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PROGRAM PLANNING FOR THE ACUTE RESPIRATORY INFECTION CONTROL PROGRAM IN MOROCCO

FEBRUARY 3-21, 1992

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TRIP REPORT

PROGRAM PLANNING FOR THE ACUTE RESPIRATORY INFECTION CONTROL PROGRAM IN MOROCCO

RABAT

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ACKNOWLEDGEMENTS

The authors wish to acknowledge the openness and collaborative spirit that they encountered on this mission, in particular at the Division of Epidemiology, Office of Respiratory Disease. Their willingness to make time available to the consultants and their expert advice contributed to the success of the mission.

A.I.D. funded this field visit. Staff at the Office of Health and Family Planning, USAID/Rabat were highly encouraging about the possibilities for future interventions in the control of acute respiratory infections in Morocco. Their insights into the Ministry of Health and service delivery in Morocco were essential for the mission.

The Ministry of Health of Morocco continues to make significant progress on its ARI program and is to be commended for its decision to establish a national program by 1997. Much work still needs to be done, but the commitment and the capabilities are clearly in place.

ACRONYMS

ADB	African Development Bank
A.I.D.	Agency for International Development
ARI	Acute Respiratory Infections
CDC	Centers for Disease Control
CQI	Continuous Quality Improvement
DHS	Demographic and Health Survey
EMRO	Eastern Mediterranean Regional Office
IEC	Information, Education and Communication
MOH	Ministry of Health
REACH	Resources for Child Health Project
SCM	Standard Case Management
SIAAP	Service for Provincial Ambulatory Health Services
UNICEF	United Nations Children's Fund
UNIPAC	United Nations Procurement Agency
USAID	United States Agency for International Development
VDMS	Visite a Domiciles de Motivation Systematique
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The scope of work for this mission was to provide a comprehensive assessment of the Moroccan ARI Program for USAID/Morocco and to work with the Ministry of Health, Division of Epidemiology to develop a five year National ARI plan.

There is no doubt about the importance of pneumonia as a factor in child survival in Morocco. Current statistics indicate that infant mortality nationally is approximately 73 deaths per thousand live births; in some provinces the 1988 IMR estimates approach 200. It is estimated that pneumonia accounts for at least 12% of these deaths.

The Morocco National ARI Program is in its first stage of development. The decision to start activities in 4 provinces, with a population of approximately four millon people, over the next year is a reasonable one, and will allow the program time to learn as it grows. Funding for the ARI program in the four provinces is being provided by UNICEF for 1992, including drugs purchased by UNICEF in 1991.

The ARI program has recently submitted a proposal to the African Development Bank (ADB) to expand program services to the ten least served provinces of Morocco in 1993. In order to move quickly to full national coverage, the program plans to focus on the expansion of the ARI program to all parts of the country from 1993 to 1997.

This very young program is progressing well and is likely to meet many of its ambitious targets, particularly in the area of training. Morocco has the potential to be one of the lead countries in the world for the implementation of a truly national program.

In order to assure that the program is fully effective in reaching and treating pneumonia cases nationally, the REACH team recommends that particular attention be paid to several key areas:

1. The development and implementation of a comprehensive information, education, communication (IEC) strategy for ARI.

2. The preparation and field testing of locally adapted training materials to meet the needs of program expansion.

3. The development of a program for continuous quality improvement at the point of delivery of pneumonia case management services.

4. An analysis of antibiotic needs, procurement mechanisms, their costs, and utilization patterns, which are key to the issue of long-term sustainability of these services.

5. The development of strategies to fully include private sector providers, particularly pharmacists, in the national efforts.

6. The early establishment of monitoring and surveillance mechanisms to allow managers to objectively assess programmatic achievements and problems.

7. A pilot project to test the most feasible way to integrate the "Visite a Domiciles de Motivation Systematique" (VDMS) into the national ARI program.

Any external assistance should be used to complement existing resources that the MOH has already allocated. The Resources for Child Health (REACH) project is prepared to provide assistance to the national ARI program in Morocco for the areas listed above, and the team recommends an initial emphasis on the area of patient education for ARI.

II. PURPOSE OF VISIT

The scope of work for the mission was as follows:

a. Provide a comprehensive assessment of the Moroccan ARI Program for USAID/Morocco.

b. Work with the Ministry of Health, Division of Epidemiology to develop a five year national ARI plan.

c. Advise USAID/Morocco on appropriate interventions in the National ARI Program.

III. BACKGROUND

The Morocco National ARI Program is in the first stages of development. This is a critical period for the program as it develops experience which will be used in program expansion to the entire country.

The decision to start activities in 4 areas of the country, with a population of approximately four millon people, over the next year is a reasonable one. This approach will allow time to learn from the problems encountered in actual implementation. The responsiveness and flexibility shown by program managers in these early stages will be the key elements that will be needed to develop an effective ARI Program.

There is no doubt about the importance of pneumonia as a factor in child survival in Morocco. Current statistics indicate that infant mortality nationally is approximately 73 deaths per thousand live births; in some provinces the 1988 IMR estimates approach 200.

According to a 1989 study,[1] approximately 12% of child deaths throughout the country are due to pneumonia; this is a conservative estimate since pneumonia is difficult to identify with certainty on verbal autopsy, and until recently has not been highlighted.

Based on experience from other countries it is likely that the proportion of child deaths due to pneumonia is especially high in high mortality areas where malnutrition is prevalent, and may well approach 30% of deaths in some of these provinces. It is also now recognized that even where pneumonia does not lead immediately to the death of a child it is an important contributor to the infection-malnutrition cycle; the survey cited above found that malnutrition was present in almost a third of the deaths studied. It is a reasonable presumption that many of these children were weakened survivors of earlier pneumonia episodes.

Morocco sent two people to the WHO training course for program managers in Tunis, Tunisia in June 1991. This was followed by the formation of an ARI Technical Advisory Committee composed of representatives of the Ministry of Health, Division of Epidemiology along with pediatric and pulmonary disease specialists.

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[1]. Garenne M. Consultation to analyze the national survey on causes and circumstances of infant and child death: an infant mortality study in Morocco. Office of International Health, Public Health Service, Department of Health and Human Services, Rockville, MD; 1989.

In October 1991 a training and planning course was held for four people from each of the four pilot provinces: Agadir, Kenitra, Meknes and Marrachech. This was followed in December 1991 by a training of trainers course for two people from the four Provinces.

Current plans call for the training of all physicians in these four provinces in ARI standard case management in February/March 1992. Funding for training has been assured by UNICEF.

UNICEF also purchased drugs in 1991 that will be used to implement the program in 1992. WHO paid for the printing of an adapted WHO wall chart for case management of ARI. WHO is also providing all of the training materials for the first year of the national ARI program.

USAID/Rabat funded two people to attend the International Consultation on Control of Acute Respiratory Infections held in Washington, DC. In addition, A.I.D. has funded this consultation through the REACH Project, as well as the visit of the REACH ARI Coordinator to assist with the June training of ARI program managers.

IV. CURRENT SITUATION

ARI control relies on health personnel to make the diagnosis of pneumonia, to provide the essential antibiotic treatment, and to interact effectively with the mother to assure compliance. As such, of all the child survival strategies it relies most heavily on accessible, effective and reliable health services and well trained and supported providers.

The 1989 national mortality survey found that fully half of the childhood deaths studied had not been seen by qualified health personnel during the period preceding their deaths. Among the deaths, only 7% of neonates and 11% of children 1 month to 5 years old had been admitted to hospital for care. This indicates that effective access to health services for children with pneumonia is low, and that appropriate action may not be taken even when care is sought.

Pneumonia also calls for prompt action: children die within an average of 4 days from the onset of clear pneumonia symptoms, and therefore delay in treatment can have serious consequences. The mortality survey found that more than half of the hospital referrals were made at least 4 days into the child's illness, and that parents followed the referral advice less than a quarter of the time. The reasons cited by mothers for not following the referral advice were, in order of frequency, that taking the child to hospital was too far (problems of accessibility), that they did not have the financial means to do so (problems of affordability), and that they did not clearly understand the importance of this action (problems of communication).

These findings have important implications for the ARI program. Clearly, referral to hospital, which is part of the routine case management protocol adopted in Morocco for neonatal and severe pneumonia, will be very difficult to accomplish on a wide scale, particularly in the poorer rural areas where most of the pneumonia deaths occur. This will require the adoption of complementary strategies, both in accepting and programming for alternatives to hospital treatment (e.g. an explicitly stated protocol for outpatient treatment of cases which "should" be treated on an inpatient basis but which for practical or social reasons cannot), and in dealing with the issues of accessibility, affordability and communications. Based on experience in other countries, we believe that special emphasis should be placed on improving health providers' effectiveness in helping mothers to understand the importance and the urgency of referral. This may well call for changes in the ways providers deal with patients.

Antibiotics, their cost and their usage, are clearly key issues in the development and sustainability of a national ARI program. As budgeted (assuming local procurement), the antibiotic cost of treating a case of childhood pneumonia on an outpatient basis is approximately US $0.72 (using co-trimoxazole as the standard).

The basis for current drug estimates is that pneumonia cases will fall into three categories: 70% are projected as being simple pneumonia, 20% as severe pneumonia, and 10% of cases will be in children less than 3 months of age. Each of these categories will require a different treatment, as summarized in Annex V.

Funding for the Moroccan ARI program in four Provinces in 1992 is being provided by UNICEF. Drugs purchased in 1991 by UNICEF will be used to meet the drug needs for the initial four provinces in 1992. There is currently a proposal before the African Development Bank (ADB) for the expansion of the ARI program to the ten least served Provinces of Morocco in 1993.

The plans developed to date have concentrated on training and drug procurement. Some funds are being provided for supervision at the national level of the provincial ARI activities.

V. RESULTS/CONCLUSIONS

Annex I includes the five year plan that was developed with the Ministry of Health as part of this consultancy. This comprehensive plan will be used by the Ministry of Health in discussions with WHO, UNICEF, USAID and other donors to identify the necessary resources for a national ARI program. Note that this plan does not include the costs of external consultants.

The team identified several critical technical areas which will require particular attention essential to the ultimate success of the national ARI control effort.

1. The first is the development and implementation of an IEC strategy for ARI.

Numerous studies on ARI in other countries have highlighted the importance of effective communications at several levels: (1) mothers who do not recognize the signs of pneumonia and/or do not take prompt and appropriate action to get their children to care; (2) those who have not received appropriate counselling when their child is first seen by a health provider and consequently do not know the danger signs which call for a return; (3) those who may not trust the treatment given (or justifiably not given) and hence seek alternative treatment elsewhere; (4) those who may not understand or follow through on home administration of antibiotics for a full course; those referred to a hospital because of the severity of their child's illness who, as shown in the survey, are not likely to comply; and (5) those who are dissatisfied with their interaction with the health services and who may decide as a result, that in the future seeking care is simply not worth the trouble, and who may even discourage other mothers from care-seeking.

In short, without effective communications, even the most technically proficient set of services will be underutilized, and as a consequence they will be unlikely to reach their potential for reducing overall pneumonia mortality.

The first level of communication is the interaction between mother and health provider. The relevance of this issue to Morocco is highlighted above by the low level of maternal follow-through in recommendations for hospital referral. **We recommend that the ARI program focus first on the development of materials and methodologies directed at enhancing the effectiveness and content of these direct face-to-face communications.**

At a later stage in program development, but only following full coverage of broad geographic areas with adequately trained and supplied health personnel, it will also be necessary to develop demand generation strategies (perhaps using the regional radio system) that will work to increase general awareness and effective program coverage.

Even though demand generation strategies are still several years in the future, this issue should receive consideration starting from the earliest stage of national program development, since it calls for prior well-conceived studies on maternal behaviors, key words relevant to ARI, understanding, and present patterns of response to childhood illness. Demand can be more easily increased if the messages are based on what people already know and do than when they simply reflect instructions from above.

An early step in the development of an IEC strategy should be a targeted ethnographic study specific to ARI and pneumonia. Such a study is being considered for the second half of 1992, and should receive adequate technical and financial support. In conjunction with REACH ethnographic specialists, WHO has developed a methodology for such a study; technical assistance is available via the REACH Project for such an undertaking.

The current Demographic and Health Survey (DHS) will also be of use in planning a communications strategy. DHS data is expected to provide information on the incidence of pneumonia and some limited information on care seeking behavior. **REACH should assist with the interpretation of this data set, with consideration for appropriate adjustments since the survey is being carried out in the winter when pneumonia is thought to be more prevalent than in other times of the year.**

2. Locally adapted training materials will be needed for program expansion.

Separate materials will be needed for the training of physicians and nurses. The development of these materials should be an iterative process -- that is, the initial printing of materials should only be enough for one to two years of training so that lessons learned as the program grows can be incorporated quickly into future editions of the training materials. Nothing results so predictably in programmatic inflexibility as stacks of training materials, printed at considerable expense, that no one feels they can simply throw away even if it is clear that elements are inappropriate, outdated, or simply in error.

At an early stage, the national program should consider whether the diversity of groups to be trained appropriately call for materials tailored to specific geographic areas. As newcomers to Morocco, the team is not in a position to make this judgement, but experience in other countries has indicated that this is often a consideration.

3. Rigorous mechanisms need to be developed to address the quality of the services that are provided.

The training to be carried out under a national ARI program is not highly complex, but it is demanding. The WHO modules which are to serve as the basis for training in Morocco have been well reviewed and tested for technical content. However, the biggest risk at the outset of a national ARI program is that the training targets established, and the large numbers of personnel who have to be trained, overwhelms considerations of outcome and quality. The world is filled with programs in which everyone has received training but no one is able to carry out the necessary tasks. This should not be the model for ARI.

From the start, the national ARI program should establish mechanisms for assessing the results of training on the knowledge and skills of trainees as well as on their actual practices. External technical assistance through REACH could be of use in helping to design and review such assessment mechanisms.

As noted earlier, pneumonia case management is perhaps the most sensitive of child survival interventions to the quality of the services provided. This has a direct effect both on the effectiveness of these services (whether lives will be saved) and on their acceptability (whether mothers will return the next time their child is ill, and whether they will recommend that their neighbors do so). In this respect, pneumonia case management and the promotion of modern contraceptives have much in common.

The Moroccan program could serve as a model in the development and testing of mechanisms directed at continuous quality improvement (CQI) to assure the quality of ARI standard case management. CQI is a rigorous methodology now widely used in consumer goods and services industries, particularly health care. The CQI approach contrasts strongly with quality assurance, an older industrial methodology. Quality assurance tends to be top-down, checklist driven, and often punitive in its approach (is the provider doing it "right" or "wrong"). Data goes to the top level decision-maker, who then must decide how to take corrective action; therefore, these decisions have to percolate down through many layers of the system, with the common result that implementation at the point of service delivery is substantially delayed or distorted, reflecting the very problems which need to be addressed.

CQI, on the other hand, addresses needs and problems at the micro-level and stresses development of a reliable process for on-site problem identification and solving. Issues that relate to broader system-wide problems (e.g. antibiotic supplies, etc.) are referred up and dealt with at the appropriate levels, rather than requiring a full top to bottom to top feedback loop. This approach has demonstrated its ability to respond rapidly and appropriately, and is currently being widely adapted in the U.S. health sector.

Because of Morocco's well-developed economy and strong private sector, the CQI approach is likely to be more readily accepted here than in more traditional societies, and the team strongly recommends that the Morocco ARI program serve as an early site for applying and refining this approach. The lessons learned from this process could then be transferred to other child survival and family planning activities carried out by the Ministry of Health, and could serve as a model for other countries.

4. A rational and cost-conscious process for selecting and procuring pharmaceuticals needs to be developed.

The costs and utilization of antibiotics are clearly key issues in the development and sustainability of a national ARI program. As currently budgeted, the antibiotic cost of treating a case of childhood pneumonia on an outpatient basis is approximately US $0.72, using co-trimoxazole as the standard. Yet even this relatively low cost is more than 14 times the cost of the same drug if procured through international (UNIPAC) channels (approximately US$0.05 per full treatment course). Clearly, attention to issues of cost and procurement could have major ramifications for the expansion and affordability of this program.

It would be extremely useful for the various interested donors and the MOH to review these costs and their implications to see whether alternative procurement mechanisms could result in more substantial programs and major cost savings. An estimate of these cost savings are found in Annex III.

A further area for serious reconsideration is the projected mix of pharmaceuticals and supplies for the ARI program. Even using the relatively high cost of locally procured treatment with co-trimoxazole, the contrast with the cost of antibiotics proposed for in-patient use is striking.

The most expensive of these impatient treatments, which is not supported by either WHO or the international medical literature, is thiamphenicol, costing approximately US $14.50 per treatment course, or 20 times the cost of locally procured cotrimoxazole. The arguments for its use are based on a reportedly lower risk of complications than the drug it replaces, chloramphenicol; yet, these chloramphenicol risks are a low 1 in 40,000, and they have been thoroughly considered by WHO in its recommendation that chloramphenicol be the appropriate hospital treatment of severe pneumonia. With a cost on the international market of less than US $0.50 per course, chloramphenicol is clearly a much more cost-effective alternative.

It is also not clear why the national program has decided to use injectable benzathene penicillin, (which is not considered by WHO to be a highly effective treatment for pneumonia) rather than the WHO proposed antibiotic, procaine penicillin. Unfortunately, there was no opportunity during the short course of this review to address this issue with the national program managers, so the issue is raised here for future consideration.

Cost considerations and funding allocations made on the basis of broad public health parameters rather than high-tech medical parameters are important for the national ARI program during its early development. Such an approach might lead to a reappraisal of the wisdom of allocating the large majority of resources for ARI treatment to hospitals (under the budget projections, fully 63% of antibiotic costs, see Table I and 84% of material costs, Annex III), especially in view of the statistics cited earlier concerning the low levels of actual hospitalization for pneumonia.

TABLE I

BUDGET PROJECTION FOR 1993 ADB-FINANCED 10 PROVINCE ARI PROGRAM				
(BASED ON MSP BUDGET, CONVERSION RATE 8.30DH TO US DOLLAR)				
		TOTAL	NON-HOSP	HOSP
ANTIBIOTICS				
COTRIM TABS		$162,582	$162,582	
COTRIM SYRUP		$18,200	$18,200	
AMOX SYRUP		$9,706	$9,706	
AMPI INJECT		$181,995		$181,995
GENTAMYC INJ		$151,663		$151,663
THIAMPHEN INJ		$161,773		$161,773
B PCN INJ		$97,064	$97,064	
SUBTOTALS	58%	$782,984	$287,552	$495,431
PERCENTS			37%	63%

5. Statement on budget allocation hospital versus PHC.

The budgetary projections made to develop the 1993 plan assumed approximately 20% of pneumonia cases being treated in hospital. This might very well be true in the context of an ideal program in which all severe pneumonia cases and all cases in children under 3 months of age are treated in hospital. However, given the relatively low case-finding capacity of the health system early on (limited to fixed facilities with a coverage of only 44% of expected cases (Annex II), based on the Ministry of Health statistics reviewed by the team), and the hospitalization rates found in the national survey of 10% or less, it would be very surprising if hospitals accounted for more than 0.5% of cases treated over the next several years. In light of this reality, it is unlikely that a cost-benefit argument could be made for this allocation of resources.

This observation is not intended as a criticism of the national ARI program. It must be recognized that this is the first exercise carried out in the initial stages of national program development, and that many assumptions have had to be made without adequate information on which to base them. It is assumed that the program and donors working together will be able to rationalize many aspects of the program and its cost implications over the next few years. There is every evidence that the program leadership is very open to this.

6. Statement on need to focus resources on pneumonia.

In the context of such a review, it would be productive to consider whether non-pneumonia ARIs (principally otitis media and pharyngitis) should be a program focus at this time. There are strong public health arguments that they should not, and current plans should be reviewed. In particular, the arguments against their inclusion in the early stages of an ARI program are that these conditions, although responsible for considerable levels of morbidity, have little impact on mortality and child survival, and that they distract health workers and program managers from what is most important. They also add considerably to the cost, training load, and administrative complexity of the national program.

Given training burdens, and the difficulty of assuring appropriate case management of pneumonia alone, this complication may be more than the program can realistically sustain. Indications are that this is realized by the Moroccan ARI program and that while they would like to include this it is not feasible at this time.

7. Consideration of the potential role of the private sector in ARI care is called for.

An additional implication of the constraints to full coverage for standard case management of pneumonia is the need to consider alternative channels for care other than government services. Morocco has a dynamic private sector, with more than 3,000 physicians nationally and more than 2,000 private pharmacists.

Studies in Morocco related to contraceptives have indicated that in some areas of the country, particularly urban areas, the pharmacy is the first place that people go for care. It will be important for the national program to develop mechanisms that will include these private sector providers in the ARI program. This has the effect not only of increasing effective coverage of pneumonia episodes with appropriate case management but also of limiting the degree to which private sector providers actively undermine the national program, which has been found to be a serious problem in other countries with similarly well-developed private sectors. Mothers who are told (especially by private physicians) that the treatment they receive from the government health services is no good will be reluctant to follow through on the advice given and to return when needed.

In addition, attention to the potential role of the private sector, recognizing what part of the population it is likely to serve, may also assist with limiting the costs of ARI control within the public sector. This is an increasingly important issue in view of the limited resources available to the Ministry of Health and the continuing requirement of ARI programs for antibiotics. This effort could lead to a productive review of costing and financing mechanisms related to the ARI program.

Development of detailed plans for the implementation of a private sector program should be the focus of a separate consultancy. We believe that such a program could be part of a follow-on to the social marketing of contraceptives that the USAID mission is currently supporting.

The marketing of the basic treatment for pneumonia (cotrimoxazole) should involve the education of pharmacists and their staff as well as the users of the antibiotics. Training should be done to teach pharmacist about standard case management for ARI. As part of the packaging for the antibiotics, there should be health education messages that would be specific for the age of the child, and packaging could potentially be age-specific, as the dosages are different for three age groupings (Annex IV). Very young children, less than three months of age, would have a syrup presentation of the antibiotic and older children pills or syrup. These are potentially promising ideas generated during the time of this consultancy, but eventual decisions should be the result of rigorous marketing surveys to determine what the consumers will find most acceptable, be most likely to use appropriately, and be most willing to pay for.

Since there are already five manufacturers in Morocco of the antibiotics for treatment of ARI, the capacity is already in place to produce the basic antibiotics locally. If some sort of exoneration from taxes, as is being talked about for contraceptive pill cycles, can be obtained, the cost of the drugs may become more affordable for the people most in need.

8. Monitoring and surveillance require ongoing attention.

The monitoring of the national ARI program will necessitate the collection of information that is specific to the standard case management of pneumonia. The current information system does not report pneumonia as a separate disease.

As part of the start up activities in the four initial areas there needs to be some attempt to collect information on the types of pneumonia that are seen and treated at the various facilities. This coupled with survey data on the incidence of pneumonia will give an indication of the effective coverage, i.e the percent of pneumonia cases that are actually receiving standard case management.

In the early stages the different provinces should be encouraged to try different information collection systems to see what will work. The DHS survey information on pneumonia could be used for the initial calculation of the pneumonia incidence. Better estimates of the incidence will be possible once there is information on the seasonal variation in the disease.

Because of the central role of a limited set of antibiotics in the national ARI effort, drug resistance surveillance is an important long term consideration. WHO is currently working with the Centers for Disease Control (CDC) to develop an appropriate methodology for this in developing countries. There is no indication at this point that this is a problem but it is something that the MOH should plan for with WHO.

9. Additional considerations

Although Vitamin A deficiency has not been documented as a widely prevalent problem in Morocco, there is reason to believe that it may in fact be important for reducing child mortality in those provinces with the highest child mortality rates.

There is a growing body of evidence that subclinical Vitamin A deficiency is far more prevalent than previously assumed, and clear indication that periodic Vitamin A supplementation provides a strongly protective effect against severe pneumonia and diarrhea, and subsequent death. This issue deserves further exploration in Morocco, given the low cost and programmatic ease of such an intervention.

The Moroccan ARI Program is planning for a Program evaluation at the end of 1993 or the beginning of 1994 with help from WHO/EMRO. There is also to be a Program review in 1996 with external assistance that will be requested from USAID, UNICEF, and WHO.

Follow-up Required

1. The national ARI Program needs to consider ways to increase outreach and general accessibility of case management services.

Linkages of the National ARI Program need to be expanded to existing maternal child health and population interventions; this will increase the access of the population most in need to standard case management of pneumonia. This could most easily be done by expanding the ARI Technical Committee to include Maternal Child Health and Health Education staff of the MOH.

If the national ARI program does not institute plans to extend effective coverage beyond the areas of current fixed facilities, its maximum potential impact will be less than half of its goal. During the early phase of program development and expansion, it is reasonable to focus on the more readily achievable targets of full training and supply of personnel at these facilities, but the limitations of this approach need to be fully recognized from the start, and plans should be incorporated from early on to develop and test strategies for improved outreach -- taking services to where the people are.

The VDMS itinerants might play an important role in such an outreach approach. As noted in a recent AID evaluation of the Morocco program,[2] delivering child survival interventions through a rural outreach program is highly effective. Concerns have been voiced about the possible burden on the VDMS workers were they to have pneumonia case management added to their existing duties. This calls for a careful review of their current burden as well as consideration of what impact such an activity might have on their existing responsibilities; it would be appropriate to include a selected group of VDMS workers themselves in such a review. However, as also noted in the AID evaluation, providing a number of child survival interventions as a package is more effective than offering each separately.

There is proof from other countries that pneumonia case management through community outreach can be highly effective in reducing mortality. Moreover, additional evidence showed that it has a strongly reinforcing effect on primary health care services in general, since these targeted curative services are generally highly valued by the communities served.[3]

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[2]. Chiavaroli ER, Agle AN, Clark SC, Gibson PS. AID technical report no. 1: Evaluation of AID child survival programs: Morocco case study. Agency for International Development. December 1991.

[3]. Daulaire NMP. Practical issues of ARI program implementation. In: ALRI and child survival in developing countries. Baltimore: Institute for International Programs, The Johns Hopkins University, School of Hygiene and Public Health. January 1990.

The Morocco ARI program should undertake a pilot study in one of the four initial provinces for the national ARI program to determine the best way to integrate the VDMS into the national program.

2. A IEC strategy needs to be developed for the National ARI Program.

Given the current staffing of the ARI program there is a need for a staff person with communications ability to assist the national program in this area. Ideally this person should be a full time position with access to technical assistance as it is needed (for example, assistance with a focused ethnographic survey).

REACH could potentially provide this assistance via a locally hired adviser who would be an employee of REACH but working with the MOH. This would allow for assistance to be provided to the MOH without building a separate capacity in the Division of Epidemiology. This assistance needs to be viewed as start up assistance of a limited nature, to be phased out over time as the linkages and the health education capacity of the MOH are strengthened.

3. A monitoring and surveillance system needs to be adopted for accurate tracking of program impact in addition there needs to be an accountability system for the use of antibiotics.

During the first year of the program a reporting system proposed by the Province of Kenitra will be used. This system will need to be evaluated before the program managers course for the next ten provinces. This will allow for incorporation what has been learned to be included in the training for the National ARI Program.

The routine reporting system will need to report numbers of cases and referrals according to the pneumonia classifications used in the training of health workers. This information could be used with survey information of the incidence of pneumonia to determine the effective coverage of the ARI program. REACH is available to assist with this if requested by the MOH.

Information exists on overall mortality from a vital events registry system that will be particularly useful for the evaluation of the impact on overall infant mortality. Cause specific information in this system is not generally regarded as being reliable.

4. Means of involving pharmacists in the ARI program need to be developed.

The current USAID social marketing program for contraceptives will certainly provide lessons for the marketing of co-trimoxazole. Ideally this should be undertaken once the marketing of contraceptives is in place.

The major cities of Morocco are well served by pharmacies. There are approximately 2,000 pharmacists in Morocco and thus potentially 2,000 points of contact in addition to the public health system. REACH is prepared to assist with this and a possible outline of the work is as follows;

The first step in beginning a marketing program for co-timoxazole would be a marketing design visit of three weeks. This visit would include the collection of consumer preference information, to see if tablets, powder or syrup would be the most acceptable and at what cost. Also, during the visit there would be extensive consultations with pharmacists, via their associations, and with concerned parties in the MOH and other ministries.

Since the quantity of syrup, powder or tablets that are needed falls into three age breakdowns, it would be most useful to look at what is preferred by mothers with children in the three age classifications, i.e. 0-2 months, 3 months to one year,over one year to less than five years.

There is the potential for a program for the social marketing of co-trimoxazole in Morocco. This could be done by having three presentations of the drug: (This represents one alternative but it will need to be tested to see if that is the most acceptable presentation for the mothers to give to their children.)

1. Syrup for the treatment of children less that 3 months of age.
2. Syrup/Pills of the appropriate dosage for children from three months to one year of age.
3. Pills for children from one year to five years of age.

The presentations(packaging) of the tablets should include the necessary instructions to help the mother to administer the drug correctly.

This is an exciting opportunity in Morocco to do something that has not been done in other countries. It will be important to see how the pill cycle program goes, the plan is to go from 3 to 12 million pill cycles a year. The bringing together of the local experience that is being developed from the contraceptive retail sales program with technical inputs, in ARI via REACH/JSI, should result in a very successful program for the marketing of co-trimoxazole.

It should be pointed out that if the pharmacists are not brought into the ARI program early then there is the possibility that they will undermine the rational use of drugs that is being proposed by the national ARI program.

5. The National ARI Program will need financial assistance to meet the ambitious training targets that it has set for itself.

This assistance is not limited to the actual training program but USAID should insist on the inclusion of a Continuous Quality Improvement(CQI) mechanism. CQI should not be undertaken uniquely for ARI but should be developed as a test case for ARI with the assumption that the MOH will use it in other health and population activities. For this reason there will need to be coordination between the Divisions of Prevention and Epidemiology.

6. USAID/Rabat should request that they be part of the ARI program evaluation that is tentatively planned for the end of 1993 or beginning of 1994 by the MOH.

WHO/EMRO will be requested by the MOH to assist with this evaluation. A program review is also scheduled in 1996 with external evaluators possibly from USAID, UNICEF, WHO, and the MOH. This should be linked to the program planning for 1998-2002.

CONTACT LIST

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Annex I

LE PROGRAMME DE LUTTE CONTRE LES INFECTIONS RESPIRATOIRE AIGUES AU MAROC 1993-1997

14

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11. BUDGET GLOBAL

12. MORTALIT INFANTILE PAR PROVINCE (1988)

AMPLEUR DU PROBLEME:

Les infections respiratoire aiguës (IRA) chez les enfants de moins de cinq ans ont été reconnues au Maroc comme un problème de santé publique majeur. D'une part en raison du taux de moralité infantile encore élevé par rapport à la limite "acceptable" de 40%. On peut estimer que les IRA sont responsables d'au moins 1/3 de cette moralité.

En terme de morbidité 30 a 50% des consultations des enfants et des nourrissons sont motivées par les infections respiratoires. L'incidence élevée de la pneumopathie bactérienne au Maroc est certainement en rapport avec certaines facteurs de risque telles que les infections virales, les faible poids a la naissance et la malnutrition qui affaiblissent les défense des voies respiratoires.

L'approche du problème des IRA a donc abouti à la structuration d'un programme national de lutte contre cette pathologie. L'objectif général sera de réduire la moralité par pneumopathie. L'un des objectifs secondaire du programme sera de diminuer l'utilisation abusive des antibiotiques et autres médicament dans le traitement des IRA de l'enfant.

La stratégie Principale sera la prise en charge standard des cas (PCS) en accordant la priorité au traitement de la pneumopathie. La priorité sera accorde à la prise en charge standard des cas dans la formation sanitaire de base et la prise en charge standard des cas de pneumopathie grave et de maladies très grave dans les hôpitaux.

Les activités du programme seront alors centrée sur l'amélioration de l'accès a la prise en charge standard des ces malades en formant les personnels de santé et en approvisionnée toutes les formations sanitaires en médicaments appropries et en matériels. La prise en charge inclut l'information des mères qui se pressentent à la formation sanitaire au sujet des soins a domicile en cas d'IRA.

Grâce à l'appui de l'OMS et de l'UNICEF, le programme de lutte contre les infections respiratoires de l'enfant va démarrer dans 4 provinces en 1992. Une évaluation en fin de parcours permettra d'envisager l'extension à d'autres provinces avant le fin 1997.

C'est ainsi que le présent plan se propose d'implanter les stratégies de contrôle de cette pathologie sur l'ensemble du Maroc d'ici fin 1997.

OBJECTIFS DU PROGRAMME IRA:

* amélioré le traitement des cas d'IRA chez les enfants;
* réduire la mortalité d'environ 1/3 d'ici l'an 2000;
* réduire la morbidité et la gravite des cas d'IRA
* développer l'éducation sanitaire des mères et de la communauté en matière de maladies respiratoires infantiles.

La prise en charge standard des cas sera focalisée sur la pneumopathie qui est la principale cause de décès. L'incidence moyenne de la pneumopathie est estimée à 20% chez les enfants moins de cinq ans. Environ 60% de la population cible aura accès à la prise en charge standard au niveau des formations sanitaires du pays.

POPULATION SOUS PROGRAMME

ANNEE DE DEMARAGE	NOM DE PROVINCE	POPULATION TOTAL	ENFANT < 5 ANS	CAS DE LA PNEUMOPATHIE	SOUS PROGRAMME
1992	AGADIR	799	119850	19176	
1992	KENITRA	1015	152250	24360	
1992	MARRAKECH	1517	227550	36408	
1992	MEKNES	728	109200	17472	
	TOTAL	4059	608850	97416	97416
1993	AZILAL	425	63750	10200	
1993	BOULEMANE	154	23100	3696	
1993	CHEFCHAOUEN	363	54450	8712	
1993	ERRACHIDIA	501	75150	12024	
1993	ESSAOUIRA	436	65400	10464	
1993	GUELMIME	162	24300	3888	
1993	OUARZAZATE	650	97500	15600	
1993	TAOUNATE	624	93600	14976	
1993	TATA	98	14700	2352	
1993	TETOUAN	495	74250	11880	
	TOTAL	3908	586200	93792	191208
1994	AL HOCEIMA	391	58650	9384	
1994	LARACHE	392	58800	9408	
1994	FIGUIG	110	16500	2640	
1994	IFRANE	128	19200	3072	
1994	KHENIFRA	402	60300	9648	
1994	SIDI KACEM	609	91350	14616	
1994	TANTAN	130	19500	3120	
1994	TAROUDANT	205	30750	4920	
1994	TIZNIT	337	50550	8088	
1994	BENI MELLAL	835	125250	20040	

ANNEE DE DEMARAGE	NOM DE PROVINCE	POPULATION TOTAL	ENFANT < 5 ANS	CAS DE LA PNEUMOPATHIE	SOUS PROGRAMME
	TOTAL	3539	530850	84936	276144
1995	BOUJDOR	10	1500	240	
1995	EL KELAA	682	102300	16368	
1995	FES	1000	150000	24000	
1995	KHEMISSET	519	77850	12456	
1995	LAAYOUNE	142	21300	3408	
1995	SAFI	866	129900	20784	
1995	SALE	644	96600	15456	
1995	TANGER	633	94950	15192	
1995	TAZA	727	109050	17448	
	TOTAL	5223	783450	125352	401496
1996	BEN M'SIK	1110	166500	26640	
1996	BEN SLIMANE	191	28650	4584	
1996	CASA ANFA	598	89700	14352	
1996	CASA EL FIDA	490	73500	11760	
1996	H.M.A.SBAA	588	88200	14112	
1996	KHOURIBGA	562	84300	13488	
1996	MOHAMMADIA ZENATA	217	32550	5208	
1996	OUJDA	1000	150000	24000	
1996	SETTAT	750	112500	18000	
1996	SKHIRET TEMARA	224	33600	5376	
	TOTAL	5730	859500	137520	539016
1997	EL JADIDA	924	138600	22176	
1997	H.H.H.CHOK	455	68250	10920	
1997	NADOR	729	109350	17496	

ANNEE DE DEMARAGE	NOM DE PROVINCE	POPULATION TOTAL	ENFANT < 5 ANS	CAS DE LA PNEUMOPATHIE	SOUS PROGRAMME
1997	RABAT	693	103950	16632	
	TOTAL	2801	420150	67224	606240
	TOTAUX	25260	3789000	606240	

MEDICINES ET INFIRMIERES A FORMER

ANNEE DE DEMARAGE	NOM DE PROVINCE	INFIRMIERE A FORMER	MEDECINE A FORMER
1993	AZILAL	175	11
1993	BOULEMANE	130	12
1993	CHEFCHAOUEN	85	12
1993	ERRACHIDIA	213	18
1993	ESSAOUIRA	139	17
1993	GUELMIME	52	7
1993	OUARZAZATE	210	15
1993	TAOUNATE	169	18
1993	TATA	69	12
1993	TETOUAN	188	17
	TOTAL	1430	139
1994	AL HOCEIMA	115	14
1994	LARACHE	105	18
1994	FIGUIG	69	6
1994	IFRANE	104	9
1994	KHENIFRA	221	26
1994	SIDI KACEM	153	14
1994	TANTAN	26	2
1994	TAROUDANT	218	15
1994	TIZNIT	141	13
1994	BENI MELLAL	306	29
	TOTAL	1458	146
1995	BOUJDOR	26	2
1995	EL KELAA	199	16
1995	FES	423	25
1995	KHEMISSET	174	16
1995	LAAYOUNE	83	6
1995	SAFI	321	18

ANNEE DE DEMARAGE	NOM DE PROVINCE	INFIRMIERE A FORMER	MEDECINE A FORMER
1995	SALE	168	19
1995	TANGER	178	17
1995	TAZA	248	32
	TOTAL	1820	151
1996	BEN M'SIK	94	14
1996	BEN SLIMANE	100	17
1996	CASA ANFA	121	18
1996	CASA EL FIDA	113	15
1996	H.M.A.SBAA	91	20
1996	KHOURIBGA	207	13
1996	MOHAMMADIA ZENATA	37	6
1996	OUJDA	464	51
1996	SETTAT	323	24
1996	SKHIRET TEMARA	60	10
	TOTAL	1610	188
1997	EL JADIDA	359	36
1997	H.H.H.CHOK	83	22
1997	NADOR	181	17
1997	RABAT	352	75
	TOTAL	975	150

Cours de Formation à prévoir;

	1993	1994	1995	1996	1997
Cours de Gestion programme IRA (4 personne de 5 Province par cours)	2	2	2	2	1
Cours de Formation des Formateurs (2 personne de 5 Province par cours)	2	2	2	2	1
Cours de Supervision (2 personne de 5 Province par cours)	2	2	2	2	1
Formation des Médecins aux Provinces (10 par cours)	15	15	16	18	15
Formation des infirmiers (10 par cours)	143	146	182	161	100

Coût des Formations

Cours de gestion de programme IRA:
$10,000 par cours ou $20,000 par an.
Ces estimations sont base sur l'expérience en Octobre 1991

Cours de Formation de Formateurs et de Supervision:
$5,000 par cours ou $20,000 par an.
Ces estimations sont base sur l'expérience en Décembre 1991

Formation des médecines et infirmiers;
200 DH par jour par personne (la durée du cours est de 3 jours)
200 DH fois 4 jour de la prise en charge =800 DH =$100.00 par personne

II. BESOIN EN ANTIBIOTIQUES

ANNEE	CAS SOUS PROGRAMME	ACESS DE LA POPULATION	CAS A TRAITER	PNEUMOPATHIE	PNEUMOPATHIE NOURRISSON	PNEUMOPATHIE SEVERE	PNEUMOPATHIE
1992	121770	60%	73062	51143	7306	14612	
1993	239010	60%	143406	100384	14341	28681	
1994	345180	60%	207108	144976	20711	41422	
1995	501870	60%	301122	210785	30112	60224	
1996	673770	60%	404262	282983	40426	80852	
1997	757800	60%	454680	318276	45468	90936	

ANNEE	COTRIMOXAZOL COMPRIMES	COUT (DH)	COTRIMOXAZOL SIROP	COUT (DH)	AMOXICILLINE SIROP	COUT (DH)
1992	1468546	440564	6576	49317	4384	26302
1993	2882461	864738	12907	96799	8604	51626
1994	4162871	1248861	18640	139798	12426	74559
1995	6052552	1815766	27101	203257	18067	108404
1996	8125666	2437700	36384	272877	24256	145534
1997	9139068	2741720	40921	306909	27281	163685

ANNEE	AMPICILLINE INJECTABLE	COUT (DH)	GENTAMICIN INJECT.	COUT (DH)	THIAMPHENICOL INJECT.	COUT (DH)
1992	157814	473442	157814	394535	52605	420837
1993	309757	929271	309757	774392	103252	826019
1994	447353	1342060	447353	1118383	149118	1192942
1995	650424	1951271	650424	1626059	216808	1734463
1996	873206	2619618	873206	2183015	291069	2328549
1997	982109	2946326	982109	2455272	327370	2618957

COUT TOTAL DES MEDICAMENTS

ANNEE	DH	$US
1992	2063636	$248,631
1993	4050502	$488,012
1994	5849765	$704,791
1995	8505191	$1,024,722
1996	11418380	$1,375,708
1997	12842437	$1,547,282

FACTURES CONSIDERE POUR LES BESOINS EN MEDICAMENTS

ACCES 60%
MARGE DES MEDICAMENTS A PREVOIR 50%
Taux Dollar = 8.3 DH

TRAITEMENT DE LA PNEUMOPATHIE
COTRIMOXAZOLE 90% DES CAS B. PENICILLAN 10% DES CAS

TRAITEMENT DE LA PNEUMOPATHIE DE NOURRISSON
COTRIMOXAZOLE SIROP 20% DES CAS
AMPICILLINE PLUS GENTAMYCIN 80% DES CAS
SUIVI DE 50% COTRI SIROP 50% AMOX. SIROP

TRAITMENT DE LA PNEUMOPATHIE SEVERE
20% DES CAS COTRIMOXAZOLE COMPRIMES
80% DES CAS EN TROIS GROUPS
GR 1 40% AMP. ET GENT.
GR 2 30% BENZ PENC.
GR 3 30% THIEMPHENICOL

LES PRIX DES MEDICAMENTS SONT LES PRIX POUR LES ACHATS LOCAUX DU MINISTRE DE LA SANTE.

III. COMMUNICATIONS

Cet aspect n'est pas encore bien détaillé. Auprès du MINISTRE de la Santé il y a déjà un certain capacité technique. Pendant l'année 1992 if faut prévoir des consultations de bien cible les actions de la communications.

L'étude démographique et Santé (DHS) va fournir des informations sur l'incidence de la pneumopathie en hiver et les comportements des mères devant cet maladie. Il y a certainement d'autres enquêtés disponible qui peut être utiles comme données de départ.

Une étude ethnographique cible sur les IRA est souhaitable a compléter les informations disponible. If faut prévoir un consultant de mener les premières enquêtes et forme les nationaux a le faire.

IV. SUPERVISION

Niveaux Provincial
Entretien 10% de prix des véhicules provinciaux
Carburant 1.000 DH par Province par mois
Indemnité 10.000 par Province par année

Niveaux Central
Une Visite par an par Province pour une semaine
600 DH fois 7 jour = 4200 DH par Province

BUDGET GLOBAL 1993-97

ACTIVITES	1993	1994	1995	1996	1997	TOTAL
FORMATION						
Cours De Gestion	$20,000	$20,000	$20,000	$20,000	$10,000	$90,000
Formation des Formateurs	$10,000	$10,000	$10,000	$10,000	$5,000	$45,000
Cours de Supervision	$10,000	$10,000	$10,000	$10,000	$5,000	$45,000
Formation des Medicines	$14,000	$15,000	$15,000	$18,000	$15,000	$77,000
Formations des Infirmiers	$143,000	$146,000	$182,000	$155,000	$98,000	$724,000
Frais d organization des cours	$49,500	$49,500	$49,500	$49,500	$25,000	$223,000
Impression des Modules	$5,000		$5,000			$10,000
Sous Total Formation	$251,500	$250,500	$291,500	$262,500	$158,000	$1,214,000
MATERIAL						
Otoscopes	$35,000	$37,500	$37,500	$45,000	$37,500	$192,500
Minuteur	$7,865	$8,019	$10,010	$8,525	$5,363	$39,782
Remplacement			$3,933	$7,942	$9,015	$20,889
Medicaments	$488,000	$705,000	$1,024,000	$1,375,000	$1,547,000	$5,139,000
Concentrateurs d oxygen	$50,000	$50,000	$50,000	$50,000	$25,000	$225,000
Video et Magnetiscope	$40,000	$40,000	$40,000	$40,000	$20,000	$180,000
Material Formation	$8,500	$8,500	$8,500	$8,500	$4,250	$38,250

ACTIVITES	1993	1994	1995	1996	1997	TOTAL
Vehicle de Supervision	$120,000	$120,000	$120,000	$120,000	$60,000	$540,000
Sous Total Material	$749,365	$969,019	$1,293,943	$1,654,967	$1,708,127	$6,375,421
SUPERVISION						
Supervision Provincial	$17,500	$30,000	$42,500	$55,000	$62,000	$207,000
Entretian	$12,000	$24,000	$36,000	$48,000	$54,000	$174,000
Carburant	$12,000	$24,000	$36,000	$48,000	$54,000	$174,000
Supervision Central	$7,100	$12,200	$17,200	$22,300	$24,800	$83,600
Sous Total	$48,600	$90,200	$131,700	$173,300	$194,800	$638,600
Supervision						
NIVEAU CENTRAL						
Etudes Ethnographique	$30,000					$30,000
Teste/impression des materiaux educative	$10,000	$15,000		$15,000		$40,000
System d Info. Sanitaire pour IRA(Impression)	$1,000	$1,000	$1,000	$1,000	$1,000	$5,000
Totaux	$1,090,465	$1,325,719	$1,718,143	$2,106,767	$2,061,927	$8,303,021

MORTALITE INFANTILE PAR PROVINCE (1988)

Province	IMR	POP.	Under 5
		(1,000)	(1,000)
GUELMIME	198	162	24
CHEFCHAOUEN	141	363	54
ESSAOUIRA	139	436	65
MARRAKECH	131	1517	228
TATA	130	98	15
OUARZAZATE	128	650	98
ERRACHIDIA	124	501	75
AZILAL	124	425	64
TAOUNATE	122	624	94
TETOUAN	121	495	74
BOULEMANE	113	154	23
IFRANE	112	128	19
TAROUDANT	112	205	31
TIZNIT	110	337	51
SIDI KACEM	109	609	91
TANTAN	106	130	20
FIGUIG	105	110	17
AL HOCEIMA	105	391	59
KHENIFRA	104	402	60
ESSEMARA	100	24	4
OUED EDDAHAB	100	2000	
BOUJDOR	100	10	2
LAAYOUNE	100	142	21
TAZA	97	727	109
EL KELAA	95	682	102
AGADIR	95	799	120
FES	91	1000	150
TANGER	86	633	95

Province	IMR	POP.	Under 5
		(1,000)	(1,000)
MEKNES	86	728	109
SAFI	82	866	130
KENITRA	81	1015	152
SALE	79	644	97
KHEMISSET	76	519	78
BENI MELLAL	75	835	125
SKHIRET TEMARA	74	224	34
MOHAMMADIA ZENATA	68	217	33
KHOURIBGA	66	562	84
OUJDA	66	1000	150
SETTAT	64	750	113
BEN SLIMANE	64	191	29
H.M.A.SBAA	61	588	88
BEN M'SIK	61	1110	167
CASA ANFA	61	1088	163
CASA ELFIDA	61		0
CASABLANCA	61		
H.H.H.CHOK	61	455	68
NADOR	60	729	109
EL JADIDA	60	924	139
RABAT	50	693	104
		26,892	3,737

ANNEX II

PHASE		POP	U5	ACCESS	BIRTHS	DEATHS	COVERED
	PROVINCE	1000	1000				SCM
2	GUELMIME	162	24	59%	5670	1123	662
2	CHEFCHAOUEN	363	54	25%	12705	1791	448
2	ESSAOUIRA	436	65	21%	15260	2121	445
1	MARRAKECH	1517	228	39%	53095	6955	2713
2	TATA	98	15	88%	3430	446	392
2	OUARZAZATE	650	98	38%	22750	2912	1107
2	ERRACHIDIA	501	75	59%	17535	2174	1283
2	AZILAL	425	64	38%	14875	1845	701
2	TAOUNATE	624	94	31%	21840	2664	826
2	TETOUAN	495	74	32%	17325	2096	671
2	BOULEMANE	154	23	41%	5390	609	250
3	IFRANE	128	19	63%	4480	502	316
3	TAROUDANT	205	31	25%	7175	804	201
3	TIZNIT	337	51	45%	11795	1297	584
3	SIDI KACEM	609	91	23%	21315	2323	534
3	TANTAN	130	20	100%	4550	482	482
3	FIGUIG	110	17	58%	3850	404	234
3	AL HOCEIMA	391	59	25%	13685	1437	359
3	KHENIFRA	402	60	33%	14070	1463	483
3	ESSEMARA	24	4	100%	840	84	84
5	OUED EDDAHAB	2000			70000	7000	0
4	BOUJDOR	10	2	0%	350	35	0
4	LAAYOUNE	142	21	100%	4970	497	497
4	TAZA	727	109	33%	25445	2468	814

PHASE		POP	U5	ACCESS	BIRTHS	DEATHS	COVERED
	PROVINCE	1000	1000				SCM
4	EL KELAA	682	102	30%	23870	2268	680
1	AGADIR	799	120	41%	27965	2657	1089
4	FES	1000	150	18%	35000	3185	573
4	TANGER	633	95	48%	22155	1905	915
1	MEKNES	728	109	63%	25480	2191	1381
4	SAFI	866	130	25%	30310	2485	621
1	KENITRA	1015	152	57%	35525	2878	1640
4	SALE	644	97	100%	22540	1781	1781
4	KHEMISSET	519	78	31%	18165	1381	428
4	BENI MELLAL	835	125	54%	29225	2192	1184
5	SKHIRET TEMARA	224	34	72%	7840	580	418
5	MOHAMMADI A ZENATA	217	33	72%	7595	516	372
5	KHOURIBGA	562	84	36%	19670	1298	467
5	OUJDA	1000	150	65%	35000	2310	1502
5	SETTAT	750	113	52%	26250	1680	874
5	BEN SLIMANE	191	29	22%	6685	428	94
5	H.M.A.SBA A	588	88	100%	20580	1255	1255
5	BEN M'SIK	1110	167	100%	38850	2370	2370
5	CASA ANFA	1088	163	100%	38080	2323	2323
5	CASA EL FIDA		0	100%	0	0	0
6	CASABLANC A				0	0	0
6	H.H.H.CHO K	455	68	100%	15925	971	971

PHASE		POP	U5	ACCESS	BIRTHS	DEATHS	COVERED
	PROVINCE	1000	1000				SCM
6	NADOR	729	109	17%	25515	1531	260
6	EL JADIDA	924	139	29%	32340	1940	563
6	RABAT	693	104	100%	24255	1213	1213
		26,892	3,737	44%	941,220	84,873	37,060

ANNEX III

BUDGET PROJECTION FOR 1993 ADB-FINANCED 10 PROVINCE ARI PROGRAM				
(BASED ON MSP BUDGET, CONVERSION RATE 8.30DH TO US DOLLAR)				
		TOTAL	NON-HOSP	HOSP
ANTIBIOTICS				
COTRIM TABS		$162,582	$162,582	
COTRIM SYRUP		$18,200	$18,200	
AMOX SYRUP		$9,706	$9,706	
AMPI INJECT		$181,995		$181,995
GENTAMYC INJ		$151,663		$151,663
THIAMPHEN INJ		$161,773		$161,773
B PCN INJ		$97,064	$97,064	
SUBTOTALS	58%	$782,984	$287,552	$495,431
PERCENTS			37%	63%
TRAINING	12%	$156,839	$125,471	$31,368
MATERIALS				
TIMERS		$10,048	$10,048	
O2 CONCENTRATORS		$130,120		$130,120
OTOSCOPES		$58,313		$58,313
VCRs+TVs		$38,554	$19,277	$19,277
SLIDE PROJECTORS		$9,639	$4,819	$4,819
ECRANS		$7,229	$3,614	$3,614
MAGNETIC BOARDS		$9,639	$4,819	$4,819
SUBTOTAL	20%	$263,542	$42,578	$220,964
			16%	84%
SUPERVISORY MEANS				
VEHICLES	83%	$120,482	$120,482	

BUDGET PROJECTION 1993 ADB-FINANCED 10 PROVINCE ARI PROGRAM				
(BASED ON MSP BUDGET, CONVERSION RATE 8.30DH TO US DOLLAR)				
		TOTAL	NON-HOSP	HOSP
FUEL		$12,048	$12,048	
PER DIEM,ETC		$12,048	$12,048	
	11%	$144,578	$144,578	$0
TOTALS		$1,347,943	$600,180	$747,763
			45%	55%

Comparison of Costs of Drugs UNICEF vs MOH Purchase

COUT EN DOLLAR (US) PAR MEDICAMENT

ANNEE	COTRI. COMPRIMES	COTRIMOXAZOL SIROP	AMOX. SIROP	AMPICILLINE INJECTABLE	GENTAMICIN INJECTABLE	THIAMPHEN. INJECTABLE
1992	$53,080	$5,942	$3,169	$57,041	$47,534	$50,703
1993	$104,185	$11,663	$6,220	$111,960	$93,300	$99,520
1994	$150,465	$16,843	$8,983	$161,694	$134,745	$143,728
1995	$218,767	$24,489	$13,061	$235,093	$195,911	$208,971
1996	$293,699	$32,877	$17,534	$315,617	$263,014	$280,548
1997	$330,328	$36,977	$19,721	$354,979	$295,816	$315,537

PRIX UNICEF($US)

ANNEE	COTRI. COMPRIMES	COTRIMOXAZOL SIROP	AMOX. SIROP	AMPICILLINE INJECTABLE	GENTAMICIN INJECTABLE	THIAMPHEN. INJECTABLE
1992	$11,748	$3,748	$3,902	$15,781	$26,197	$26,302
1993	$23,060	$7,357	$7,658	$30,976	$51,420	$51,626
1994	$33,303	$10,625	$11,060	$44,735	$74,261	$74,559
1995	$48,420	$15,448	$16,080	$65,042	$107,970	$108,404
1996	$65,005	$20,739	$21,588	$87,321	$144,952	$145,534
1997	$73,113	$23,325	$24,280	$98,211	$163,030	$163,685

ANNEX IV