update, however, of the budgetary allocations to Siliana and Sidi Bouzid provinces since FHC first conducted its analysis in 1977 is in order to get an idea of the future availability of funds to cover the costs of an

expanding outreach system. In addition, a brief summary will be given of events subsequent to the report that may influence future allocations to the area. The financing of health care in Tunisia will then be discussed.

Using the 1976 budget data, the FHC Design Study II Report concluded that the recurrent cost impact of RCH project activity on the area's budget was reasonable. To meet planned expenditure, the budget for the area would either have to grow at a real rate of 12.7% per annum to absorb additional operating costs in three years or 7.4% per annum to absorb additional costs in five years.

To get a rough idea of the trend in the health sector (MOPH) and provincial (Siliana and Sidi Bouzid) health budgets since that time, an analysis of the MOPH recurrent budget indicates a growth rate of approximately 10% per annum since 1976 (at constant 1976 prices)<sup>1/</sup>. In addition, the health sector's share of the national budget has remained fairly constant at 8%. This is well above the average for developing countries which is around 5%. Crudely estimating Siliana and Sidi Bouzid provincial budgets using FHC methodology<sup>2/</sup>, indicates a per annum growth rate of roughly 11% from 1976 to 1979 (at constant 1976 prices). Of course, it must be remembered that it cannot be ascertained where the increased budgetary allocations were spent (i.e., rural vs. urban health services, curative vs. preventive, etc.). But in any case, the additional allowance which is above the mid range of what FHC recommended was needed to meet incremental project expenditure is encouraging.

Since the Design Study II Report, three events have occurred that will influence MOPH budgetary policy and allocations. First, delays in RHC project implementation have resulted in increased capital costs due to inflation, particularly in the area of construction and equipment purchases. The MOPH has estimated a shortfall of funds in the neighborhood of 10 to 15 percent due to escalating construction costs. And, the equipment prices cited in Design Study II are said to be one-fourth of their real value. As a consequence, construction and renovation in Siliana and Sidi Bouzid have been cut back to the minimum deemed necessary (i.e., 16 Type A<sub>1</sub> facilities, four Type C<sub>1</sub> facilities and one Type B facility are planned for construction). In Kasserine, the MOPH plans to build (with GOT resources), 17 Type A<sub>1</sub> facilities, two A<sub>2</sub>, one C<sub>1</sub> and one Type B. Lodging will be included for the health workers. Given the current constraint on foreign exchange, the GOT will be hard pressed to adequately equip these facilities without external assistance.

Second, the World Bank sponsored project that is adjacent to Siliana province will most probably have a significant impact on MOPH allocations for primary care services in rural and urban areas. Unfortunately,

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<sup>1/</sup> Please refer to the statistical annex for the MOPH Title I budget.

<sup>2/</sup> That is, inflating the provincial hospital budget by 125 percent to account for allocations outside of this line item.

at this time that impact cannot be assessed because the magnitude and timing of project inputs are currently not known. In any case, to avoid competing for GOT resources (i.e., personnel, fuel, supplies, etc.) and straining the absorptive capacity of the area, it is crucial that coordination of donor efforts occur.

Third, the MOPH has recognized the importance of being able to account for program and facility operation costs and important budgetary revisions have been proposed. As of January 1980 the MOPH will remove all personnel expenditures from the provincial hospital budget and shift it to the budget for central administration. Eventually, an administrative capability will be established at the (health) regional level to take charge of the responsibility for determining budgetary requirements and making payments; personnel and other operating expenditures will be placed under the control of the health regions. Budgetary line items are proposed to be broken down by facility (i.e., salle de soins, dispensary, etc.) and the capacity to do so will be developed over the next few years through an improved management information and medical records system. The direction of expenditure as well as the efficiency with which allocations are used can then be more readily obtained and used to reinforce and strengthen management/administration capability. In addition, requests from the regions for increased budgetary allocations can be based on evidence rather than on the estimation.

The financing of health care is done through a variety of means. Most salaried employees are covered by the CNSS (National Social Security System), including government workers. Members of the CNSS are required to utilize the government provided health services that are under the auspices of the MOPH, and are reimbursed for 85 percent of incurred expenses.

As the demand for private health services has increased, some private employers are being pushed into buying supplemental insurance (semi-private and private), thus creating an alternative to the CNSS and the public health system. Reimbursement under these plans ranges from 85 to 100 percent of consumer expenditure. In addition, increasingly significant out-of-pocket payments are being made for health services in the private sector.

Other modes of health services financing through special programs include: (1) the Caisse Franco-Tunisienne, a reciprocal agreement established with the French government that provides free care for French employees and their dependents who live in Tunisia and vice versa; (2) special services for the military (which has its own hospital system); (3) public insurance for university students, the national guard and the police; and (4) free services for the urban and rural poor (indigents). With the exception of the military, all are provided health care under the public health service system. Indigents identified by the omda (community leader), must carry a carte de soin (health card) to receive free medical care. The MOPH is not reimbursed by any external source for health service expenditure on indigents; costs are absorbed by the annual budget.

Looking at the source of finance for system users on the dispensary level in Siliana, Sidi Bouzid and Kasserine provinces, the bulk are indigents at 56.1, 71.5 and 62.5 percent of total consultations respectively. The next largest consumer category include the CNSS members who represent 26.6, 20.6 and 29.1 percent of total consultations at dispensaries in Siliana, Sidi Bouzid and Kasserine provinces respectively.

Those who pay out-of-pocket make up 1.0 percent of consultations in Siliana, 1.2 percent in Sidi Bouzid and 0.9 percent in Kasserine.<sup>1/</sup> The rest, who represent a minor percentage of the total, fall into other categories.

#### B. Transport

The success of a rural health care delivery system is dependent upon adequate transport to resupply health facilities and to move patients and medical personnel to and from those facilities. In central Tunisia, the MOPH is confronted with many of the transport and logistical problems that are common to developing countries:

- 1) Lack of foreign exchange which prohibits the purchase of necessary vehicles and needed equipment;
- 2) Lack of adequate roads, particularly during the rainy season;
- 3) Lack of a properly functioning cold chain system;
- 4) Lack of regular maintenance for vehicles and equipment which render them inoperable and shorten their lifespan.

These problems are exacerbated by the widely dispersed population of central Tunisia which makes the job of providing accessible health services that much more difficult.

The MOPH has a clear idea of its transport problems and vehicle needs in rural areas (cf. Projet Démographique II). While AID does not envision funding vehicles under the PP amendment, the broad issues of transport need to be addressed because of their long term importance both to the project and to the national program in rural areas.

The FHC team in conjunction with the MOPH examined transport requirements in Siliana and Sidi Bouzid and determined that the number of vehicles (4-wheel drive) that was needed for supply distribution and personnel/patient transport was two per delegation site. Initially, however, one functioning dual-purpose vehicle for each delegation site was felt to be sufficient (see Design Study II, p. 54).

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<sup>1/</sup> MOPH, Sur l'Activité des Dispensaires Durant le 2eme Trimestre 1978, (October 1979).

From a casual observation, it appears that the total number of MOPH vehicles in Kasserine province meets this minimum requirement. In Kasserine city, the provincial hospital has at least four vehicles used as ambulances plus an unknown number of vehicles that are used by the mobile health teams. In addition, each of the four circumscription hospitals has at its disposal one land rover, one ambulance and one car for the resident physician.

Once the RCH project and its extension into Kasserine is underway, the number of vehicles in central Tunisia may prove to be insufficient; i.e., Design Study II may have underestimated the minimum number required for successful project operation; the project may create additional needs (such as the transporting of interns to the project area); current maintenance practices in central Tunisia may prove to be insufficient to keep vehicles operating regularly.

Therefore, after the project is underway, short term technical assistance would be appropriate to examine the entire question of transport and vehicle maintenance for health care delivery in central Tunisia. Among other issues to be considered should be the use of public transport and the role of the private sector in transportation and maintenance. For example, one of the activities planned under the CTRD umbrella is to beef up the public transport system, putting in more buses and improving the roads, particularly those with access to health facilities. In addition, patients who can afford it travel considerable distances for health care services in louages (group-hired taxis with pre-set destinations), taxis, private cars and trucks as well as buses and trains. Although less well developed in the central Tunisia area, these existing means of transport are a resource and RCH planning for logistics and transport should take account and make maximum use of them.

Eventually, community participation in the provision of transport for patients referred to more distant health facilities may also be a solution. The health project at Medjez El Bab which benefits from community cooperation in supplying transport has demonstrated the feasibility of this idea.

The use of private sector maintenance facilities and personnel should also be considered as a means to reduce the difficulty of obtaining spare parts from Tunis and the long down-time of vehicles waiting to be repaired at central government maintenance yards. Preliminary observation indicates that the problem with utilizing the private sector may not be so much the lack of funds, but the maldistribution of budgetary resources. A larger allocation of funds from the central MOPH to the provinces (or, to go along with plans for decentralization, the sanitary regions) might enable health administrators to handle maintenance problems more quickly and effectively through utilizing private sector maintenance capabilities.

Thus, the search for creative and cost-effective solutions in this critical area should benefit not only from an understanding of Tunisia's needs and resources but also from the experiences of the MOPH and other AID-sponsored projects and the public/private transportation system itself.

### C. Health Manpower

The RCH project addresses the lack of trained health personnel in central Tunisia in two principle ways:

- 1) By retraining currently under-utilized and ineffective paramedical personnel and restructuring their job descriptions to reflect their increased skills.
- 2) Strengthening the internship program in preventive medicine.

Recent figures indicate that the number of paramedical and medical personnel in the three provinces of central Tunisia has increased since Design Study II (Appendix II C gives current staffing levels). Kasserine has greater numbers of personnel than Siliana and Sidi Bouzid in all categories. Therefore, it is anticipated that there will be sufficient personnel available to staff facilities at least at the levels which FHC regarded as minimal.

Long-term staffing is dependent, however, on national training, recruiting and staffing patterns. Recent changes in these areas will have an impact on the personnel available for assignment and training in central Tunisia.

Physicians: As the Tunisian system of primary health care has developed, the physician plays a central and critical role even when he does not personally deliver all of the services. The physician:

- . delivers services, not all of which require high levels of skill and training
- . serves as the point for referrals, legitimizing the entire system (including peripheral, non-medical personnel)
- . bears the major burden of training paramedical personnel in both formal and non-formal contexts
- . supervises and provides legal coverage for paramedical personnel performing preventive and curative acts
- . is the catalyst for instilling enthusiasm, motivation and high performance in primary care workers
- . is the most effective promoter of innovation in the health care system
- . plays an important administrative role in health delivery systems

Despite the fact that there is a shortage of physicians, especially Tunisian nationals, in rural areas (Appendix II C), there has been no

reduction in the scope of work they are expected to fulfill. This shortage and the inability of the few over-extended physicians to meet these unrealistic expectations are the principle causes of the problems in the rural health care system.

Tunisia is attempting to solve this problem by: 1) assigning MOPH physicians on a more equitable basis (in 1979, Tunis lost 38 MOPH physicians while the rest of the country had a net gain of 49, (Appendix II C); 2) increasing medical school enrollments and developing community medicine programs and internships; and 3) encouraging medical school involvement with rural areas by dividing the country between the three medical faculties. (Tunis' area includes Siliana, Sousse's Kasserine; and Sfax's Sidi Bouzid). Because of the critical role of the physician and because the number of medical students has increased markedly and will peak in the next few years, the portion of the RCH project addressed to strengthening the internship program will be particularly important.

Senior Medical Technicians: A recent change in paramedical training has been to raise the level of certain categories of nurses to that of senior medical technicians. Training for these categories is conducted by the medical schools and entrance requirements are higher (the baccalauréat). This change affects mid-wives, x-ray technicians, nutritionists and others (Appendix III C.2).

The question should be raised if increasing entrance requirements and length of training will have the effect of reducing personnel available to staff rural and provincial facilities especially in such important categories as obstetrics, x-ray, and nutrition. This is of particular concern since Kasserine and other rural provinces are already understaffed in these categories vis a vis the national total. For example, as of June 1979, there were no x-ray technicians in any of the three central Tunisia provinces (Appendix III C.2).

Furthermore, the training in the medical schools may not be appropriate to the integrated approach supported and needed in rural areas. In the case of the mid-wives, they have been almost totally supplanted by the new category of senior medical technicians in obstetrics (Appendix II D.3). Their training, emphasizing obstetrics, is inappropriate to the more general approach needed in MCH centers and rural facilities. Officials working in integrated health facilities in Tunis have found that these new workers have to be reoriented to the more integrated approach through in-service training in order to serve as effectively as lesser-trained mid-wives. Because of the importance of mid-wives to rural programs, the RCH amendment might include some activity in the form of internships or field activity directed specifically to this new category.

Other Paramedical Personnel: Paramedical personnel include hospital nurses, specialized nurses and public health auxiliaries. This latter category includes the aides-soignants and agents de santé and is the category to whom much of the training efforts of RCH will be directed.

Experience with this category of worker in Medjez El Bab and other pilot projects has helped to clarify the future roles they may be able to play in rural Tunisia. The approach employed so far can be characterized as essentially cautious. It is still illegal for paramedical workers to "practice medicine". Paramedicals in existing programs offer curative services only under close medical supervision. For example, at Medjez El Bab, although these workers play an expanded role, medical personnel supervise the daily schedule of activities of non-medical workers.

Paramedical personnel are trained at 14 Public Health professional schools located throughout the country. There is, however, no public health school in central Tunisia. Plans to build one in Kasserine appear to have been dropped. Currently, students from the three provinces of central Tunisia go to the schools in Gafsa and Le Kef or elsewhere for training. (The team has requested statistics for the percentage of students currently enrolled who are originally from central Tunisia). In theory, workers are assigned throughout the country after graduation without regard to origin. In practice, it appears to be difficult to attract personnel to rural areas on a permanent basis unless they are from that region. It needs to be determined in the near future if Central Tunisia will suffer from short falls in trained paramedical personnel in the long run because of the lack of local training facilities and under-representation in the existing public health schools. If this is so, as it appears likely, it also needs to be determined whether such measures as supplemental local training or concours spécifique might be taken to increase future available personnel levels in central Tunisia.

Community Health Workers: Despite the commitment to a proliferation of health facilities and health personnel in rural areas, there appears to be a need for greater and more direct contact between health personnel and rural people especially in certain public health campaigns which need near universal participation, in dispersed areas where access to health services is difficult and infrequent and where movements are circumscribed. A number of pilot outreach projects, particularly those in family planning, have found it useful to add a low-level female worker to extend health services to the household and to facilitate contact with women.<sup>1/</sup> In some regions, social workers (assistantes sociales) from the Ministry of Social Affairs have cooperated with the MOPH on an ad hoc basis to provide such community health services.<sup>2/</sup>

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<sup>1/</sup> Notably the Dutch Le Kef project, community based contraceptive distribution projects in Bir Ali and Jendouba, family planning education in Kasserine (FPIA), and integrated services in Mahdia (ASDEAR).

<sup>2/</sup> The category of assistante sociale was formerly part of the Ministry of Health and Social Affairs. When this ministry was divided into the Ministries of Health and of Social Affairs, the latter was assigned the assistante sociale.

MOPH officials have considered the possibility of introducing a female worker, an aide familiale, as a new cadre of worker. However, this has been rejected both on an experimental basis in the Medjez El Bab project and as part of the national health program for two reasons, briefly mentioned above. The first is bureaucratic. A new job category would have to be created in the civil service statutes. However, the need to recruit female workers willing to remain in rural areas who might have little formal education, might conflict with the necessity of meeting educational requirements for government employees. The second, and more fundamental reason, is financial. The MOPH estimates that 6,000 aides familiales would be necessary for national coverage (1:1,000). At approximately \$100/month per worker, the estimated annual cost would be \$7,200,000, considered prohibitive.

A more feasible approach is 1) to continue to work on an ad hoc basis with the Ministry of Social Affairs' workers with the hope that this link may be formalized in the future, and 2) to involve workers from other ministries and local offices for orientation and cooperation in specific health campaigns. In addition, in the context of an ongoing project, it may be possible to experiment with other forms of community participation and outreach. In addition to the cooperation of individuals such as religious leaders and businessmen, five bases for contact and participation may be considered.

1) Omda: The lowest level of political organization is the Omdat, headed by the Omda. Appointed by the delegate who, in turn, is appointed by the governor, the Omda may have considerable political power as well as daily and intimate contact with the population in his area. Currently, he plays a role in health programs, recording births and deaths; determining which families qualify for indigent status and thus for social service programs including health care and child feeding programs; and motivating the population to participate in government programs. In some cases, the wife of the Omda has also played an influential role, for example, in motivating women to accept birth control. In Kasserine, there are seven delegations and 80 Omdats (1979).

2) The Neo-Destour Party: The Tunisian political party and the associated women's organization, the Union Nationale des Femmes Tunisiennes (UNFT) play a significant role in educating and motivating people with respect to government programs. Historically, the UNFT, in particular, has been active in family planning education, primarily in urban areas. They have had education and handicraft training programs in rural areas for girls. The number of Destourian party cells in Kasserine has recently increased from 96 to 162.

3) Kinship structure: Kinship in central Tunisia is generally traced through the male line. Groups of brothers, patrilineal extended families and clans are important social and economic units, often serving as the basis for residence, social ties and marriage, and access to land, animals and water. It is advisable to be aware of and to respect clan lines when identifying a community health worker or programming home visits. Aides

familiales operating with the Kasserine family planning program have faced difficulties when attempting to operate across clan lines.

4) Traditional practitioners: Traditional practitioners, especially traditional birth attendants (qablas), continue to play an important role in central Tunisia despite the fact that they are operating illegally and against MOPH policy. An estimated 90 percent of births in Kasserine occur at home attended, in many cases, by traditional birth attendants. Some pilot projects have established contacts with qablas and given them instruction in sterile techniques and, in at least one case, supplies. However, it is unrealistic to expect that any formal program could be developed in the near future without a major and unexpected national policy shift. Currently, the women themselves are reported to be wary of official contact because of fear of reprisals. An attempt by family planning officials in Kasserine to establish a training program directed at qablas failed because the women were suspicious and refused to participate. Finally, the informal nature of the role of qabla poses some problems. Many function only occasionally and informally, as birth attendants. Only a few have a wide reputation and attend many births. Because of these factors, and because many rural women give birth unattended, even by a qabla, an educational program on pregnancy and birth needs to be directed at a wider audience than traditional birth attendants.

5) Schools: School health is supervised by a school nurse or, where there is none, by the itinerant nurse. Responsibilities include preventive tasks such as vaccination, inspection, following cases of contagious disease and referral of suspected cases to a physician, as well as supplying teachers technical assistance in health education. The team suggests that the TA team explore the needs and potential for school participation, directed at the students themselves as well as to the larger community through a child-to-child or child-to-family program.

#### IV. Health and regional development

While the importance of health-related factors in regional development projects is often stressed on paper, in reality, health is rarely considered as a critical area of intervention. Programs with regional economic goals usually emphasize projects with direct and measurable economic impact, often to the exclusion of projects with more indirect effects.

This is specifically the case in central Tunisia despite the fact that the proposed expansion of the Rural Community Health project would formally be a sub-project of the larger Central Tunisia Rural Development (CTRD) project. In part this reflects the fact that the Tunisian implementing organization, the Central Tunisia Development Authority (CTDA) has only recently received legislative approval and is still an embryonic body. Its initial focus is thus, necessarily, on consolidating its regional political base and on developing projects with immediate and demonstrable economic impact; primarily those related to agriculture.

The CTDA has not yet defined an expanded role for the future in the area of health. Organizationally, there is a Health, Nutrition and Family Planning section under the Division of Rural Services. Dr. Daly, the Regional Director for the Gafsa Public Health Region (which includes Gafsa, Sidi Bouzid and Kasserine provinces) has been appointed head of this section. As no other members of this section have been identified, it exists, so far, only on paper. In an initial discussion of the topic of health in regional development, Mr. Bougateff, the Director of CTDA, made it clear that the CTDA supports the health programs and priorities envisioned by the GOT/MOPH. However, the CTDA has neither the staff nor the resources to initiate or administer health projects.

Furthermore, national health programs are run almost exclusively within and by the MOPH. The MOPH has little history of inter-ministerial or inter-agency cooperation which would bear on the implementation of a regional health project. Within the MOPH, the National Office of Family Planning and Population probably has the most experience in inter-ministerial cooperation, especially in the realm of health education. Nevertheless, the MOPH is willing to cooperate with the CTDA in a multi-sectoral approach but sees, as does the Mission, that the initiative for such an integrated approach needs to be Tunisian and originate primarily within the CTDA.

Fostering a multi-sectoral approach to socio-economic development is a long-term undertaking. As a first step to encourage the integration of health into the CTDA's approach, the team recommends that the GOT and USAID consider steps to strengthen the CTDA's capacity to gather and analyze data on the interrelation of health and economic factors. Specifically, the team urges that the CTDA consider including in its planning unit, a health or social planner who could bring a holistic approach to socio-economic development planning.

In addition, such advisory groups as the Universities of Wisconsin and Cornell should be alerted to A.I.D.'s concern with health as an integral part of regional development and supply advisory staff who can bring these concerns to the fore. <sup>1/</sup> As a consequence, base line evaluation and monitoring data should: (1) Use health and nutritional status indicators as important base line indicators of the quality of life (in addition to the economic and consumption oriented indicators now used), and examine the impact of projects on these indicators, i.e.:

- . The impact of switching from grain farming to irrigated gardens and cash crops on family diet. cursory observations suggest that fresh produce grown in garden plots is usually shipped for sale in urban areas and may not find its way to local tables. In addition, purchased food is often of little nutritional value -- coffee, tea, sugar and white bread -- so that overall, the irrigated gardens may have an unintended deleterious effect on local diet;
- . Improved availability and cleanliness of water sources may result in a reduction in infant mortality and morbidity, especially when combined with an effective educational campaign.

(2) Examine the interrelation of health and economic factors and the influence of health status on regional socio-economic development, i.e.,:

- . Determine the relation of health status of a worker and his family with such economic factors as productivity and absenteeism;
- . Ascertain the importance of female agricultural labor and the significance of reproductive behavior and maternal and child health to agricultural productivity.

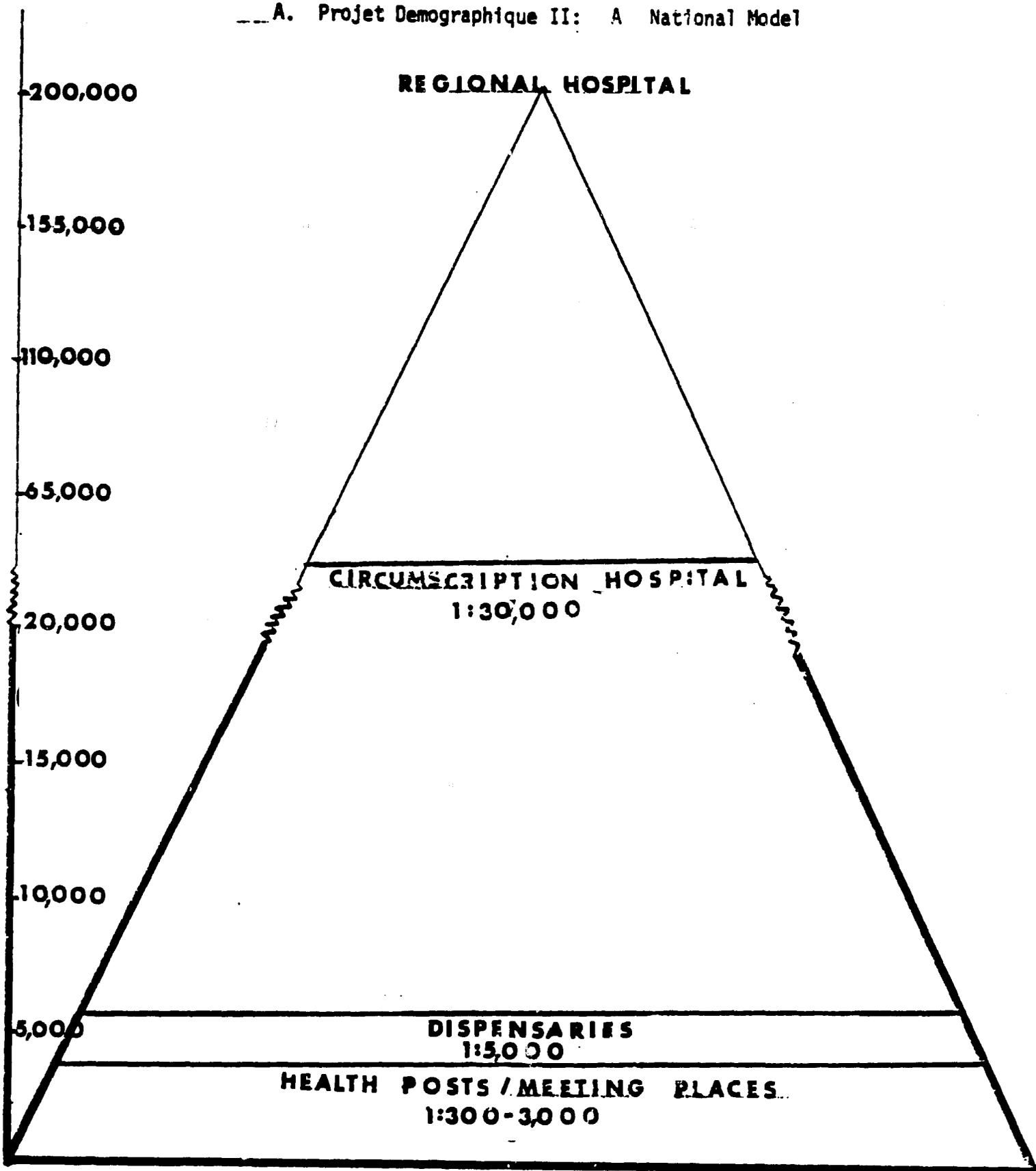
Such integration on the level of research and planning may provide the long term basis for future multi-sectoral cooperation and project execution which will be more than mechanical or externally imposed.

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<sup>1/</sup> An informant survey questionnaire prepared and administered with Cornell University in the fall of 1979 as a CTRD baseline survey almost totally ignores health, nutrition and population as socio-economic indicators.

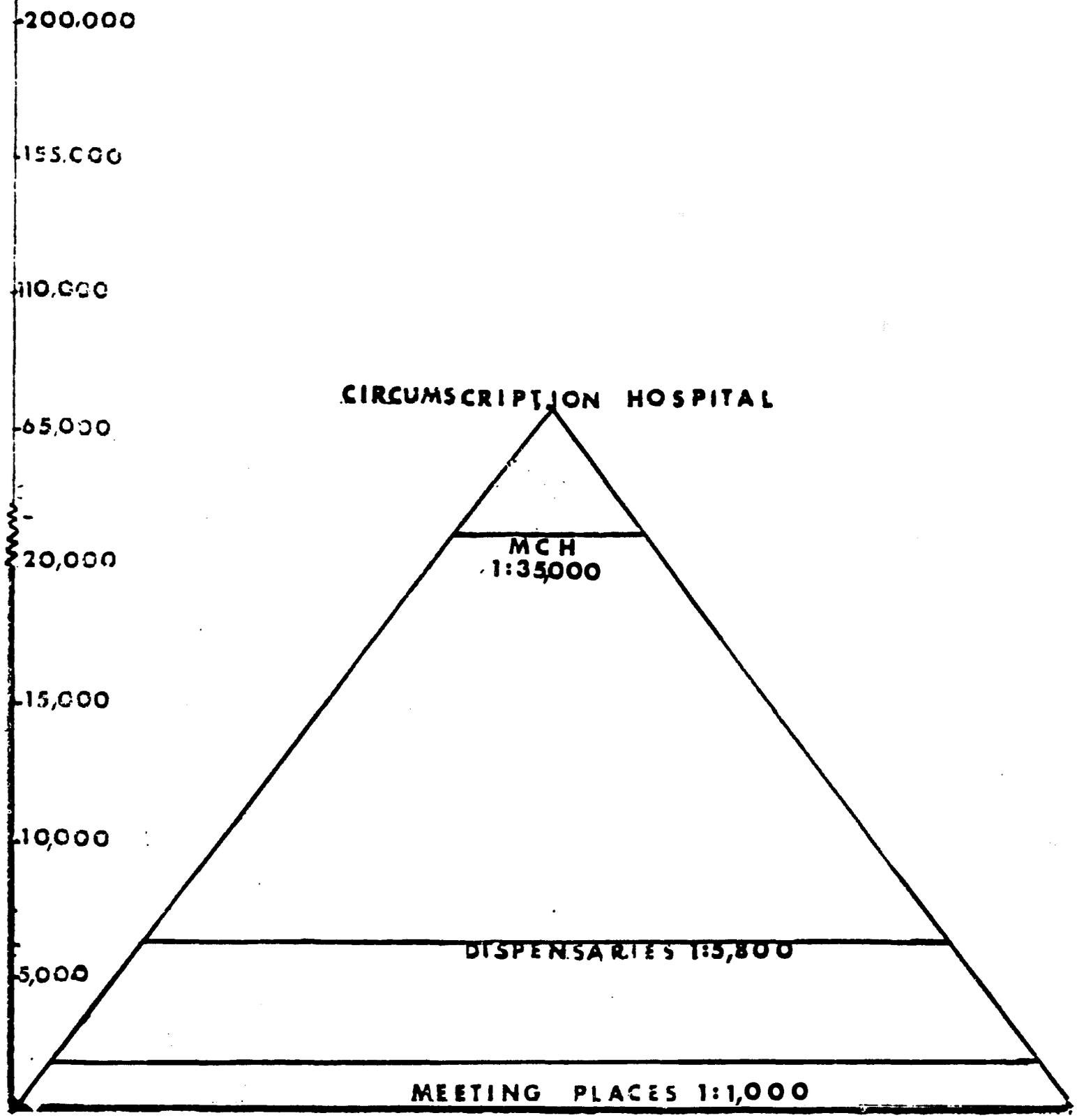
## **I. Models of Rural Health Infrastructure**

A. Projet Demographique II: A National Model



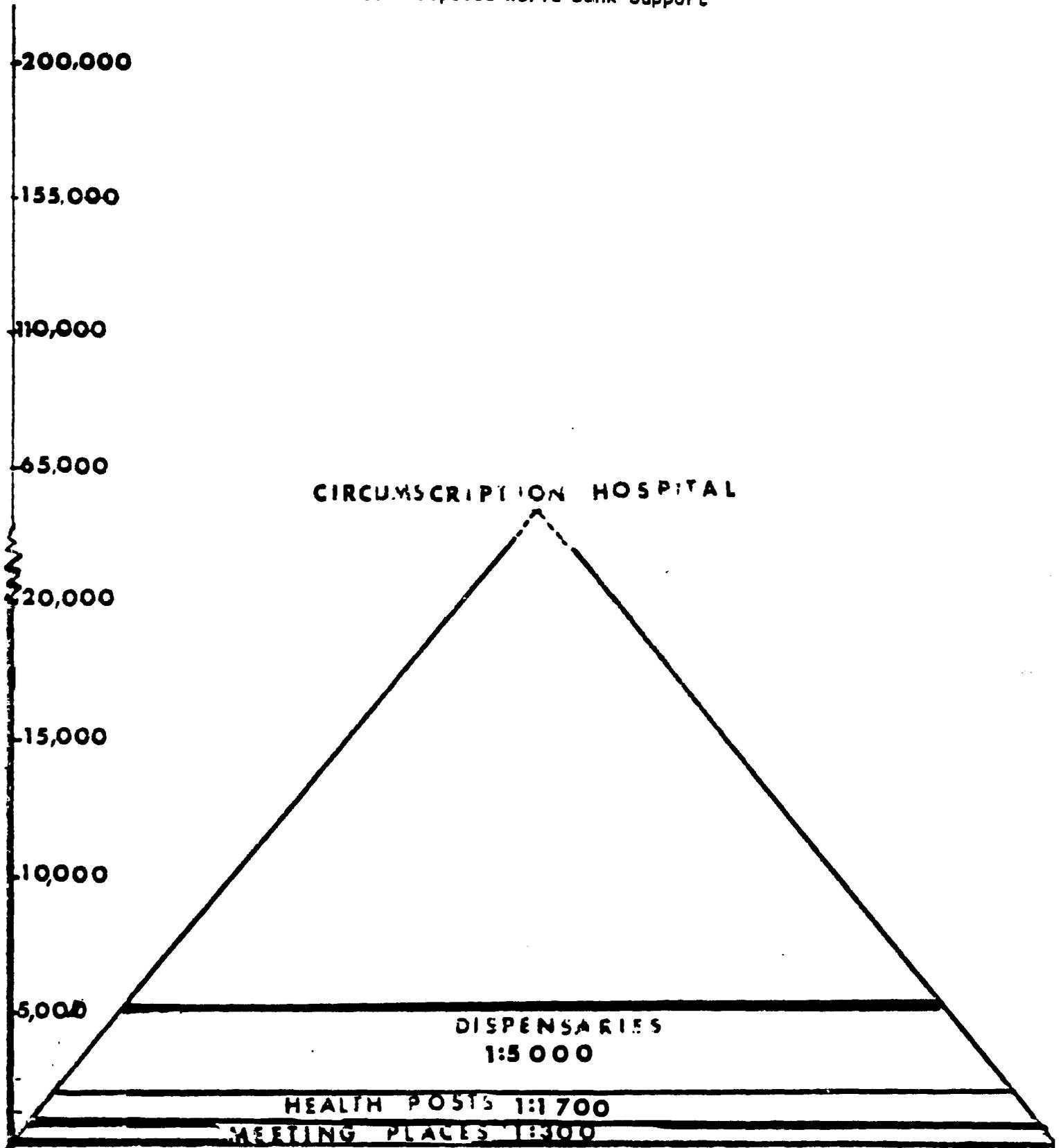
Source: Projet Demographique II

B. Medjez el Bab Pilot Project in Integrated Medicine.

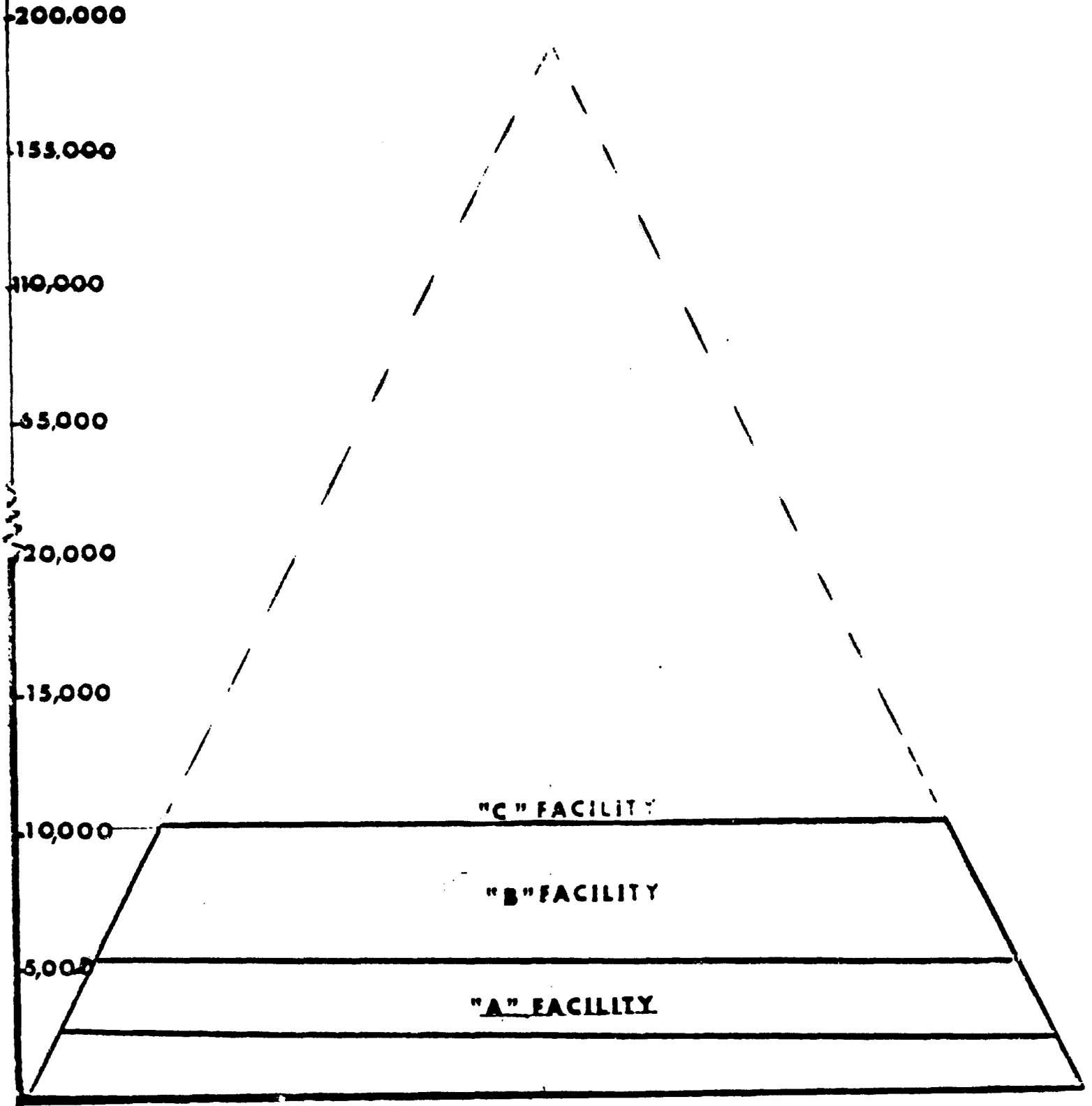


Sources: Projet Tunisien de Médecine Communautaire, Annual Report 1978.  
Dr. Sabri, Project Coordinator

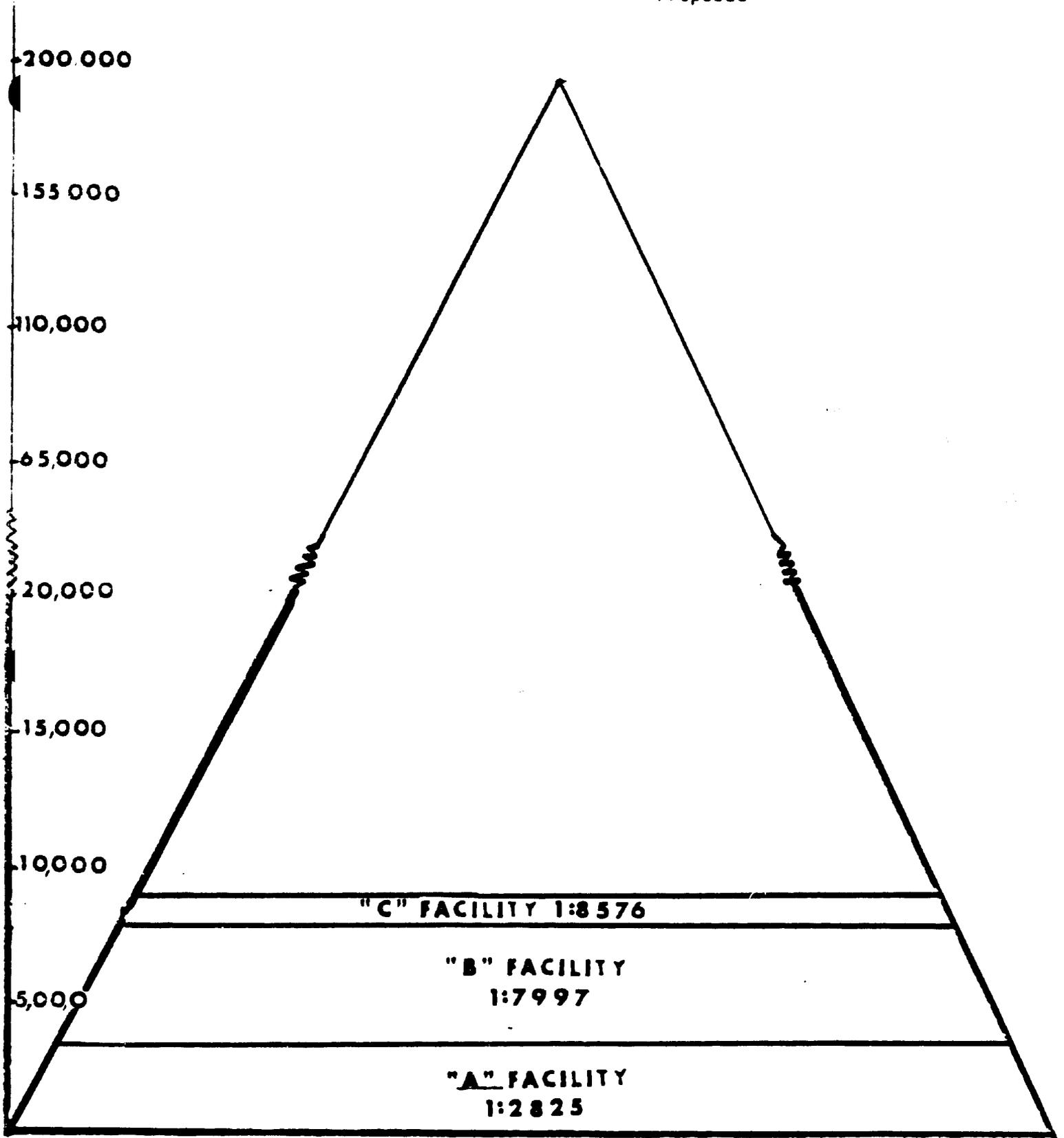
C. Proposed World Bank Support



D. Design Study II: Proposed Facilities

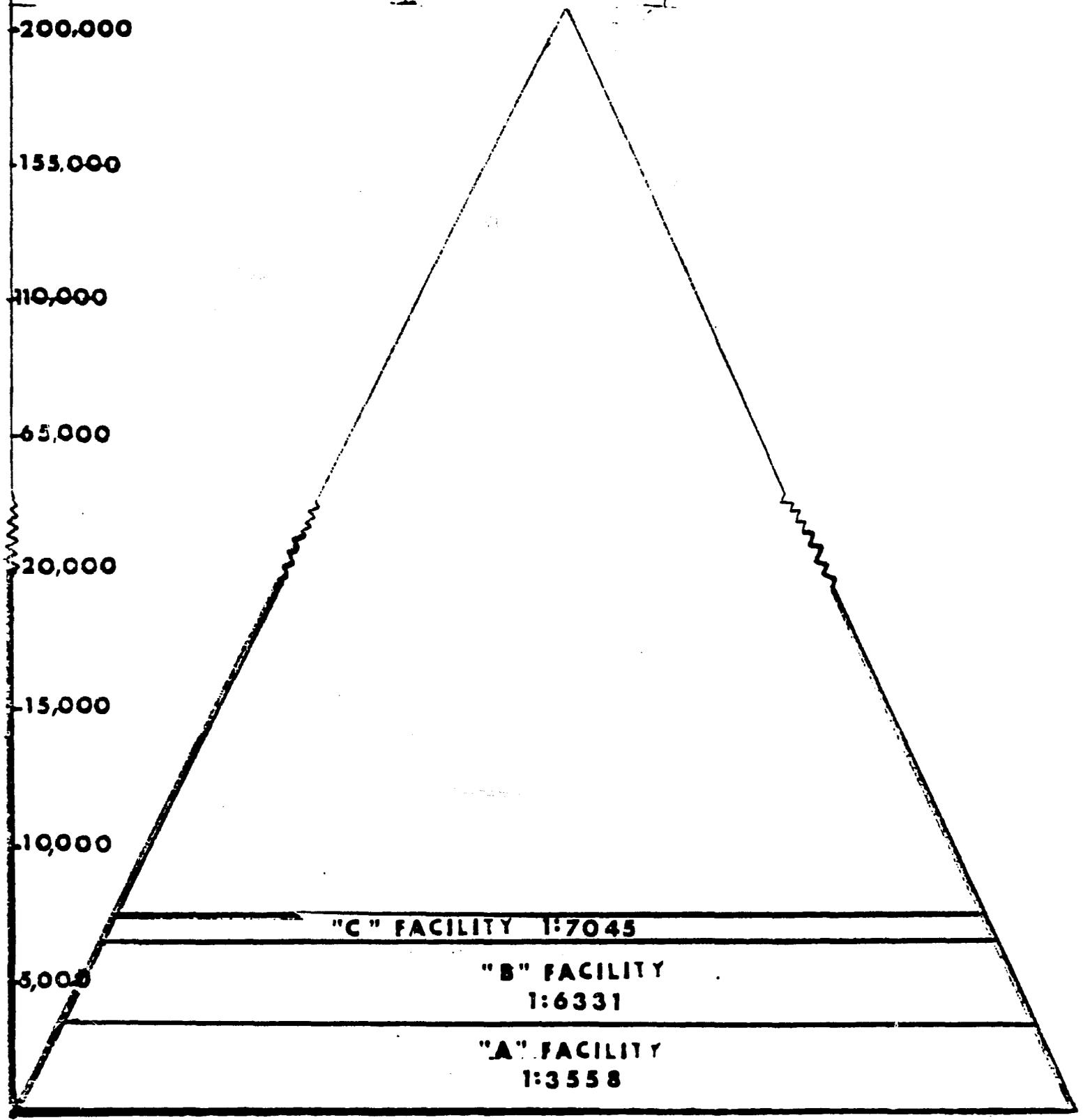


E. Siliiana Health Infrastructure: Proposed



Source: Rural Community Health, Project Paper

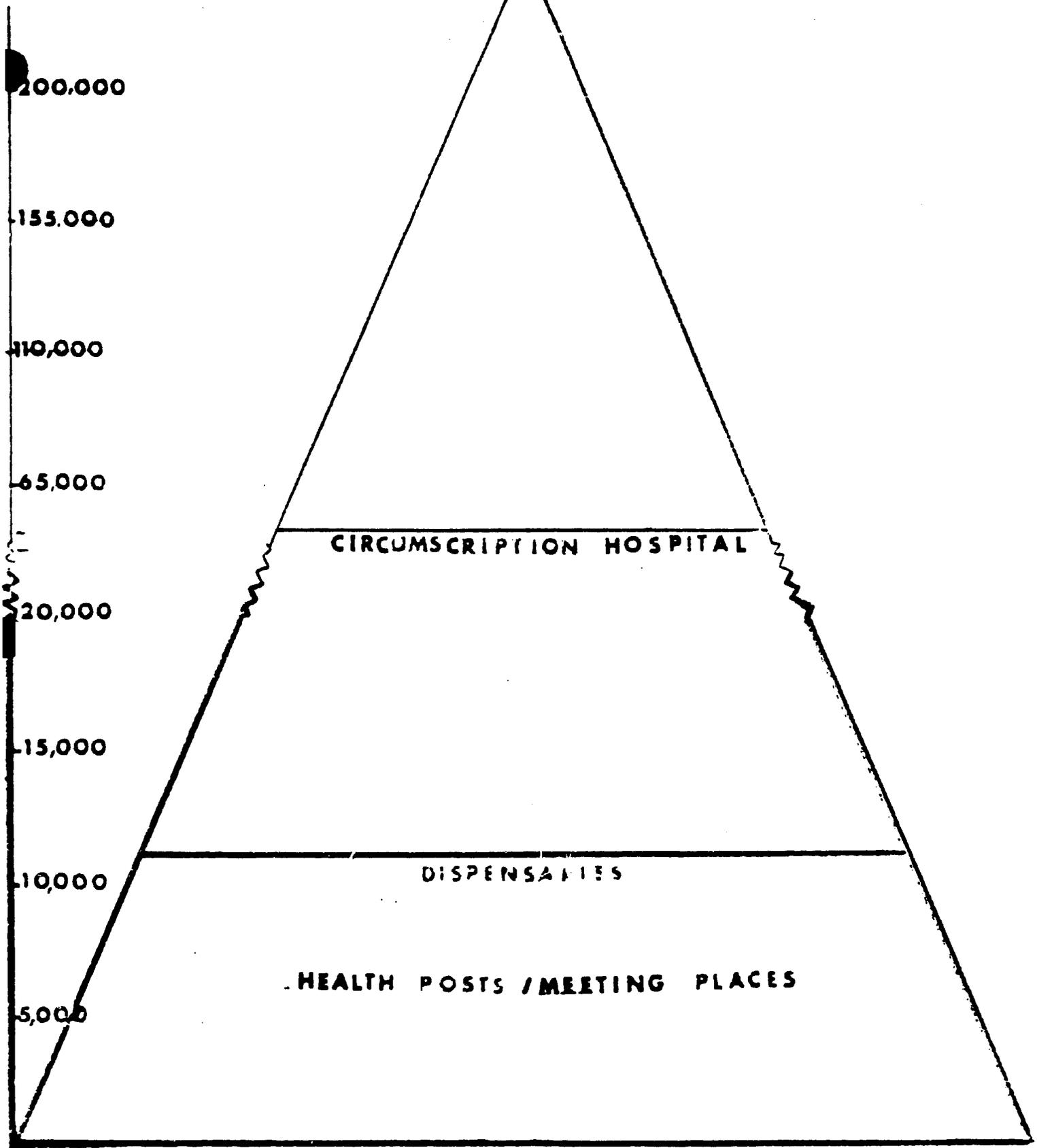
F. Sidi Bouzid Health Infrastructure: Proposed



Source: Rural Community Health, Project Paper

G. Kasserine Health Infrastructure: Actual

REGIONAL HOSPITAL



Source: Données Statistiques  
H. Mlika, Hospital Administrator

## Appendix II A.1

Ministry of Health Recurrent Budget  
Breakdown  
(000' Dinars)

	1977	1978	1979
I. <u>Total GOT (Recurrent Budget)</u>	441 500	541 200	625 100
II. <u>MOH (Recurrent) Budget</u>			
A. Authorized expenditure	35 417	44 130	51 462
B. Unforeseen expenditure	3 826	2 640	NA
C. Total (consolidated) Budget	39 243	46 770	51 462
II/I in %	9.0%	9.0	8.23
<u>Detailed MOH (Recurrent) Budget</u>			
<u>Breakdown</u>			
I. <u>Minister of Health &amp; Cabinet</u>	30	35	22
II. <u>Operations</u>			
(Article 30) Civil Servants	4 831	6 299	5 570
(Article 31) Temporary/contractual personnel	159	172	177
(Article 32) Permanent unskilled workers	683	369	430
(Article 33) Ad-hoc/temporary personnel	4	4	4
Subtotal (Salaries)	5 677	6 844	6 181
(Article 40) (Administrative) Supplies/Materials (i.e., rents, utilities, fuel, furniture, uniforms, etc.)	584	510	592
(Article 41) Transportation/Per Diem	173	166	193
Subtotal	757	676	785
(Article 50) Hospitals (includes institutes, centers, regional hospitals, etc.)	28 158	35 580	43 370
Total (III)	34 592	43 100	50 336
III. <u>Public Interventions</u>			
(Article 61) Office of Family Planning	NA	484	554
Office of Thermal Spas	NA	420	450
Subtotal	706	904	1 004
Cultural Activities	87	89	100
(Article 80) Contributions to International Organizations (transferred to Ministry of Foreign Affairs since 1979)	2	2	0
Total (IV)	795	995	1 104

Source: Budget de l'Etat (Titre 1er), Ministère  
de la publique

NA = Not Available

\* Percentage does not include unforeseen expenditure

II A.2

Average Salary\* for MOPH Personnel (Dinars)\*\*

	base Salary Month	Allowances/Mo.				Total Salary Per Month	Total Salary Per Year
		Risk	Family	General	Other		
Public Health Aux	92.837	15.000	8.400	16.666	6.250	139.000	1670.000
Public Health Nurse	116.462	15.000	8.400	20.000	6.250	166.000	1990.000
(Specialist) Nurse	137.087	15.000	8.400	25.000	6.250	191.000	2300.000
Technician Superieur	144.212	15.000	8.400	25.000	6.250	199.000	2386.000
Physician	530.000	15.000	-	40.000	-	590.000	7080.000

\*Assuming 10 years experience

\*\*TD 1.000 = \$2.50

Source: D.A.F., Government of Tunisia (1979)

Appendix II A.3: Standard Dispensary Equipment List and Cost

PA/RS

HE EQUIPEMENT TYPE D'UN DISPENSAIRE

--oOo--

- MOBILIER -

- 1 Ensemble de bureau pour médecin comprenant :

- 1 Bureau à deux tiroirs : 1,20 x 0,70
- 1 Fauteuil
- 2 Demi-fauteuils
- 1 Guéridon
- 1 Élément de bibliothèque

- 1 Bureau pour infirmier comprenant :

- 1 Bureau : 1,00 x 0,60
- 1 Demi-fauteuil
- 6 Chaises en formica
- 1 Fichier médicament
- 5 Fichiers (malades)

- Divers

- 3 Armoires pour médicaments 1,20 x 0,60 x 0,40
- 2 Vestiaires métalliques
- 2 Tables en formica 1,20 x 0,70
- 10 Bancs (salle d'attente)
- 3 Appareils de chauffage à gaz
- 1 Réchaud à 2 feux à gaz
- 1 Réfrigérateur (250 litres)
- 1 Ventilateur bi-tension
- 1 Lit d'Hôpital inoxydable
- 6 Draps en cretonne à une place 2,40 x 1,40
- 2 Couvertures en laine à une place
- 6 Serviettes de toilettes
- 1 Lampe à alcool
- 1 Lampe tempête
- 6 Verres à eau
- 1 Pince tube en bois
- 2 Poubelles (1 petit et 1 grande avec couvercle)
- 2 Seaux ménagers (plastique)

Estimated Total Cost per Dispensary.....2395 dinars\*

Estimated Additional Cost for X-ray Equipment.....2000 "

\* 1 dinar = \$2.50

- MEDICAL -

- 1 Vitrine (armoire vitrée) 1,70 x 0,60 x 0,40
- 1 Table d'Examens médicale et gynécologique
- 1 Escabeau à 2 ou 3 marches
- 1 Stéthoscope
- 1 Appareil de tension artérielle
- 1 Marteau à réflexes
- 1 Miroir de Clark
- 1 Bascule avec toise
- 1 Série de Spéculum O.R.L. (3 Spéculum)
- 3 Spéculums Vaginaux
- 1 Série de sondes
- 1 Foupinel
- 5 Alaises langue métallique
- 1 Négatoscope à 1 plaque
- 5 Seaux à pansement avec pédale
- 1 Chariot à pansement 60 cm x 40 cm à 2 étages
- 6 Plateaux émailles
- 6 Boîtes de stérilisation 22 x 10
- 5 Seringues de 10 cc
- 5 Seringues de 2 cc
- 5 Seringues de 5 cc
- 3 Manches de bistouri : n° 2, 3 et 4
- 3 Boîtes de lames (2 boîtes n° 22 et 1 boîte n° 24)
- 3 Paires de ciseaux droits
- 3 Paires de ciseaux courbes
- 3 Paires de pinces Fém
- 3 Paires de pinces Kocher
- 3 Paires à dissection avec griffes
- 3 Paires à dissection sans griffes
- 3 Sondes canulées
- 3 Douvaines d'aiguilles ultra masculine
- 3 Douvaines d'aiguilles sous-cutanée
- 3 Douvaines d'aiguilles ultra veineuses
- 1 Boîte de 100 Agraphe avec pinces d'agraphe michel
- 10 Thermomètre médicaux
- 1 Broc à lavement
- 1 Capote à double courant

(Suite)

- MEDICAL -

- 1 Poire à lavement O.R.L.
- 3 Haricots
- 1 Crachoirs sur pied
- 10 Fissettes pour alcool
- 12 Paires de gants
- 12 Paires de doigtiers à 1 doigt
- 12 Paires de doigtier à 2 doigts
- 3 Verres gradués (dimensions diverses) 125 - 250 - 500
- 2 Bouilleurs émaillés
- 2 Cuvettes émaillées (grand modèle)

Provinces	Health Facility																			
	INSTITUTES	SPECIALIZED CENTERS	GENERAL HOSPITALS	REGIONAL HOSPITALS	CIRCUMSCRIPTION HOSPITALS	MATERNITY & MCH CENTERS	PRIVATE CLINICS	MCH CENTERS	TB CLINICS	URBAN POLYVALENT DISPENSARIES	URBAN NEIGHBORHOOD DISPENSARIES	RURAL DISPENSARIES	HEALTH POSTS	HYGIENE CENTERS	BORDER HEALTH CONTROL CTRS.	PROF. PUBLIC HEALTH SCHOOLS	MEDICAL SCHOOLS	DENTAL SCHOOLS	PHARMACY SCHOOLS	
TUNIS	5	4	4	2	-	-	20	18	1	-	31	4	-	1	4	1	1	-	-	
ZAGHOUAN	-	-	-	1	2	-	-	4	-	-	-	8	5	-	-	-	-	-	-	
BIZERTE	-	-	1	1	2	-	2	7	1	1	5	18	5	2	1	1	-	-	-	
NABEUL	-	1	-	1	6	2	1	11	1	-	2	33	13	1	-	1	-	-	-	
SOUSSE	-	-	1	-	1	1	2	3	1	1	5	33	3	1	1	1	1	-	-	
MONASTIR	-	-	-	1	3	-	-	6	-	-	3	33	2	1	1	1	-	1	1	
MAHDIA	-	-	-	1	2	2	-	3	-	-	5	24	14	1	-	1	-	-	-	
KAIROUAN	-	-	-	1	2	-	1	1	1	1	4	20	3	1	-	1	-	-	-	
SFAX	-	-	1	-	3	-	4	6	1	2	1	66	8	1	1	1	1	-	-	
GABES	-	-	-	1	2	-	-	8	1	1	3	53	8	1	1	1	-	-	-	
MEDENINE	-	-	-	2	3	-	-	6	-	-	2	50	7	3	2	1	-	-	-	
GAFSA	-	-	-	3	4	1	-	5	1	-	2	39	7	2	1	1	-	-	-	
SIDI BOUZID	-	-	-	1	1	-	-	1	-	-	-	21	-	1	-	-	-	-	-	
KASSERINE	-	-	-	1	4	-	-	5	-	-	5	17	14	1	-	-	-	-	-	
JENDOUBA	-	-	-	1	4	-	-	5	1	-	1	26	12	1	1	1	-	-	-	
LE KEF	-	-	-	1	3	-	-	5	-	-	1	14	20	1	-	1	-	-	-	
SILIANA	-	-	-	1	3	-	-	4	-	-	4	13	9	1	-	-	-	-	-	
BEJA	-	-	-	1	2	2	-	4	1	-	5	21	7	1	-	1	-	-	-	
TOTAL	5	5	7	20	49	8	30	102*	10	6	79	503	126	22	13	16	3	1	1	

\* Not including combined Maternity/MCH Centers



Appendix II C.1: Physicians by Province, 1977-79

	MOH			PRIVATE			TOTAL			TUNISIAN		EXPATRIATES		POPULATION		POP/PHYSICIAN		
	1/78	1/79	Δ	1/78	1/79	Δ	1/78	1/79	Δ	1/78	1/79*	1/78	1/79*	77	79	77	79	Δ
Kassarine	17	18	+ 1	2	1	-1	19	21	+ 2	5	5	14	13	230,328	235,106	13,175	11,195	-1,980
Siliana	9	10	+ 1	1	3	+2	10	11	+ 1	2	2	8	8	196,539	198,506	19,654	18,046	-1,608
Sidi Bouzid	9	8	- 1	2	2	NC	11	10	- 1	2	2	9	6	228,811	256,462	20,801	25,646	+4,845
Tunis	526	488	-38	171	211	40	697	699	+ 2	611	405	86	75	1.03M	1.03M	1,483	1,483	NC
Zaghuan	11	11	NC	7	5	-2	18	16	- 2	12	6	6	5	214,220	219,383	11,001	13,711	+1,810
Bizerte	72	62	-10	17	21	+4	89	83	- 6	36	19	53	47	356,543	363,139	4,006	4,375	+ 369
Nabeul	57	65	+ 8	17	13	-4	74	78	+ 4	43	40	31	23	392,049	404,596	4,298	5,187	- 111
Sousse	93	98	+ 5	27	28	+1	120	126	+ 6	85	62	35	36	268,534	275,785	2,238	2,188	- 50
Monastir	37	41	+ 4	5	9	+4	42	50	+ 8	13	15	29	26	236,051	242,778	5,620	4,855	- 765
Mahdia	16	18	+ 2	1	4	+3	17	22	+ 5	2	3	15	15	234,890	235,133	13,817	10,687	-3,130
Kariouan	32	33	+ 1	5	3	-2	37	36	- 1	13	8	24	25	355,057	361,723	9,596	10,131	+ 535
Sfax	74	86	+12	30	33	+3	104	119	+15	67	51	37	35	495,518	506,172	4,765	4,253	- 512
Gabes	38	37	- 1	8	9	+1	46	46	NC	17	6	29	29	275,758	274,333	5,995	5,963	- 32
Medenine	27	33	+ 6	14	14	NC	41	47	+ 6	24	12	17	21	304,500	310,445	7,427	6,605	- 822
Gafsa	30	36	+ 6	1	2	+1	31	38	+ 7	7	6	24	28	249,056	253,964	8,031	6,683	-1,351
Jendouba	21	27	+ 6	7	5	-2	28	32	+ 4	11	3	17	24	309,064	313,855	11,038	9,807	-1,231
Le Kef	28	33	+ 5	6	7	+1	34	40	+ 6	10	6	24	26	245,798	242,366	7,229	6,059	-1,170
Beja	22	26	+ 4	11	11	NC	33	37	+ 4	17	11	16	15	255,733	259,289	7,749	7,007	- 742
<b>TOTAL</b>	<b>1,119</b>	<b>1,130</b>		<b>332</b>	<b>381</b>		<b>1,451</b>	<b>1,511</b>		<b>977</b>		<b>474</b>	<b>451</b>	<b>5.9M</b>	<b>5.99M</b>	<b>4,067</b>	<b>3,966</b>	<b>- 101</b>

NOTE: \* Includes only those practising in the public (i.e. under the MOH) sector

NC = No change  
 Δ = Change  
 M = Million

Source: Office of Planning and Statistics, Ministry of Public Health

## Paramedical Personnel by Category and Province, 1979

PROVINCES	NUTRITION	PHYSICAL THERAPY	MIDWIVES	ANESTHESIA	MEDICAL SECRETARY	AUDIOLOGY	X-RAY TECHNICIAN	CYTOLOGY	HYGIENE	PEDIATRICS	PSYCHIATRY	OPERATING ROOM	RESUSCITATION	GENERAL CARE	PUBLIC HEALTH	LABORATORY ASSISTANTS	PHARMACY ASSISTANTS	NURSES	NURSES' AIDES	SUBTOTAL	TEACHERS	TOTAL
TUNIS	48	86	144	86	85	8	71	31	15	20	43	22	15	103	20	203	34	1 258	1 259	3 551	12	3 563
ZAGHUAN	-	-	10	-	1	-	-	-	-	-	-	-	-	2	-	2	-	49	71	135	-	135
BIZERTE	1	6	30	8	1	-	7	-	-	2	-	-	5	8	3	21	7	251	283	633	2	635
NABEUL	2	12	39	5	1	-	-	2	-	-	-	1	1	10	6	21	5	162	240	506	-	506
SOUSSE	1	12	53	16	8	-	8	-	1	6	-	10	8	30	9	36	3	318	246	765	9	774
MONASTIR	-	5	28	7	2	-	3	1	-	-	-	2	1	5	7	15	5	148	220	449	-	449
MAHDIA	1	2	18	2	1	-	1	-	-	1	-	1	1	14	4	5	-	110	120	281	1	282
KAIROUAN	1	66	23	4	-	-	1	-	-	2	-	5	-	9	4	7	2	157	270	491	1	492
SFAX	2	9	49	19	7	-	6	1	-	1	5	1	3	42	6	39	7	406	312	915	7	922
GABES	-	3	21	1	2	-	2	-	-	1	-	-	-	14	3	12	22	163	192	416	1	417
MEDENINE	-	-	16	4	-	-	2	-	-	2	-	-	-	8	5	5	1	148	135	331	1	332
GAFSA	1	3	29	5	2	-	3	-	-	-	-	1	-	13	2	15	2	147	231	454	1	455
SIDI BOUZID	-	1	13	2	-	-	-	-	-	-	-	-	-	2	1	4	-	56	75	154	-	154
KASSERINE	-	-	16	2	-	-	-	-	-	1	-	-	-	2	1	4	1	67	121	215	-	215
JENDOUBA	-	1	14	1	-	-	-	-	-	-	-	-	-	6	-	5	3	66	188	284	-	284
LE KEF	1	-	15	3	-	-	1	-	-	-	-	-	1	2	-	6	1	87	173	290	1	291
SILIANA	-	-	10	-	-	-	-	-	-	-	-	-	-	1	1	1	1	38	77	129	-	129
BEJA	2	3	17	3	1	-	2	-	-	1	-	1	-	3	4	11	3	138	148	337	1	338
OTHER	-	-	8	2	-	-	1	-	-	2	1	2	2	3	8	4	1	26	-	60	-	60
TOTAL GENERAL	60	149	553	170	110	8	110	34	16	39	49	46	37	277	84	416	78	3 795	4 365	10 396	37	10 433



STUDENTS ENROLLED IN PUBLIC HEALTH PROFESSIONAL SCHOOLS (by Category, Year, Sex)

For the Academic Year 1978 / 1979, Tunisia

Categories Schools	Public Health		Hospital Nurses				Specialized Assistants						Pharmacy Assistants						Laboratory Assistants						Medical Secretaries		T O T A L				
	Auxiliaries		1st year		2nd year		1st year		2nd year		3rd year		1st year		2nd year		3rd year		1st year		2nd year		3rd year		1st year		2nd year		Total By Sex		General Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			
	Year	Sex																													
TUNIS	13	3		20	46	25	50	36	38	15	62	23	19	22	16	18	18	20	11	20	21	16	13	14	28	14	307	294	591		
NABEUL	15	13		26	9	-	-	-	-	43	2	26	4														89	23	112		
MZEL BOURGUBA	19	35		7	20	13	30	9	16	1	8															49	109	156			
KAIROUAN				39	18	33	22																				72	40	112		
M.HDI				20	11	21	8																				41	19	60		
MONASTIR	21	11		51	14	22	14													13	8	12	0			119	47	166			
SOUSSE	22	12		39	24	29	13	25	5	21	8	15	11	22	11	-	-	-	-	17	16	8	13			198	113	311			
Sfax	14	11		33	17	20	19	35	29	20	19	22	19	6	16	7	6	11	6	9	11	5	8			182	161	343			
GABES				40	7	17	8																				57	15	72		
MEDENINE				47	10	23	7																				70	17	87		
KEF				25	34	10	18																				35	52	87		
BEJA	21	11		-	-	11	15																				32	26	58		
JENDOUBA				17	17	25	15																				42	32	74		
GAFSA				23	12	18	11			8	7																49	30	79		
T O T A L	125	96		204	413	218	292	216	107	75	155	67	86	56	44	45	25	26	22	26	60	51	38	35	28	14	1342	968	2336		

GRADUATES OF THE SCHOOLS OF PUBLIC HEALTH ANDTHE MEDICAL FACULTIES IN MIDWIFERY: 1957 - 78

Year	Mid-wives	Obstetrical Nurses	Senior Medical Technicians Obstetrics	T O T A L
1957	11			11
58	6			6
59	15			15
60	17			17
61	18			18
62	8			8
63	8			8
64	11			11
65	7			7
66		13		13
67	17			17
68		11		11
69		12		12
70	13			13
71	22			22
72	21			21
73	43			43
74	64			64
75	58			58
76	74			74
77	89			89
78	11		53	104
<u>T O T A L /</u>	513	36	93	<u>642 /</u>

III A

Kasserine Province Title I Health Sector  
Budget by Circumscription<sup>1</sup>

<u>Circumscription</u>	1974			1975			1976			1977			1978			1979		
	P	M	T	P	M	T	P	M	T	P	M	T	P	M	T	P	M	T
KASSERINE	145.3	39.4	184.7	181.6	47.2	228.8	230.6	49.8	280.4	235.7	53.3	289.0	322.9	66.2	389.1	417.8	73.2	491
SBEITLA	185.5	11.3	298.5	25.5	12.1	37.6	39.1	12.9	52.0	34.6	13.9	48.5	49.2	14.6	63.8	59.7	15.9	75.6
THALA	9.3	10.9	20.2	11.6	11.7	23.3	17.0	12.4	29.4	15.1	13.4	28.5	26.2	14.1	40.3	31.5	15.5	47.0
FERIANA	3.9	5.8	9.8	4.7	8.5	11.2	10.1	7.2	17.3	7.9	8.1	16.0	19.5	8.6	28.1	22.8	10.0	32.8
SBIBA	31.7	8.3	11.5	11.5	4.0	13.2	7.9	10.0	17.9	7.0	11.0	18.0	15.6	11.6	27.2	20.0	12.8	32.8
<b>TOTAL</b>	<b>180.5</b>	<b>75.7</b>	<b>255.9</b>	<b>227.6</b>	<b>86.7</b>	<b>314.2</b>	<b>304.7</b>	<b>92.3</b>	<b>397.0</b>	<b>300.3</b>	<b>99.7</b>	<b>400.0</b>	<b>433.4</b>	<b>155.1</b>	<b>548.5</b>	<b>551.8</b>	<b>127.4</b>	<b>679.2</b>

DINARS

<sup>1/</sup> In '000 dinars

KEY:

1 Dinar = \$2.50

P = Personnel  
M = Material  
T = Total

Source: Office of the Regional Hospital Administration, Kasserine Province (1979)

III B.

MOH Personnel  
Kasserine Province

	1974			1975			1976			1977			1978			1979		
	P	PM	W															
<b>KASSERINE</b>																		
<b>Total</b>	10	121	32	10	130	34	10	112	34	10	112	34	11	135	57	13	159	58
<b>SBEITLA</b>																		
<b>Total</b>	1	9	21	1	9	21	1	9	21	1	9	21	1	23	22	1	22	22
<b>THALA</b>																		
<b>Total</b>	1	6	6	2	6	6	2	6	6	2	6	6	2	30	16	1	23	16
<b>FERIANA</b>																		
<b>Total</b>	1	4	1	1	4	1	1	4	2	1	4	2	1	26	10	1	22	10
<b>SBIBA</b>																		
<b>Total</b>	1	2	2	1	2	2	1	2	3	1	2	3	1	23	9	1	20	9
<b>TOTAL</b>	14	142	62	15	151	64	15	133	66	15	133	66	16	210	92	17	233	93

Key

P= Physician

PM= Paramedical

W= Worker (i.e. drives, cleaners, etc)

Source: Regional Hospital Administration, Kasserine Province (1979)

## III C

## HOSPITAL ACTIVITY IN KASSERINE PROVINCE BY CIRCUMSCRIPTION

	Number of Patients Seen			Number of Health Care Acts Administered			Number of persons hospitalized			Number of hospital days		
	76	77	78	76	77	78	76	77	78	76	77	78
KASSERINE	86181	89562	99104	138922	153516	125648	4073	4282	5830	24637	24988	22894
SBEITLA	26492	25842	22884	39914	54360	42033	773	694	604	7305	7539	5110
THALA	26183	28933	30641	55634	64541	85410	469	550	557	4010	3824	4245
FERIANA	25453	28624	25857	41600	38670	47037	614	518	373	2511	2416	2087
SBIBA	12733	12622	16228	29941	25282	25016	623	622	664	5682	5422	4271
TOTAL	177042	185583	194714	306011	336369	352144	6552	6666	7228	44225	44189	38627

Source: Office of the Regional Health Administration, Kasserine Province (1979)

III. D.

Preventive Medicine in Kasserine

Province: Number of Vaccinations Administered

CHOLERA					SMALL POX					RABIES					POLIO					DPT					BCG					TYPE OF VACCINE
74	75	76	77	78	74	75	76	77	78	74	75	76	77	78	74	75	76	77	78	74	75	76	77	78	74	75	76	77	78	YEAR
45	276				3	091				482					49	067				15	312				20	120				Number of Vaccinations
68	788				6	697				443					36	987				6	889				34	576				
60	364				5	843				566					38	949				36	728				51	994				
57	373				8	492				623					46	523				55	469				54	409				
NA					2	928				913					34	425				34	425				11	709				

Source: Office of the Regional Health Administrator, Kasserine Province (1979)

III E.

Preventive Medicine in Kasserine Province: <sup>1</sup>Number  
of Activities in Environmental Health

Kasserine	Sbeitla	Feriana	Thala	Sbiba	DELEGATION
74 75 76 77 78	74 75 76 77 78	74 75 76 77 78	74 75 76 77 78	74 75 76 77 78	YEAR
2289 3000 2709 3056 1899	2286 2520 2587 3082 2422	2273 2300 1328 2802 1264	2085 2100 2205 2741 1778	1649 2000 1453 2145 1204	Number of Activities

<sup>1</sup>/ disinfecting wells, marked inspection, etc.

Source: Office of the Regional Health Administrator, Kasserine Province (1979)

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