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**THE FUTURE NEEDS
OF THE MOZAMBIQUE
PROSTHETICS PROGRAM**

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I. Outline of the Project

The USAID/Mozambique Prosthetics Project is a humanitarian response to the large numbers of civilian casualties from the brutal and protracted civil war. It is supported from the War Victims Fund, established in 1989 by the Congress as a dedicated resource to assist civilians disabled in civil strife and return them to productive lives. Through this fund Congress wanted to demonstrate US concern for the civilians disabled in wars and provide a means to involve US groups in this work.

Initially, US experts estimated that there were from 15,000 to 20,000 amputees in Mozambique and that there were 1,500 to 2,000 new amputations each year. A subsequent survey of medical facilities suggested that this estimate was too high. We now believe that the amputee total is closer to 8,000. With the Peace Accords the numbers of new cases will eventually be significantly reduced.

The original AID project has four principal objectives :

- to increase the number of prosthetics that are produced and fitted
- to improve the overall quality of orthopedic case management
- to train Mozambicans in rehabilitation skills
- to improve access to rehabilitation services for rural and urban disabled.

Initially, \$2.5 million was obligated in grants to the International Red Cross (ICRC), Handicap International (a French NGO), Health Volunteers Overseas (a US Physician NGO) and Save the Children Federation.

Subsequent project amendments broadened the scope of the project to include vocational training and some orthotics, expanded the production of prostheses and funded additional training. In total \$5.3 million has been granted for this activity.

The principal current project components are :

- 1) A \$1,525,000 grant to ICRC to support the work at four orthopedic centers, provide equipment needed for production, open a new orthopedic center in Quelimane and train 23 new prosthetist.
- 2) A \$1,383,000 grant to Handicap International (HI) to support production at orthopedic workshops, train 19 prosthetic technicians and 29 physical therapists.
- 3) A \$50,000 grant to ADEMO (a Mozambican NGO) to support vocational training at their provincial centers.
- 4) A \$1,300,00 grant to Health Volunteers Overseas (HVO) to support training for orthopedic surgeons, general surgeons, surgical nurses and assistants and to fund modest amounts of additional equipment, supplies and facilities refurbishing costs.
- 5) A \$825,000 grant to Save the Children Federation to construct patient hostels at the two principal orthopedic centers.

II. Accomplishments to Date/Current Situation

- to increase the production and fitting of prostheses

This project element has gone very well over the four elapsed project years (1990-1993). ICRC has produced and fitted almost 3,700 prostheses. HI has produced and fitted 600 prostheses during the same time period. With the graduation and recent deployment of the 23 new internationally qualified prosthetist/orthetists ICRC's production capacity should be significantly enhanced. ICRC estimates an optimum annual figure of about 1,200-1,400 units. HI can produce 150-200 prostheses giving a total production capacity of about 1,350-1,600 prostheses.

| | 1990 | 1991 | 1992 | 1993 | Total | Est. 1994 |
|-------|------|-------|-------|-------|-------|-----------|
| ICRC | 784 | 898 | 1,027 | 972 | 3,681 | 800-900 |
| HI | 114 | 154 | 177 | 171 | 616 | 125 |
| Total | 898 | 1,052 | 1,024 | 1,143 | 4,297 | 925-1,025 |

While the principal effort of the workshop is directed to the production of prostheses both ICRC and HI are engaged in producing orthotics and orthopedic shoes for polio victims. HI also manufactures its own wheelchairs. ICRC contract for wheelchair manufacture with a Maputo factory. Both HI and ICRC manufacture large quantities of crutches.

- **to improve the overall quality of orthopedic case management**

The results of this project component have been disappointing. Despite earlier commitments to USAID the Ministry of Health (MOH) was unable to provide orthopedic residents for training. This resulted in the resignation of the full-time US orthopedic surgeon recruited by HVO. Some short-term training by HVO Volunteers was carried out but the shortage of qualified portuguese speakers was limiting. The project provided needed equipment and refurbishment for some orthopedic clinical facilities along with a professional library and furniture for a teaching conference room. Only about 80% of the total technical grant was spent when it concluded in December, 1993 (an additional \$400,000 was given to SCF for HVO support).

- **To train Mozambican in rehabilitation skills**

This project component has been quite effective. ICRC has trained and graduated 23 of the 38 prosthetist/orthotist students in a three and a half year, internationally recognized course. All are now deployed at orthopedic centers throughout Mozambique, and are integrated into and paid by the MOH.

HI has two training programs. A three year physical therapy pre-service program for 22 students and a basic level program for ortho-prosthetic technicians. All these positions are integrated into the MOH civil service and budget. The 18 basic level ortho-prosthetic technicians were graduated in 1993 and are now working at orthopedic centers. The 22 physical therapy students have completed their theoretical training and are now doing practical training at the hospitals and in the community.

- **to improve access for rural services for urban and rural disabled**

After several false starts this project component is now making progress. The Maputo center is completed and ready for occupancy. The Beira center is being constructed and should be completed by 1994. It should be recalled that the original plans contemplated five traditional structures at a total estimated cost of \$150,000. This plan proved impractical. The two permanent structures now contracted for will probably cost \$250-300,000 each and will not be available until the last months of the project. The need for transit centers is still a priority but clearly a cheaper and quicker way of meeting this need will have to be found. ..

- **to promote economic activities for the disabled**

The \$50,000 grant to ADEMO to promote economic activities for the disabled was partially successful. ADEMO has started some pilot economic activities in Maputo and

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the provinces, some of which are apparently quite successful. A portion of the resources in the grant were used for national and provincial mobilization.

III. Discussion of Anticipated Need

A. PROSTHESES

There are a number of factors that influence an estimate of need. These are :

1. The requirements for replacement and repairs

Fabricating replacement prostheses for existing amputees will engage the bulk of ICRC's and HI's capacity.

A prosthesis can be expected to last from three to four years. In the interim period between fitting and replacement there will be an intermittent need for repairs and readjustments. Children require a new prosthesis about once a year because they outgrow the old one. There are currently an estimated 4,000 prostheses now in use in Mozambique. Assuming a 25% drop out rate and a three and a half year life expectancy for a prosthetic device, there is an annual countrywide requirement for 860 replacement units.

| | | |
|---|-----|--------------|
| No. of prosthesis fitted | = | 4,000 |
| Less 25% dropout | | <u>1,000</u> |
| | | 3,000 |
| Replace every 3.5 years divide by 3.5 | | |
| Estimated number of replacements needed annually | 860 | |

This estimate is conservative, in 1993 ICRC alone produced almost 600 replacement units.

2. The age distribution of the amputees

A 1993 survey of a sample of amputees carried out by ICRC indicated that 12% were less than 20 years and 79% were between 20 and 50 years. Thus, the target population we are dealing with is relatively young, 91% under the age of 50, suggesting that the need for replacement prostheses and an aggressive repair program will be a concern for decades to come.

3. Post-War Casualties from Unexploded Mines

Initial UN estimates suggested that there were about 2,000,000 mines in Mozambique. Experts now feel this estimate is far too large and have revised the figure downward to 1,000,000. Our best informed observer suggested that the total was in the "hundreds of thousands". These to come, civilian casualties from anti personnel mines will be a problem for decades provided the mine removal program is aggressively pursued. This is a considerable caveat since mine clearance operations have been notoriously slow in starting. UNHCR reported that unexploded anti-personnel mines had thus far not been an impediment to their resettlement operations.

ICRC estimates that three quarters of the 500 annual amputations nationwide result from the war. Of this total, about half the war related amputees they treat are victims of anti personnel mines, the remainder are from gunshot wounds, infections and other causes. If this is the case, "the Peace Dividend" should reduce the numbers of war related amputees by half, from about 400 annually to 250-260, in the short term. In the longer term, as mines are cleared, the numbers should be considerably fewer.

It was frequently pointed out that Mozambique's mine problem, while very serious, does not approach the levels of Afghanistan, Cambodia, or Angola. Landmines are said to have claimed 10,000 victims in Mozambique, 20,000 in Angola, 30,000 in Cambodia and hundreds of thousands in Afghanistan.

4. The impact of the backlog of war casualties from RENAMO areas and other remote areas on demand for services

There are no data from which to fashion an estimate of the impact of the PEACE Accord (which dramatically improved accessibility to orthopedic centers from some remote areas) on demand for services. Well informed observers make two points: first, RENAMO health services were notoriously poor, resulting in an excessive number of deaths from war-related casualties; second, the government's health services have been treating both soldiers and civilians from RENAMO

areas throughout the war period. This suggests that in the absence of an aggressive campaign to reach war victims in RENAMO areas, the impact on demand will be not be great.

5. The waiting period for services

Since the beginning of the ICRC and HI prosthetic program there has been a backlog in demand. Currently, there is a waiting list of 160 patients in Maputo and 60 patients in Zambezia. These are roughly the same levels as in earlier years.

A clear constraint in increasing the numbers of patients treated is the availability of space at the transit centers. USAID has sought to ameliorate this situation, but resolution has proven both more difficult and expensive than USAID expected.

6. Non-war related amputations

Currently, non war-related amputations account for an estimated 25% (100-125) of the current total of 500 new amputations. The bulk result from traffic accidents which are said to be increasing in "epidemic proportions". The remainder result principally from diabetes and infections.

To summarize, estimated annual needs for each of the next three years are as follows :

| | |
|--|-------------|
| 1. Replacements of prostheses already fitted | 850 - 900 |
| 2. New casualties from mines | 200 - 250 |
| 3. Non war-related causes | 100 - 125 |
| Total Estimated Need Per Year | 1,100-1,275 |

B. ORTHOTICS

There are no estimates of the numbers of patients requiring orthotics, but all professionals agree that the need is substantial. ICRC expects to provide between 600-800 orthotics per year. ICRC started producing orthotics at their centers in Beira and Quelimane in 1993 (the Quelimane center was equipped with USAID funds). Initially, ICRC also produced their own wheelchairs but these are now produced at a Maputo factory. ICRC contemplates funding annual production of 200 wheelchairs. ICRC also produces about 3000 pair of crutches annually.

HI has also produced some orthotics including large numbers of orthopedic shoes and sandals for lepers. HI also manufactures about 275 wheelchairs annually using local materials, along with 2,000 pair of crutches.

C. VOCATIONAL REHABILITATION

The Mozambique prosthetics program has concentrated on physical rehabilitation. While vocational rehabilitation has not been totally overlooked, it has not received either the concentrated effort or resources applied to the physical side. In part, this results from the state of the art and the absence of a clear course of action that will produce the desired results. There have been both successful and unsuccessful pilot schemes in Mozambique. All the same, vocational rehabilitation is an enormous problem which clearly falls within the war victims fund's mandate "to return the disabled to productive lives". Fortunately, there is a strong interest in this issue in the government (Acciao Sociale), and in the Mozambican and expatriate NGO sectors. This problem merits more concentrated effort.

IV. TECHNICAL ISSUES

A. HI vs. ICRC PROSTHETICS TECHNOLOGY

In the early 90's ICRC converted their prosthesis manufacturing process from polyester resin to polypropylene. Technical experts agree that the polypropylene technology is superior as it is faster and cheaper to produce. The product is also lighter and thus more comfortable for the patient. In Mozambique HI continues to use wood and leather to fabricate their prostheses and have thus far resisted changing over to the new technology. In the past they have argued that their approach is more sustainable since it relies on local resources. This argument has lost strength since the cost differential is now insignificant. The amounts and costs of the imported materials are not large and are readily available in South Africa, and the polypropylene product is clearly technically and cosmetically superior. Furthermore, it is reported that in Yugoslavia and Cambodia HI is now using the polypropylene technology.

At a recent USAID/W prosthetics technical conference the consensus of the US technical experts was that the wood/leather prosthesis was "substandard" and production should not be supported with USAID funds. The Prosthetics program managers did not entirely agree. They felt that USAID should not try to impose our standards on ongoing programs, particularly in situations where we are a minority donor, but that USAID should not support new programs that use the wood/leather technology. The HI staff in Maputo appear to be quite open minded on this issue. They state that the MOH has asked that they continue with the existing technology. Were the MOH to request a change, HI says it would approach Lyon to secure their concurrence and additional resources to make the change. The MOH told us their view was "pragmatic". They said they want the best sustainable treatment but recognize that the quality of health services delivered in the more "remote areas" where some of the HI clinics are located may not be as good as is available in Maputo. They appeared ready to live with this.

B. SHOULD AID BECOME INVOLVED IN VOCATIONAL REHABILITATION?

Thus far the USAID prosthetics program has concentrated on physical rehabilitation. Many, if not most, amputees have no means to support themselves independently and are often not welcomed back to their families. The net result is a growing class of disabled with no means of support. While a number of vocational rehabilitation initiatives have been undertaken in Mozambique there is no strategy or plan as to the best way to approach this problem. Given that the War Victims Fund legislation admonishes us to "assist war victims to return to productive lives," it would appear that an exploratory interest in determining what can and should be done is merited.

V. MANAGEMENT ISSUES

A. REPLACING THE ICRC

The ICRC has announced that with the end of hostilities their mission is completed. They plan to withdraw from Mozambique in December, 1994. The ICRC prosthetics program has been operating in Mozambique since 1981. During this period they have established an effective, high quality program that provides 80% of the national prosthetics resource. Since 1989 USAID has financed a portion of ICRC's Mozambique activities through a grant from the War Victims Fund. In preparation for their eventual departure, ICRC has sought to create a technically sustainable institution through the training of 23 internationally certified prosthetist/orthotist. As a result, ICRC leaves behind a fully qualified Mozambican technical team that is integrated into the Mozambican civil service, albeit at very low salaries. In the past, ICRC has supplemented these to some extent with food assistance.

ICRC has supplied ample amounts of up to date equipment and their four orthopedic facilities are fully operational. All this equipment, plus the vehicles, will be turned over to the MOH when they depart.

The ICRC has operated managerially largely outside the structure of the MOH with its own independent budget and accounting procedures. In order to sustain the ICRC resource, \$200,000 in annual recurrent costs will have to be found. In addition, funds will be needed to employ a project administrator. Everyone agrees that maintaining the ICRC entity as a managerially and financially independent entity (while working under the policy direction and supervision of the MOH) is crucial to its continued effectiveness. The MOH is unable to pick up these costs. Even if they had the resources it is unlikely they would be able to use them for this activity considering their competing priorities.

The ICRC and the MOH are now looking for donors who can support both the financial and technical assistance requirements of the prosthetics program. They have approached USAID, the Swiss and the EEG. Without external assistance this resource will seriously deteriorate in quality and efficiency, and, within a year, will probably collapse as supplies are exhausted and carry over funds run out. This would certainly cause some extent of political problems as the ICRC has served as the country's principal resource for physically rehabilitating war casualties.

There are a number of technical/managerial assistance resources who could possibly provide the needed help. These include: Santa Casa de Misericordia, a Portuguese orthopedic institution; POWER, a new British NGO with experience in Cambodia prosthetics and whose mission is specifically focussed on replacing ICRC with long term technical assistance (they plan a feasibility visit to Mozambique in November); and the Mozambican Red Cross. All of these institutions would certainly merit consideration for donor funding.

Financially, the SWISS Cooperation has indicated some interest in participating with others in local cost financing. They are not in a position to fund technical assistance.

B. CAN REHABILITATION SERVICES BE REALISTICALLY PRIVATIZED?

The 1993 evaluation suggested that privatization of rehabilitation services was possible route to sustainability. The plan envisioned establishing a series of independent group practices using MOH facilities. The individual amputee would not pay directly for these services, except in exceptional cases. Services would be supported by grants from donors, local businesses and the MOH. The MOH is strongly opposed to privatizing these services. They say they have no objection to a plan that includes "means tests" benefits. However, they fear a privatized plan would not reach the most vulnerable, and, if it did, would still require public resources to do so. A pending law requiring mandatory auto insurance would cover medical expenses for accident victims but we were advised that an effective system is several years away. If this scheme is not feasible what are the sustainability alternatives?

C. HOW CAN THE TRANSIT CENTERS BE EFFECTIVELY MANAGED?

The transit centers are an integral part of the prosthetics program since they provide expanded access to orthopedic facilities for the rural and urban patients awaiting treatment. Acciao Social has nominal responsibility for these institutions but they lack the resources to manage them effectively. They say they are fully prepared to turn over these facilities with the Acciao budget and staff to an NGO, but they have yet to find any takers. One possibility is to provide a candidate NGO with a start-up grant that would enable them to refurbish the facility. What are the alternatives?

D. WHAT ARE THE OPPORTUNITIES FOR COLLABORATION WITH OTHER DONORS IN THIS ACTIVITY?

A remarkable number of donors are involved in one way or another with the rehabilitation activity. Besides USAID, the donors include the Swiss, the Italians, the Danes, the Norwegians and the EEG. There are undoubtedly others. How can we capitalize on this interest to broaden technical and financial participation and perhaps have a richer and more successful rehabilitation experience?

VI. FINDINGS

- A.** Production capacity for prostheses (1,200 - 1,400 units) roughly approximates effective demand with the average number of patients on the waiting lists remaining about the same. Over the next three years about 70% of current capacity will be used to fabricate replacement limbs for existing clients. Twenty percent will be needed for new casualties from mines. Ten percent will be needed for non-war related causes. If the experts are correct mine casualties should drop off sharply in three years when the most dangerous areas are cleared.
- B.** The principal challenge is not to try to build additional production capacity. USAID needs to sustain existing capacity at the current high levels of quality while further integrating operations into the MOH. For ICRC this will require mostly managerial assistance and about \$200,000 annually in external resources for recurrent costs. The Swiss have expressed an interest in collaborating in an assistance package.
- C.** The funding and management of the prosthetics program is a long term problem. The disabled population is relatively young and will require support for decades to come.
- D.** The imminent departure of the ICRC places in dire jeopardy USAID's major investment in prosthetics and X principal resource for prostheses. ICRC, with donor assistance, runs a high quality program that provides 80 % of Mozambique's artificial limbs. Unless a new funding source or sources are found this resource will probably collapse.
- E.** The ICRC and HI prosthetics programs are staffed with fully qualified Mozambican technicians trained under the project. Their salaries are paid by the MOH x the Ministry budget. Nevertheless, the situation is fragile since it is unclear whether the ICRC prepared technical staff can be retained since their pay is low. The technical viability of the ICRC program depends on these people.
- F.** There are insufficient data to analyze the need for orthotics and other mobility aids.

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- G.** The prosthetics program priority is to engage in an aggressive repair and replacement program. The absence of an effective working network of transit centers will probably be a serious constraint.
- H.** It is impractical to attempt to privatize the Mozambican prosthetics activity.
- I.** There is a large unmet need in vocational rehabilitation for the war-related disabled. There is substantial Mozambican and donor interest in this problem. Some experimental programs have been carried out, but there is no clear strategy.
- J.** There appear to be significant opportunities to collaborate with other donors & NGO's in any follow-on activity.

APPENDIX I

List of Persons Contacted

| | |
|--|---|
| Dr. Mussa Calu | Prosthetics Program Advisor USAID |
| Mr. Armand Utshudi | HPN Program Manager USAID |
| Mr. Roger Carlson | USAID Director |
| Mr. Michel Le Roy | ICRC Project Manager |
| Mr. Evaristo Wanela | President, ADEMINO |
| Mr. Gabriel Dava | National Director, Acciao Social |
| Ms. Farida Gulamo | President, ADEMO |
| Mr. Douglas Passanisi | ONUMOZ, Handicapped Soldiers |
| Mr. David Kapya | Deputy Representative UNHCR |
| Mr. David Helitson | Halo Trust |
| Mr. Vicente Ululu | Secretary General, RENAMO |
| Ms. Isabelle Soares | Program Officer, Swissaid |
| Dr. Jose Langa | Director Orthopedic Services Maputo Hospital |
| Dr. Justin Opoku | Field Office Director Save the Children |
| Mr. Xavier Lemire Ms. Isabelle Urseau | Handicap International |
| Dr. Abdul Razak Noor Mohomed | National Director of Health Services MOH |
| Dr. Averino Barreto | Chief Epidemiologist, Ministry of Health |