MIDTERM EVALUATION OF VI/VVAF ACTIVITIES IN ANGOLA

by

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ACRONYMS

ADL	Activities of daily living
AMMIGA	The Association of Disabled Soldiers of the Angolan War
ANDA	The National Association of Disabled Angolans
CAPDC	Center for the Assistance and Promotion of Community Development
CCR	Coordination Committee for Rehabilitation
GCPO	Orthopedic Program Coordination Group
FNLA	National Front for the Liberation of Angola
FPLA	Popular Armed Forces of Liberation
GTZ	German Technical Assistance Organization
HI	Handicap International (Belgium)
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person
MAG	Mines Advisory Group
MI	Medicos International
MPLA	Popular Movement for the Liberation of Angola
NGO	Nongovernmental Organizations
SRC	Swedish Red Cross
P&O	Prosthetics and Orthotics
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNITA	National Union for the Total Independence of Angola
UCAH/DRO	United Nations Humanitarian Assistance Coordination Unit Demobilization and Reintegration Office
VI	Veterans International (referred to in this document as VI/VVAF)
VRD	Voluntary Relief Doctors
VVAF	Vietnam Veterans of America Foundation
WFP	World Food Program


REP. OF THE CONGO
Congo
0 100 200 km
0 100 200 mi
Cabinda
DEM. REP. OF
THE CONGO
Soyo
Ambriz
LUANDA
Malanje
South
Atlantic
Ocean
Porto
Amboim
Luena
Lobito
Huambo
Benguela
Menongue
Zambezi
Lubango
ZAMBIA
Namibe
NAMIBIA

EXECUTIVE SUMMARY

Background

A two-person team from the U.S. Agency for International Development's (USAID) Leahy War Victims Fund (LWVF) visited Angola in July 2000 to assess the impact of Veterans International's (VI) technical and medical rehabilitation support services program in Luena, Moxico Province. The team spent time in Luena and in and around the capital of Angola, Luanda. The team reviewed project documentation; conducted interviews with VI personnel; and visited the major international organizations supporting rehabilitation services in Angola, as well as orthopedic delivery sites in Viana, Neves Bendinha, and at the National Rehabilitation Center.

The need for quality orthopedic services in Angola is evident. Throughout the country, people with disabilities, especially amputees, are visible on the street and in the shops. Angola has one of the highest percentages of amputees in the world: an estimated incidence of one per 134 persons. To put this figure in proper perspective, compare it to that of Vietnam at one incidence per 1,182 people and to the that of the United States at one per 22,000.

Landmines are the leading cause of disability and amputation in Angola. Almost two-thirds of all war casualties in Angola are caused by accidents involving landmines. In half of these instances, the victims are killed; in the remainder, they are disabled. With approximately 20–40 new landmine casualties a day, an estimated 3,000–6,000 people are added to the amputee list annually.

In response to the needs of the growing amputee population, Veterans International, a program of the Vietnam Veterans of America Foundation (VVAF), established a regional rehabilitation center in Luena, East Angola, with support from the U. S. Agency for International Development's Leahy War Victims Fund. A $3,033,000 grant was signed with VI in September 1996.

Findings

Despite a slow start and hampered implementation, VI has achieved most of its program objectives and outputs proposed under its grant agreement. The well-functioning, fully staffed rehabilitation center in Luena has produced more than 772 prosthetic limbs, 34 orthotic devices, and at least 751 assistance

devices (crutches/walkers). Several imported wheelchairs were also provided to bilateral lower limb amputees. The center has an effective, collaborative relationship with the regional hospital in Luena and with the Center for the Assistance and Promotion of Community Development (CAPDC), the local NGO formed when Medicos International departed. Although the hospital provides limited medical interventions, CAPDC, with significant VI assistance, is providing fairly comprehensive social reintegration for beneficiaries after they leave the rehabilitation center. Handicap International (HI) is the only other in-country organization specifically addressing the social and economic needs of amputees and other persons with disabilities.

Although the 1994 Lusaka Protocols officially ended the conflict between the government of Luanda (FPLA) and the rebels (UNITA), sporadic fighting continues and UNITA still controls some territory, including the area immediately outside of Luena. This situation has severely affected VI's ability to implement some of the activities described in the grant agreement, such as producing wheelchairs and establishing a satellite clinic. It has also made it difficult for people with disabilities (including amputees) to travel freely and access services. As a result, all orthopedic production facilities, from Lubango in the South to Negage in the North, report much lower production volume than was estimated just a couple of years ago.

In addition to having established the central rehabilitation facility in Luena, VI had planned to open a support center in Lumeje, a UNITA-controlled area. This satellite support center was to serve as a referral and repair center for persons living outside of Luena town. Although during the past four years the security zone around Luena has been extended from 5–15 kilometers, peace is so tenuous that provincial officials will not allow civilians to go beyond this safety zone. VI is not, therefore, able to choose, negotiate, and open this satellite center.

As was the case in 1996, the project depends on the World Food Programme's (WFP) air transport operation to ferry personnel and freight to and from its project locations. However, the limited number of flights available and the limited space on the planes have restricted VI's ability to begin the wheelchair-manufacturing component of the original grant. Because it is unlikely that reliable, safe ground transportation will be available in the near future, this activity is not in the annual work plan. No other organization is producing wheelchairs in country. At least one group, the German Technical Assistance Organization (GTZ), is importing chairs from South Africa a the high cost of $350-$750 a chair. (VI/VVAF had anticipated producing wheelchairs for approximately US$130.[1]

As is true of all organizations providing prosthetic and orthotic services in Angola, VI uses the International Committee of the Red Cross' (ICRC) polypropylene component system for its devices. These components have been produced at the ICRC facility in Neves Bendinha and provided free. However, a recent worldwide ICRC study revealed quality control issues at many of its manufacturing facilities. ICRC has, therefore, decided to produce almost all its components at one central location in Coppet, Switzerland beginning in the year 2001. ICRC has assured organizations in Angola that

[1] VI/VVAF Angola Project Proposal ; August 26,1996; p 11.

although it will import all of its components beginning in January 2001, it will still provide the components free until December 2001. After that, all organizations will have to order directly from the Coppet factory and pay the full price for the components as well as paying the shipping and importation fees. As a result, the Angolan Ministry of Health has stated that it will assume responsibility for producing components in Neves Bendinha. Conventional wisdom is that the ministry does not have the technical capabilities to produce quality componentry and will most likely not embark on such an endeavor.

The Ministry of Health, through a Coordination Committee for Rehabilitation (CCR), directs orthopedic services in the country. Dr. Emmanuel Diavita is the national coordinator of the Physical Rehabilitation Program for the MOH. Dr. Diavita, while respected, is regarded as maintaining a relatively ineffectual position. Moreover, because his office (and ostensibly, his salary) is housed in the offices of the German Technical Cooperation (GTZ), who is providing technical guidance on orthopedic issues, he is seen as closely aligned with GTZ on issues.

Dr. Diavita informed the team that a two-person team from the European Union (EU) recently conducted an assessment and developed a plan of action for the rehabilitation sector. The EU had made clear statements to the government that it would not provide any further assistance in this sector until such an analysis and resulting document were complete. Despite little or no input or feedback from the implementing organizations, the Ministry of Health has adopted this document as a national plan of action for the whole sector. In September/October 2000, the document will be submitted to the National Assembly for passage. Once passed—and it is likely that it will pass—the MOH will seek donor commitments for implementation. It is highly likely that all NGO programs will also have to fit closely within this new plan.

Despite significant resources and royalties from oil exploration and drilling, prosthetic and orthotic services hold a relatively low priority within the government's health care system. Moreover, the "social responsibility" programs of private oil companies doing business in Angola have not provided any resources for this sector. All of the orthopedic rehabilitation programs underway in Angola depend on external funding. These programs are unlikely to achieve managerial and financial sustainability in the near future. Moreover, implementing organizations continue to follow the practice of supplementing government salaries. Although this practice is vital in the short term, it complicates the process of integrating these services into the public sector once external support is terminated.

Recommendations

- International organizations, government partners, and local beneficiaries agree that the VI program is providing a much-needed service in Luena. Because travel within the region is limited, it is doubtful that clients would be able to reach the next closest center in Kuito if the Luena workshop did not exist. One of only five provincial-based facilities in the country, the Luena workshop accounted for nearly 9 percent of the total 1999 production of artificial legs in the country.

- The project enjoys strong support from the local USAID office. The USAID mission director and the evaluation team recommend that the project be extended once the current grant expires (Although the current grant ends in September 2000, VI has submitted a no-cost extension request. The request, if approved, will extend the grant until March 2001). At present, this program is not sustainable without outside funding, nor will it be at the end of the one-year program extension. Therefore, if USAID supports the recommendation to continue the project, this decision should be communicated to both VI staff in-country and in Washington as soon as possible to allow sufficient time to develop an appropriate plan of action for the follow-on.

- It appears inevitable that the CCR will adopt a national plan of action for the implementation of rehabilitation services in Angola. Although it is far from perfect, the plan begins to outline steps to strengthen services. Implementing organizations like VI must not operate independently and outside of the health services framework. The national plan should be internalized, referred to, and used in developing any follow-on proposals.

- The Angolan government relies on advisors from GTZ for guidance on most rehabilitation issues. This advice is not always in the best interest of all involved parties. VI and other implementing organizations like HI and ICRC should push to play a more participatory role in the decision-making process regarding these issues. Donors like USAID should also be encouraged to take a more active role in influencing the Ministry of Health and CCR on issues related to rehabilitation services for persons with disabilities.

- Although the project is unlikely to achieve managerial and financial sustainability in the present setting, it is clearly possible to achieve technical sustainability. Under its resident director and technical advisor, VI has done a laudable job of developing and nurturing the skills of its local technical staff through mentoring and on-the-job training. However, although the staff makes technically sound rehabilitation devices, their lack of basic knowledge in areas such as anatomy, physiology, and physics prevents them from fully understanding the reasons and mechanics behind rehabilitation devices and techniques. Mentoring under an expatriate-certified prosthetist/orthotist (CPO) should continue and be coupled with an investment in longer-term, external training for one to two staff members. The Tanzanian Training Center for Orthopedic Technologist (TATCOT) in Moshi, Tanzania, offers one-year certificate courses (with an additional six months practical work experience) in lower limb prosthetic and orthotic technology, as well as a comprehensive three-year program leading to an internationally recognized Category II certification. Under a grant from the Leahy War Victims Fund, TATCOT provides scholarship assistance for all three curriculums. One person from the project should be selected to attend the three-year course, and at least one person should be selected to attend the one-year lower limb prosthetic course.

- VI has recently contracted with an external evaluator to conduct a cost analysis of its program in Cambodia. A similar exercise should be conducted for the Angola program.

INTRODUCTION

Background

Angola, a country of approximately 12 million people, is rich in natural resources including diamonds and oil. Unfortunately, it is also a nation devastated from more than 20 years of nearly continuous warfare. Its economy is in disarray, and despite its abundant natural resources, output per capita is among the world's lowest. Subsistence agriculture provides the main livelihood for 85 percent of the population.

Suffering their fourth war since the struggle to win independence from Portuguese colonial rule in 1975, the people of Angola have known nothing but conflict. According to an August 1999 United Nations Security Council report, Angola is now officially ranked as the worst place in the world to be a child. Nearly one in three children die before their fifth birthday because of war and war-induced poverty. Immunization rates for the childhood diseases of polio and measles are only 38 percent and 48 percent, respectively. Only 24 percent of all Angolans have access to adequate health care and less than 31 percent have access to potable water.

Angola is said to have one of the highest rates of physical disability in the world: an estimated incidence of one per 134 persons. Many disabilities results from accidents involving landmines, 10 million of which are scattered throughout the country. Almost two-thirds of all war casualties in Angola result from landmines. In half of these instances, the victims are killed; in the remainder, they are disabled. Estimates of the amputee population range from 30,000 (approximately 1 in 340)[2] to 70,000 (1 in 146)[3] people, which are the highest of any country in the world. With approximately 20 to 40 new landmine casualties a day, an estimated three to six thousand new disabled are added annually.

[2] *Briefing Paper: ICRC's Orthopedic Programme in Angola*. (published after March 2000 and given to this evaluation team by ICRC during the evaluation).

[3] *An Assessment of Prosthetic Needs and Opportunities in Angola*. John Alden and Mussa M. Calu. May 1995.

Project History

In 1994, the United Nations' *Study of the Vulnerable Groups in Angola within the Perspective of the Peace Process* noted that the highest concentrations of disabled people in Angola were located in the provinces of Huambo, Moxico, Cuando Cubango, Bie, Cunene, and Luanda. According to *After the Guns Fall Silent: The Enduring Legacy of Landmines*, published in 1995 by the Vietnam Veterans of America Foundation (VVAF), Moxico ranks in the top third of mined provinces in Angola. The book notes that "the province is severely mined. Some parts of the province were so contaminated that UNITA and FPLA soldiers were prohibited from entering them."

In 1996, in response to the rising incidence of disability and the lack of services, the U.S. Agency for International Development (USAID), through the Leahy War Victims Fund (LWVF), awarded a four-year, $3,033,000 grant to VVAF for the Angola Regional Rehabilitation Project in Moxico province. Under this grant, VVAF established a regional rehabilitation center in Luena, the capital of Moxico province. VVAF planned to target more than 3,600 direct and 18,000 indirect beneficiaries by (1) providing 2,140 orthopedic devices fitted with appropriate follow-up, (2) providing 1,000 mobility aids such as crutches and walkers, and (3) producing and distributing 480 wheelchairs. In addition, the project planned to train 17 Angolans to assume all administrative and technical aspects of the project.

In June 2000, VVAF requested a one-year, no-cost extension to the projects. VVAF stated that the reason for the request was that (1) due to security concerns it was unable to open a second, repair workshop in Lumeje, and (2) the project could not initiate its wheelchair production activities as originally planned because of unforeseen logistical complications, i.e., lack of land transportation. The extension request has been approved in principle and USAID/Angola is preparing the documentation.

As part of their project monitoring and evaluation plan, VVAF scheduled two program evaluations: a midterm evaluation to be conducted in the 20th month of the project and a final to be conducted at or near the end of the grant. Due to deteriorating security in the area, the midterm evaluation was canceled and program performance was instead assessed based on progress reports and a USAID/Angola team site visit. The final evaluation is being conducted in July 2000.

Regional Rehabilitation Center at Luena

Luena

Luena, the governmental center of Moxico province in eastern Angola, is a city of 175,000 residents and no less than 70,000 displaced persons living in nine IDP camps. In those camps the most urgent issues are landmine clearance and access to water.[4]

[4] MSNBC International News. "Angola Town Bears Brunt of War." Luena, Angola. June 17, 2000.

Luena's infrastructure is seriously degraded and without public water or electric utility services. The security zone around the city is limited to 15 kilometers and roads or highways to the rest of the country are insecure or impassable. Gasoline and diesel fuel must be flown in by United Nations (UN) World Food Programme (WFP) planes along with other supplies for humanitarian workers. As peace approaches, the city is also a natural transit and/or destination point for large numbers of refugees—more than 310,000 residing in neighboring countries.[5]

Implementation Timeline

The 1996 project proposal was approved with a starting date of October 1, 1996. Mr. Bob Eaton, director of Humanitarian Affairs, and Mr. Joe Nagles, VI/VVAF project director in Cambodia, identified equipment needed for the workshop. That equipment was ordered prior to April 1997, mainly from South Africa. The project director believed that the space that Medicos International designated for the orthopedic workshop was too small. Therefore, a much larger space in the adjoining warehouse was renovated for the orthopedic workshop, physical therapy unit, and patient (or beneficiary) dormitory, which was completed within the past year with the help of Luena-based NGOs and UN agencies.

The patient dormitory provides a place for patients from other areas to stay while they are fitted with their orthopedic appliances and associated gait training or other therapy services. These renovations were completed by July 1997 and were ready for inspection by the rehabilitation director. An orthopedic technologist from India was assigned temporarily to supervise the orthopedic workshop.

Prior to September 1997, the project director surveyed the personnel and salaries of other humanitarian projects in Angola and then hired staff with median-level salaries competitive with other projects. The orthopedic workshop began production in September 1997 and has continued providing services and producing orthopedic appliances since then, except for a three-month interruption caused by a security breach around Luena from January to March 1999. During that period, all members of the international staff were evacuated and WFP planes stopped flying between Luanda and Luena. During that time, the national staff was kept on salary but did not report to work.

Center Compound and its Departments

The Regional Rehabilitation Center in Luena is in a fenced and gated compound, approximately 100 meters by 150 meters. Nine security guards and one supervisor rotate shifts to provide round-the-clock security for this compound. The compound comprises several buildings, including a large warehouse-style building that has been remodeled to house the orthopedic (prosthetics and orthotics) workshop, the physical therapy department, and a men's and women's dormitory. An additional building contains the project director's offices, the CAPDC (formerly Medicos International) offices, and the office of the Jesuit job training program. The Jesuit workshop, which teaches carpentry to center beneficiaries, is located very close to the Jesuit offices. Bathrooms, laundry facilities, a kitchen, and a dining area are

[5] VVAF Angola Regional Rehabilitation Program grant proposal of January 29, 1996. final version –8/30/96, p.6.

available to the beneficiaries. Two to three very large shipping containers hold the stock for the orthopedic workshop. A 65 KW generator and a 25 KW backup provide the compound's only power source during working hours. The smaller generator can be used when the larger generator is shut down for maintenance.[6]

Water must be transported to the center and stored in an elevated tank because there is no community water service (as with electricity). A physical therapy gait training area, a recreational area with a basketball court, a parking area for center vehicles, and small vegetable and flower gardens complete the Regional Rehabilitation Center. This compound is within the city of Luena, approximately 10 minutes from the airport. The UN World Food Program maintains regular radio contact with the compound during the night to alert staff to any security situations in Luena. The World Food Program also coordinates these security checks with other humanitarian NGOs working in the Luena community and transmits security/evacuation information in case of emergencies.

The physical therapy area is staffed by two male and two female physiotherapy (PT) technicians who have each completed an eight-month training program and had completed almost 5,000 physical therapy treatment sessions through March 2000. A PT technician is present during clinic team evaluations and when a patient is checked out after completing medical rehabilitation services. An indoor PT gym has elevated exam mats, two sets of parallel bars (adult and children's sizes), practice stairs and a ramp, a gait training area with lines painted on the floor for gait activities, and other PT equipment.An extensive gait training obstacle course outside has simulated environmental obstacles such as logs, stones, ladders, and trenches. Physically challenged people are also trained in various typical daily activities.

The orthopedic workshop occupies approximately half of the large structure in the compound. It is well lighted by natural and artificial light. Five prosthetic technicians and five assistant technicians work in this department. It is equipped with the typical tools and machinery of an orthopedic workshop in a developed country for the number of staff working there. Among the tools and equipment are two plastics heating ovens (one is not working), a four-station vertical fabrication or transfer jig, which was made at the center with the help of the expatriate technician, two prosthetic routers or carvers, a band saw, an air compressor, a vacuum pump, a metal grinder, a flat bed sewing machine, a plastics mirror welder (for ICRC technology), a dust collection system, a large belt sander, a drill press, an electric metal arc welder, a metal lathe, a couple of anvils, large metal shears, numerous workbenches with bench vises and hand tools, and numerous storage racks and storage units.

The orthopedic workshop is divided into several areas including a reception area, administrative offices, a management office, a stock room, private casting and measurement areas, a plaster model rectification area, and various activities involved in the fabrication of orthoses and prostheses. Forearm crutches of ICRC polypropylene and metal design are made in the workshop. Technicians are cross trained using both practical and theoretical methods. The staff periodically rotate into different

[6] Petrol to run the generators is very expensive and represents one of the major capital costs for the project.

workshop areas to get the opportunity to work with different team members. Production is essentially limited to lower limb prosthetics and some orthotics that do not require metal knee, ankle, or hip joints.

The center has three social workers who work closely with CAPDC's Social Action Teams. They track amputee care and social needs including housing, schooling needs for children, and job training or income-generation projects. Their work will be described later in this report.

Staffing of the Regional Rehabilitation Center

According to project documentation, the number of VI/VVAF staff at the center (excluding CAPDC and Jesuit staff) is intended to be 32 nationals and three expatriates. However, the staff distribution and size appears to be different than noted (a staff listing notes 35 employees excluding expatriates). The expatriate physiotherapy director is no longer at the center. The national staff includes seven women and eight physically challenged (or disabled) persons who fall into eight pay grades ranging from US$70 to US$220 per month with a "13th month" salary bonus paid in December by national law. The administrative assistant for the workshop uses a wheelchair. None of the staff live at the center. None of the national staff have formal or extensive technical training to international standards although they have received extensive mentoring and semiformal training through the center. Except for the cleaning staff, all of the staff are able to read and write. Two of the prosthetic technicians have high school educations, and two of the workshop staff have special expertise in welding and metal lathe work, which has been useful in producing orthopedic devices and equipment.

Although original plans called for the Angolan government to pay the salaries of the national workers, VI/VVAF apparently covers these costs.

Note: When the team visited the project, they learned that contracts for the program director and the rehabilitation diirector expire in the first quarter of 2001. However, shortly after the team's return to the United States they learned that the rehabilitation director had resigned effective immediately. In addition, several MSF physicians resigned assignments in Luena two to four weeks after they arrived. Living conditions are austere as a result of the degradation of the community caused by the war: no public utilities are available (although water and electrical power are available through other sources) and the center is isolated from the community (WFP planes only, no roads). Expatriate humanitarian workers participate in regular informal social events according to the VI/VVAF program director.

Quality Assurance Activities

Numerous examples of quality assurance measures/controls were evident or noted in discussions during the team's tour of the Regional Rehabilitation Center:

1. Staffing

    - Timesheets or work logs maintained with pay docked for excessive tardiness or absenteeism.

- C Cash/petty cash logs and controls maintained.

- C Systematic staff reviews conducted with written formatted evaluation including commendations for good work performance and recommendations for improvement. The rehabilitation director meets personally with staff and provides an opportunity for employee feedback.

- C Training experience provided mostly in the form of mentoring but with prepared written training supplemental materials given to employees.

- C Work areas and responsibilities assigned.

- C Work teams rotated within departments to allow for varied experiences and to reduce chances of "cliques" forming.

- C Staff chosen by conducting interviews and reviewing qualifications. In cases of equal qualifications, preference given to physically challenged people or women.

2. Beneficiary relations

- C Non-discriminatory practices (i.e., regarding gender, age, political persuasion, etc.) followed in terms of service provision.

- C Cross referrals for services facilitated by working with other NGOs and humanitarian organizations (including hospitals and governmental agencies).

- C Clinic team evaluations conducted and documentation produced.

- C Beneficiary (patient) service records (e.g., production, therapy, and social service activities) maintained.

- C Sound production methodology and cosmetic finishing practices followed when producing orthopedic devices. Orthopedic devices deemed inferior in quality of the materials and/or the workmanship are reworked.
- C Clinic team assessments conducted/service provided to beneficiaries noted.

- C Scheduled follow-up visits conducted and documentation (i.e., patient ID card and center records) provided.

- C Unscheduled beneficiary visits (mostly by social workers) conducted to assess the impact of services on the beneficiaries and their families.

- C Hostel services (i.e., dormitories and meals) provided for beneficiaries who must travel some

distance to access center services.

- Social service activities (job training, income-generation projects, housing assistance, and educational assistance for young children) as part of a holistic approach to rehabilitation service provision.

3. Facilities, materials, and maintenance

   - Round-the-clock security provided for the center.

   - Regular maintenance activities assigned to staff.

   - Vehicles/generator logs maintained for recording official use and maintenance activities including fuel usage. Major pieces of equipment also have office files dedicated to those items.

   - Requisitioning process used to obtain materials from stockroom (which contains a limited supply) through stock clerk.

   - Inventory controls in place, including well-organized stock rooms and supply containers.

4. Governmental and interagency relations

   - Active participation in GCPO sustained.

   - Good working relationship maintained with national rehabilitation director, MOH, and other humanitarian agencies and NGOs.

   - Good working relationship maintained with U.S. governmental agencies such as USAID.

Technology

The ICRC polypropylene technology was chosen as part of a national plan for a unified approach to providing prosthetic services by all orthopedic workshops (the Viana workshop recently began teaching this technology and is the last to implement this technology in a conversion from conventional wood/laminate production). ICRC polypropylene prosthetic components are produced in Luanda at the ICRC Neves Bendinha center.

Handicap International has a prosthetic foot production unit at the Viana center near Luanda, which produces the Cambodia-style vulcanized rubber "SACH" foot with polypropylene keel. Although HI has a fairly stringent quality control system in place, they have allowed the prosthetic workshops to make recommendations for design changes based on their experience.

Both the ICRC components and the HI feet are provided free to the prosthetic workshops throughout

the country. This practice will continue through 2001. After that, at least the ICRC components will have to be purchased and imported from Geneva. Although the costs are very reasonable by international industrialized country standards, they will affect this center's (as well as all other centers) production costs.

For all practical purposes, production has been limited to lower limb prosthetic services. Upper limb prosthetic service has been limited. The reason for this limited service is unclear.

Orthotic devices are also made from polypropylene, but these devices are generally limited to non-jointed types of devices since orthotic joints are not available. The workshop produces various types of foot orthoses (FO), ankle foot orthoses (AFO), solid knee type knee ankle foot orthoses (KAFO), non-jointed hip orthoses, spinal orthoses, and non-jointed upper limb orthoses. However, the team also noted contracture reduction orthoses, which did allow for changes in the joint angle. Treatment options for certain orthopedic disabilities such as polio sequelae are limited since the workshop does not have orthotic joints and the staff to do not know how to produce them. Having orthopedic technicians with metal lathe and welding capabilities would lead one to believe those skills could be used in orthotic component production for the center.

The workshop has high production standards in terms of appearance and biomechanical design including cosmetic finishing. Prosthetic cosmetic finishing is accomplished using a firm density (similar to pelite) thermal forming foam material with a color similar to the skin tone of the Angolan people. All components (polypropylene, cosmetic foam finish, and the prosthetic feet) are brown. A few rejected items were present as teaching examples of less-than-ideal-quality production standards. Polypropylene scrap is prepared for recycling, and excess material scraps from foam socket liners were also saved for initial forming/shaping procedures of cosmetic coverings.

Although polypropylene orthopedic device technology affords advantages such as lightweight and low-cost, uniform national production methods with good durability and cosmetic appearance as well as improved worker safety, it does have potential drawbacks that should be considered in the continued developmental plans of a project. For example, the ovens used in the thermal forming process and for plastic welding need a consistent electrical source. If the plastics forming ovens fail, production stops. In addition, the supply of plastic and components depends on production, importation, and transportation capabilities. Therefore, it might not be prudent for the center to teach and rely solely on one type of technology. That said, it is easier to teach only one method and repairs or follow-up can theoretically be performed at any other workshop within the country because the people are trained to use the same technology.

Statistical Data Relating to Center Services

A sample survey completed in July/August of 1996 noted that +/- 900 disabled (1 percent) were found in a population sample of 90,000 people. This compares favorably with the 1990 WHO Alexandria

Consultation[7] in which it was estimated that 0.5 percent of a given population needs prosthetic or orthotic services. GTZ used a slightly higher figure of 0.8 percent[8] when planning for the orthopedic technologist training program at University Don Bosco in El Salvador.

The following is some specific statistical information regarding service provision in Luena. All statistics came directly from center documents:

Patient	**Percentage of total**
700 mine victims	90
192 female patients	25
66 children (0 – 18 yrs.)	8.5
588 residents	75
119 displaced persons	15
73 demobilized	9 (ex-combatants)
A total of 780 patients were evaluated for P&O-related services	

[7] *Guidelines for Training Personnel in Developing Countries for Prosthetic and Orthotic Services*. WHO Consultation. June 1990. Alexandria, Egypt.

[8] *Formación de Tecnólogos Ortopédicos en El Salvador*. GTZ / University Don Bosco. Early edition of course information booklet.

Appliance/Device Produced	Number
BK prostheses	572
AK prostheses	200
Orthoses	34
Crutches	751
A total of 1,557 orthopedic appliances/devices produced	
Prosthetic repairs/adjustments	215
Orthotic repairs/adjustments	132

It was reported that at least one patient received upper limb prosthetic service. Additionally, several bilateral lower limb amputees received imported wheelchairs since the center was not able to initiate it wheelchair production program due to logistical difficulties.

Physiotherapy Treatment Sessions
712 patients received treatments from 1998–March 2000
129 persons also received follow-up services from physiotherapists

Social Service Activities/Social Action Team Activities

Since VI/VVAF started working in Angola, it has sought to coordinate activities with other NGO's operating in and around Luena such as Medicos International, and the Mines Advisory Group (MAG). This coordinated effort was established to alert people to the dangers of landmines, to encourage demining activities, to survey the local population on issues related to mine and other war-related victims, and to work toward reintegration activities for those victims of war. All activities were to be implemented through Social Action Teams (SAT).

Although Medico and MAG have since left Luena, the team saw a number of activities started by these groups:

- Mine awareness training classes take place in the compound in the area of the Jesuit program.

- The team visited an amputee beneficiary's low-cost home (a few hundred dollars) under construction in a local neighborhood. This female, bilateral, transtibial amputee is raising her children without a husband. A local amputee homebuilder knowledgeable in adobe-style construction (mud bricks with thatched or corrugated metal roof) was employed to build the home. The children also received assistance to attend school. The homeowner stated that she

would be able to cultivate a garden and brew beer to supplement her income. Her prostheses gave her the mobility to perform these activities and to visit her neighbors. At the time of the team's visit, five low-cost homes were completed and three were under construction.

- Livestock production (raising goats for meat [milk production is unheard of in Angola]) is a carefully monitored income-generating project supported by VI/VVAF at the Regional Rehabilitation Center. Seven of 77 individual family projects are funded by VI/VVAF. A family is given two female goats and one male goat. The first offspring is given back to the project to give to another family. The criteria for selection into the program include (1) a disabled person or amputee as head of the family, (2) the number of persons in the immediate family unit, and (3) family income.

With regard to social reintegration, orthopedic appliances such as prostheses and orthoses and the related medical rehabilitation services provided by the center assisted the beneficiaries by allowing them to receive services without leaving the province, providing them with much-needed mobility, enabling them to work and perform daily activities, and enabling them to actively participate in family life. Moreover, the devices enabled beneficiaries to share in social activities, increase their independence, reduce their reliance on other family members for care, and reintegrate into their communities.

Constraints and Variants to the Implementation Plan

Security has been tenuous in the Eastern Health Zone since the start of the project. When the team visited, the security zone around the city of Luena had just been extended from a 5 kilometer radius to a still-limited 15 kilometer (<10 mile) radius. However, travel outside of the immediate city limits is prohibited without prior approval from the local security forces.

Many of the original cooperating partners are no longer present or active in the area. First, the Mines Advisory Group (MAG) who provided landmine awareness educational programs to villagers, identification of areas to be demined, actual demining activities, and assistance with identification of mine victims in need of physical rehabilitation services departed when Luena was evacuated a few years ago. Fortunately, most of these programs have been picked up by other agencies. Second, Medicos International left early for funding reasons and has turned over its activities to a local NGO (CAPDC) that it helped to organize. However, some additional financial responsibility has shifted to the VI/VVAF Regional Rehabilitation Program to continue cooperative programs. Third, ANDA (The National Association of Disabled Angolans) and AMMIGA (The Association of Disabled Soldiers of the Angolan War), provincial chapters of advocacy groups recognized by the Angolan government, are not as strong as they had been in the past, which has limited cooperative activities.

In addition to limited organizational assistance, the inability of the Angolan government to reopen roads between Luanda and Luena (at least three bridges are said to be out and security breaches are regularly reported along the highway) has restricted the movement of supplies and materials to the region including those planned for wheelchair production. Those constraints have also caused the cost of items such as fuel to increase. The cost of fuel was +/- US$4.00/liter for diesel fuel (VI generators and trucks are diesel powered) and +/- US$12.00/liter for gasoline.

As noted earlier, the security situation has also hampered the estimated return of the 310,000 refugees[9] to Angola. Many of the refugees would pass through Luena because it is a natural funneling point. When the refugees passed through it was hoped that those needing physical rehabilitation or other social assistance could be identified and assisted.

Finally, the government has not assumed responsibility for paying the salaries of the nationals employed at the Regional Rehabilitation Center as expected. This has affected project costs. These cost implications have left little or no resources remaining for the repair workshop, its associated double cab pick-up truck and equipment, two motorbikes, and materials and equipment to fabricate low-cost wheelchairs.

[9] VI/VVAF Angola Project Proposal. August 26, 1996. p 16.

COUNTRY-WIDE REHABILITATION SERVICES

Needs and Capacity

As noted earlier in the report, Angola is said to have one of the highest rates of physical disability in the world with the preponderance of this disability coming from landmine injuries. Statistics relating to the need for prosthetic services in Angola vary from 30,000 to 70,000 people. The actual number is likely to be at the high end of the estimates. Support for this convention comes from the fact that from October 1989 to December 1998, within ICRC-supported facilities alone, over 13,600 amputees were fitted. Moreover, major portions of the countryside remain isolated due to the war and, when hostilities end and unserved areas are reached, most informed observers expect a surge in demand for prosthetics and also orthotics.

In 1999, Angolan rehabilitation facilities produced 3,565 prosthetic devices. Although this is a significant increase from 1995 production output of 1,399 devices, it is well below the estimated production capability of approximately 6,000 devices annually. Even if full capability is reached, prostheses produced will still fall short of estimated need. Further, production estimates neither take into account the need for replacement limbs (necessary every 3–5 years) nor the continuing stream of new amputees resulting from landmines and other injuries.

Currently, 10 rehabilitation centers produce prostheses in Angola. The sites, 1999 output, and support organization are listed in the following chart:

Prosthetic Production in Angola, 1995 and 1999					
Province	**Name**	**Operator**	**Est.**	**Est. 1995 Production**	**1999 Production**
Luanda	Neves Bendinha	ICRC	1989	999	636
Luanda	Viana	HI	1990	200	32
Luanda	Nat'l Center	GTZ	1970's	0	221
Huambo	Bomba Alta	ICRC	1979	0	805
Kuito	Kuito	ICRC	1986	0	625
Benguela	Benguela	HI	11/94	200	402
Huila	Lubango	HI	1992	0	366
Malange	Malange	VRD	1996	0	Doesn't exist
Uige	Negage	HI	1996	0	137
Moxico	Luena	VVAF	1997	0	341
		Totals		**1,399**	**3,565**

Technology

Prior to 1996, international and nongovernmental organizations supporting rehabilitation services in Angola used three different prosthetic technologies; polyester-resin, Dynacast, and Otto Bock. However, in that year it was agreed that all of the orthopedic centers would use the polypropylene technology and that component parts for all of the centers would be supplied by ICRC (from its production facility in Neves Bendinia). The use of a single technology in Angola has been beneficial from both economic and technological standpoints. It is cost-effective and allows for simpler and more universal repairs.

To date, ICRC's components have been produced in-country and been provided free of charge to all orthopedic centers. Beginning in January 2001, ICRC will move to centralized production of components for most of its worldwide programs. These components will be produced in Coppet, Switzerland, and shipped to ICRC projects throughout the world. In Angola, ICRC has agreed to import componentry sufficient for all orthopedic centers and to continue to provide them free of charge for one year. In January 2001, however, all orthopedic centers must arrange to either produce their own prosthetic components or import them via the ICRC Coppet facility. This change will have both financial and logistic consequences and will have to be built into future funding proposals as well as into negotiated Memorandum of Understandings (MOU's) with the Angolan government.

Handicap International produces a vulcanized rubber foot at their facility in Viana. Similar to the polypropylene technology, this foot is used by all the orthopedic facilities in Angola.

Despite a tremendous need, wheelchairs are not currently being produced in country. As noted earlier in the report, due to security and logistic constraints VI has been unable to develop a wheelchair production facility in Luena as initially planned and outlined in the 1996 grant agreement. Both ICRC and GTZ currently import wheelchairs from South Africa. ICRC purchases a hospital-type chair and notes the costs at $150, including shipping. GTZ imports an all-terrain, multi-speed chair. It is a fairly

technologically advanced chair with quick release wheels and a light alloy frame. It is also quite costly. A regular chair costs $400 and one outfitted with a hand pedal attachment runs over $700. Obviously, the costs are too high for Angolans to ever afford or for an international organization to sustain on a long-term basis.

Social and Economic Rehabilitation and Assistance

In addition to the social action teams supported by VI and CAPDC, HI is the only other international organization supporting social and economic rehabilitation activities in Angola. In Benguela, HI's activities are a function of its occupational therapy program. Activities such as gardening, sports, and handicrafts are instigated through the referral of a social worker and are a part of the out-patient therapy program.

In the centers of Lubango and Uige, and to a small extent Benguela, HI has been attempting microfinance through group lending programs. In these areas, HI identifies local NGOs that can facilitate the loan program. HI has been disappointed with the results in all three provinces. They believe that the low education of the people coupled with the very poor economy has led to poor repayment rates. HI states that most microfinance NGOs in Angola have had similarly poor results and many have either slowed down or ceased their activities.

Additional Recommendations

- The project should move quickly to replace orthopedic technologists filling the roles of the program director and the rehabilitation director to provide training and oversight to the project and the orthopedic workshop.

- The project should continue to explore implementation of a wheelchair production capability perhaps in collaboration with another international NGO.

- VI/VVAF should assist CAPDC in developing the grant proposal for humanitarian assistance to its social rehabilitation programs, which help the beneficiaries of medical rehabilitation services of the regional center in Luena. This cooperative program of social services should continue.

- The project should formalize some of its classroom training to the orthopedic technologists and therapists and expand the scope of training by seeking out upper limb amputees and more disabled persons with orthotic service needs. This would mean purchasing or making components needed in the fabrication process of those devices.

- The project should repair the malfunctioning oven in the Luena workshop and/or explore and articulate in a written plan contingencies in the event that the oven fails or electrical power is lost for an extended period of time.
- Although the quality of orthopedic devices (prostheses and orthoses) observed at the center were of high quality, unannounced visits to amputees' homes in the community indicated that a number

of persons were not wearing their prostheses or that the prostheses were in disrepair. An increased emphasis on follow-up on a periodic scheduled basis after an amputee takes his/her prosthesis home could address these issues. The center should look at its follow-up care to see if it sufficiently meets the needs of the beneficiaries. Some additional training for social workers may be in order to help them identify causes that warrant recommending a beneficiary return to the center for follow-up care.

APPENDICES

APPENDIX A - NATIONAL PLAN FOR PHYSICAL REHABILITATION, 2001–2006 AND GCPO

In a meeting, Dr. Emmanuel Diavita, M.D., National Director of Physical Rehabilitation for the Ministry of Health (MOH), shared an overview of the draft plan for national rehabilitation for the next five years. This is a revision of the MOH's 1994 National Rehabilitation Plan (conforming to the national health policy established in 1992 through Law 21-B/92).[10] It is to be taken to the government for approval along with budget estimates (including recommended or anticipated Angolan government participation of approximately one eight of the budget) in August. A roundtable discussion of involved national/international organizations is planned for late September to discuss implications of the new plan. Whereas the 1994 plan was to meet emergency physical rehabilitation needs, this plan is developmental in nature.

The draft plan calls for six (6) major aims or objectives with twenty-seven (27) strategies and multiple activities to achieve those aims. A cursory review of the draft document seems to indicate a well-thought-out plan with encouraging developmental objectives. Dr. Diavita indicated that a copy of the 1994 National Plan for Physical Rehabilitation could be made available to compare the new plan against the previous document. International NGO's working in physical rehabilitation in Angola expressed some concerns that they had not been asked to participate in the process of revising the National Plan for Physical Rehabilitation.

Dr. Diavita emphasized the great need that exists in Angola for quality physical rehabilitation services. However, in order for services to achieve quality, education at a national and international level of rehabilitation personnel (particularly physical/occupational therapists and orthotists/prosthetists) must be addressed. Moreover, government would need to begin to assume a larger portion of the service costs currently being provided by international aid, provide oversight with some flexibility in local program development to meet the specific needs of the various health regions, as well as gradually assume physical rehabilitation services, currently provided by national NGO's, beginning at the municipal level (Type C). The 1994 plan called for a decentralization of services into five regional zones with Regional Orthopedic Centers (Type A) providing the highest level of service followed by

[10] VI/VVAF Angola Project Proposal. August 26,1996. p 11.

Provincial Orthopedic Centers (Type B) providing the more common services and Municipal Orthopedic Centers providing repair and referral services the higher level centers. Dr. Diavita stated that there has been a feasibility study conducted which looked at the reestablishment of a national training center or school for orthotics, prosthetics, and the physical therapy professions most likely in connection with a national university. The Southern Africa Union (SADAC) was noted to be considering the establishment of a regional training center in Angola.

Dr. Diavita chairs the Orthopedic Program Coordination Group (GCPO) meetings which are held monthly in Luanda. The international NGOs report that these meetings are more informational in nature than participatory. However, they provide regular interaction between the NGOs operating physical rehabilitation centers and a forum for informal cooperative relations. There is an initial impression that the NGOs in Angola are exceptionally cooperative and friendly toward each other; this would seem to bode well for future turnover of the physical rehabilitation services to Angolan authorities.

APPENDIX B - TEAM ITINERARY

Saturday, July 29, 2000. Team arrives Angola. Informal meetings on Saturday and Sunday discussing project background documents and physical rehabilitation situation in Angola and Luena.

Monday, July 31, 2000. The VVAF and USAID teams fly to Luena by WFP plane. Visit the different sections of the Regional Rehabilitation Center, view and discuss activities and documentation of that section. A demonstration of typical service provision, from intake to physiotherapy was given using actual beneficiaries. Following lunch the team continued the center tour with more detailed discussion of the administrative section; brief demonstrations of welding and metal lathe capabilities of two of the orthopedic technicians; a tour of the Jesuit workshop, the CAPDC offices, water and fuel stores, kitchen/dining area, washing/bathing areas, beneficiary dormitories, and recreation area. The team also accompanied one of the social workers who was conducting a team visit to a nearby neighborhood where a low-cost (approximately $300US) adobe house was being constructed for a beneficiary as part of the Social Action Team (SAT) cooperative activities between the VI and CAPDC (Medicos). The team interviewed the single parent female amputee beneficiary and performed a brief prosthetic follow-up examination of her prosthetic fitting. A tour of the community and a local market followed. After dinner the team continued discussions regarding the day's activities and the VI project.

Tuesday, August 1, 2000. Continue with program visit to the center. Discussion of training program for technicians and the work of the Social Action Team cooperative efforts between VI/VVAF and CAPDC (Medicos). Visit to VI/VVAF supported housing project for vulnerable mine victims and IDP Camp to look at prosthetic usage, income generating projects (goats and pigs), and adobe housing constructed with project assistance. After lunch visit another IDP as well as a Norwegian supervised mine clearance project. Additional tour of Luena followed with brief discussions at the local hospital, other community, internationally-supported humanitarian projects (MSF, SOS, etc.), and regional government activities relating to the MOH. Meeting with Mr. Antonio Eduardo, CAPDC Executive Secretary and dinner with MSF/B Coordinator, WFP Base Manager, OCHA Field Advisor and CAPDC Executive Secretary.

Wednesday, August 2, 2000.
AM Return to Luanda and hotel check-in
2:00PM - Visit to ICRC Orthopedic Workshop and polypropylene component production facility at Neves Bendinha Orthopedic Center in Luanda.

3:30PM - Meeting with Mr. Didier Reck, Rehabilitation program coordinator ICRC/Angola, at ICRC office.
Evening - Team dinner in local restaurant

Thursday, August 3, 2000
8:30AM - Meeting with Ms Sophie Periquet. Program Director, HI/Angola.
10:00AM - Meeting with Dr. Diavita, Director of Rehabilitation MOH, at GTZ Luanda office.
11:00AM - Meeting with Mr. Gunter Dietz. GTZ Director/Angola, at his office
2:30PM - Meeting with Mr. Keith Simmons, Mission Director, USAID/Angola.
EVENING - Team dinner

Friday, August 4, 2000
8:30 AM - Accompany HI person to Viana Orthopedic Center. Guided tour of orthopedic workshop, GTZ wheelchair assembly workshop, and HI national foot production factory.
EVENING - Team meal at local restaurant