

**Colombo Friend in Need Society
Jaipur Foot Project**

**A Review of the
Jaipur Foot Project in Sri Lanka
for the War Victims Fund**

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
Summary of Findings	ii
Summary of Recommendations	iv
LIST OF ACRONYMS	vii
MAP OF SRI LANKA	ix
INTRODUCTION	1
ORTHOPAEDICS IN SRI LANKA: AN OVERVIEW OF NEED	3
Recommendation	5
ASSISTANCE ACTIVITIES ADDRESSING WAR VICTIMS	7
Recommendations	8
MANAGEMENT AND ADMINISTRATION OF THE JAIPUR FOOT PROJECT	9
The Friend in Need Society	9
USAID	10
Recommendations	11
TECHNICAL QUALITY OF THE JAIPUR FOOT PROJECT	13
Prior Training	13
Use of Thermoplastics, Modular Components, and Technology Blending	14
The Jaipur Foot	15
Temporary Prostheses	16
Locally Made Prostheses Parts	16
Recommendations	16
SERVICE DELIVERY BY THE JAIPUR FOOT PROJECT	19
Production of Prosthetics and Other Orthopedic Devices	19
Other Services	20
Personnel	21
Capabilities of FINS Centers	21
User Satisfaction and Outcomes Surveys	23
Imported Material and Production Cost Concerns	23
Technical Recommendations	23
APPENDIX I: SCOPE OF WORK	25
APPENDIX II: ITINERARY	31
APPENDIX III: LIST OF PERSONS CONTACTED	35
APPENDIX IV: INTAKE FORM	39

EXECUTIVE SUMMARY

Sri Lanka has suffered more than a decade of civil war and strife that have left an estimated 90,000 dead¹, displaced several hundred thousand internally, and caused in a massive exodus of refugees. Uncounted have been the civilian survivors of landmine blasts, shelling, and crossfire.

In 1995, two massive government military offensives retook the northern peninsula of Jaffna, a stronghold of the Liberation Tigers of Tamil Elam (LTTE). With government initiatives to appease the Tamil population in Jaffna relatively well received and the LTTE resistance apparently quashed, it appeared that Sri Lanka was on the path to lasting peace. But the Tigers regrouped and by mid-1996 were able to launch damaging counterattacks on government troops in Jaffna and terrorist strikes in Colombo. Offensives and counteroffensives by the Military and LTTE continue to prohibit any return to normalcy in the north and east of Sri Lanka. Populations remain relatively contained in government “welfare” centers or geographically isolated areas and dependent on outside assistance and aid.

In 1991, the War Victims Fund (WVF), which is administered by the Office of Health and Nutrition of the U.S. Agency for International Development (USAID), provided \$420,000 to the Colombo Friend in Need Society

(FINS/Colombo), a 150-year-old indigenous charity organization, for a two year grant to allow FINS to expand its prosthetic assistance program. In February 1996, a new one-year, \$100,000 grant was signed with FINS to improve the administration and workshop facilities of its three branch workshops as well as produce and provide approximately

2,000 prosthetic, orthotic, and wheeled mobility devices to disabled people. The grant was amended in November 1996 with an additional \$200,000 in WVF money, and targets were revised to provide more than 3,500 prosthetic and orthotic devices. The grant completion date is February 1999.

Sri Lanka's economy is suffering from high inflation, high unemployment, poor infrastructure and corruption. Spending on defense saps almost 20 percent of government expenditure, and the domestic economy is propped up by the US\$1.5 billion sent home every year by Sri Lankans working abroad, mainly in the Gulf States. A resolution to the conflict and renewed economic growth remain inextricably linked.

The FINS response to the growing need of the disabled is not new. FINS has been providing assistance to this marginalized group since the mid-1980s. As the current conflict gains

¹ The official casualty figure is 50,000. However, the official total has remained constant over the past three years. Knowledgeable sources put the number at approximately double the official rate.

momentum, it is evident that the Sri Lankan government will not be able to address the needs of this population any time soon. Instead, an increasingly heavy burden will be placed on nongovernmental organizations such as FINS.

Summary of Findings

- C The activities engaged in under this grant are in keeping with the mandate of the War Victims Fund.
- C While it is evident that there will be an ongoing need for prosthetic services in Sri Lanka, the team was unable to ascertain the size of the client population of amputees. A review of existing statistics coupled with team interviews places the number at approximately 7,000. However, the need for some other type of orthopaedic devices (for example, bracing) far exceeds the need for artificial limbs. The number of blindness and/or sight-related disabilities also appears to be high.
- C Most amputees are between the ages of 20 and 35. This indicates a long-term need for prosthetics as well as the potential need for vocational and/or skills training.
- C Among the indigenous groups, FINS is providing services to the greatest number of beneficiaries. Others providing services include the Military Rehabilitation Center, which provides devices to government military combatants, and three small private clinics that offer devices to paying clients. A number of facilities offer nonmobility assistance such as skills training, occupational therapy, and educational assistance. Most such indigenous organizations are small and cater to a specific disability or client. Access is limited by the modest nature of their facilities and programs.
- C The grant agreement between FINS/Colombo and USAID/Sri Lanka includes device production targets as well as cost distribution for all centers. These numbers were developed by FINS/Colombo without input or feedback from the centers. (The provincial centers are aware of the grant expectations, including required production targets and the funds available for activities.) The real costs have been much higher; FINS centers cannot produce the number of limbs assigned within the budget allocated. Furthermore, targets for orthopaedic braces and upper arm prostheses have been set for some centers that cannot make the devices.
- C All centers are FINS branches, but they have separate management boards, constitutions, and governing rules. Despite the management responsibilities inherent in the central grant agreement, FINS/Colombo does not believe it has the right to involve itself in the management and administration of the provincial centers. Indeed, well-established centers such as Kandy take exception to what they see as central "interference." USAID has been quick to recognize the potential discord and has implemented measures to

encourage cooperation and provide greater oversight. These measure have met with some success. However, because responsibility for the coordination of the entire program remains with FINS/Colombo, FINS/Colombo should take a more proactive management approach.

- C The current management burden of the FINS grant is not relatively excessive. However, the projected downsizing of the USAID mission will diminish administrative and managerial support, thereby adding significant travel and monitoring responsibilities to the Foreign Service National (FSN) currently assigned to manage the FINS grant and approximately 10 other s. USAID has provided able leadership and attention to the FINS grant.
- C The FINS projects produce primarily Jaipur-style aluminum below-knee (BK) and above-knee (AK) prostheses. The FINS Colombo and Jaffna branches have the capacity to produce some plastic limbs and to blend these with the Jaipur technology. By Jaipur standards, the BK and AK limbs are satisfactory. By any other standard, however, the socket design and alignment are marginal in the BK limbs, although they function. The AK limbs are marginal in socket shape and must usually be used with the knee joint locked. By definition, the AK alignment is not satisfactory, but is not unlike other Jaipur limbs.
- C There is evidence that earlier training has been integrated at some level at the Colombo center. This is reflected primarily in the socket design but not the alignment of the BK prostheses. The socket design and alignment examples of the AK prostheses do not reflect training. The limbs at the Kandy and Galle centers, which are limited to Jaipur technology, do not reflect the results of earlier training.
- C The introduction of plastics technology in Sri Lanka has been achieved, as evidenced by numerous sockets (both laminated and vacuum-formed) that have been blended with aluminum (Jaipur-style) shanks. The plastic BK sockets generally have older patellar tendon bearing (PTB) designs, which is satisfactory. The AK sockets are made of aluminum or plastic. The aluminum sockets are very poor in shape. Plastic socket shapes are only marginally acceptable, although about average in comparison with those in other developing countries. Better plastic AK socket shapes were seen at the Military Rehabilitation Center that uses University of California-Berkeley casting brims to obtain an impression of the stump. Plastic sockets seem to be used on patients who are able to pay for the additional cost of materials.
- C FINS has been able to manufacture excellent Jaipur feet. FINS also arranges for the local manufacture of standard drop-lock knee joints, a nonadjustable modular knee joint with plunger lock, and an ankle clamping component; all are crude and simple but functional.

FINS is able to produce these parts in volume for all its centers although prompt production and delivery are problematic. There is a great need for modular adjustable alignment component parts.

Summary of Recommendations

- C USAID is applauded for spearheading an initiative to bring together representatives of all workshops on a quarterly basis. However, the individuals participating in these meetings should be empowered to make decisions on behalf of their respective centers.
- C Further follow-up should be made with regard to the real costs and real abilities to produce orthopaedic devices. This effort was begun during the last quarterly meeting. Although it is evident that costs vary from center to center, it appears that a fixed amount was allocated to each center based on production costs at FINS/Colombo. In turn, grant budget allocations were based on these amounts and production numbers. The production goals are not achievable within the FINS/Colombo set costs. USAID/Sri Lanka is encouraged to work with the FINS branches to determine (1) the real cost of producing an artificial limb (these costs will probably vary by center) and (2) realistic and achievable production goals based on remaining available grant funds. USAID/Sri Lanka is also encouraged to urge FINS/Colombo to reallocate the budget on the basis of workshop need and client demand.
- C Future WVF funding should be (1) based on demonstrated need at each prospective center and (2) to the extent possible, granted directly to provincial centers (this will entail assisting these centers to meet guidelines for registering as a USAID Local Private Voluntary Organization). Furthermore, program development, implementation, and monitoring should use results indicators that measure limb quality and user function rather than output production.
- C Within the existing scope of this grant, FINS should continue using the Jaipur limb systems and the blended technology plastic/Jaipur limbs. It is doubtful that FINS will be able to reduce the cost of the limbs further without abandoning the use of plastics. Significant savings could be achieved by using economies of scale, for example, central ordering of supplies for all FINS offices.
- C FINS should obtain additional plastics cutting, grinding, and polishing equipment, to enhance existing capability. Better polishing equipment for aluminum sockets should also be obtained. Rough edges and bad radii are significant problems at all FINS centers.
- C Training is indicated for and has been requested by FINS technicians. Within the scope of this grant, the technician at Galle needs to be apprenticed for a few months to bring him up to the level of the technicians at the other FINS centers. The Galle FINS center

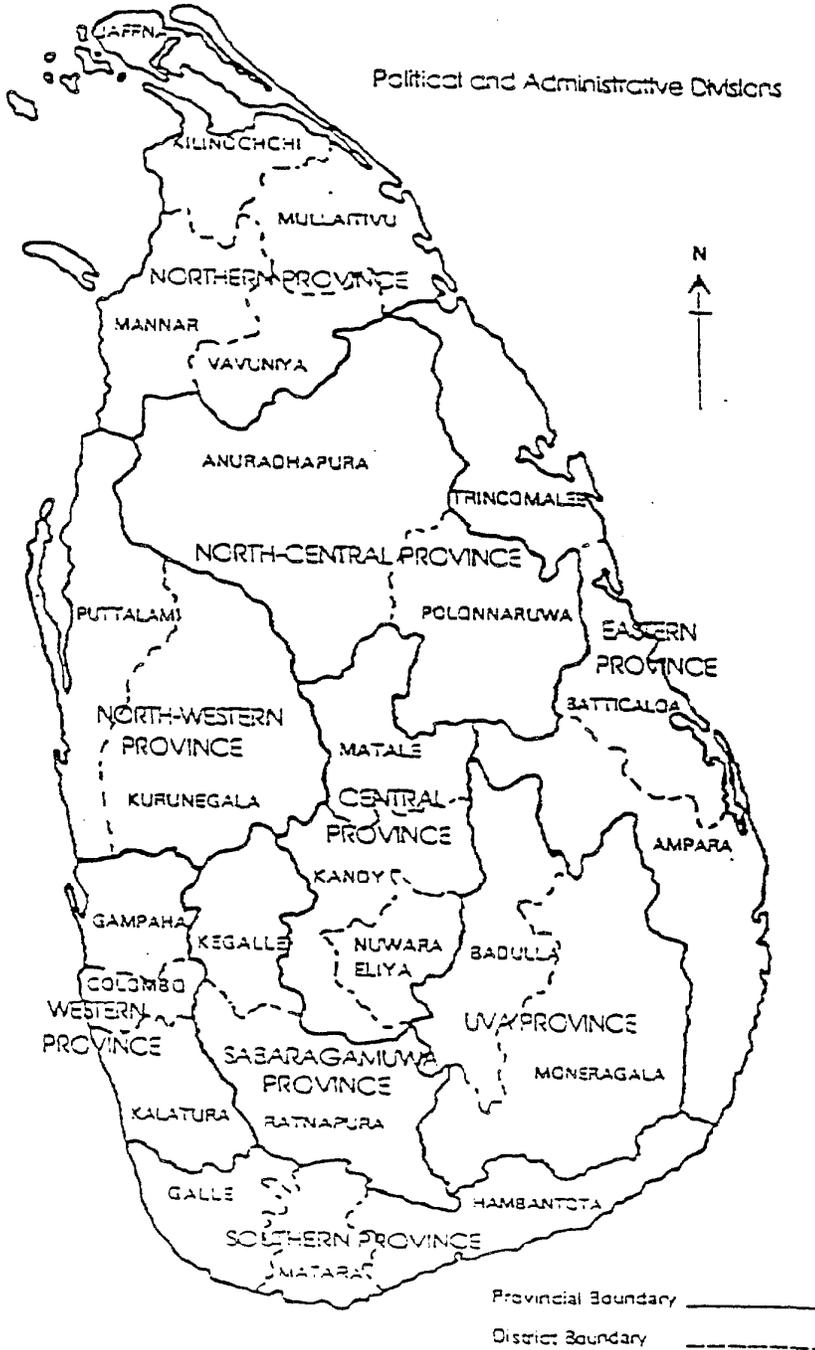
also needs one additional technician. Beyond training for this new technician, the team does not recommend additional training activities under the existing grant.

- C The training should be conducted using the Jaipur limb as the technology, since improving the Jaipur limb socket shapes will benefit all FINS centers. Although training in plastics technology could offer distinct improvements, it cannot be spread to all the FINS branches. Training in socket design without prosthetic alignment will not result in dramatic improvements in the way amputees walk, but it will improve comfort for amputees. If training funds are limited, training should focus on AK socket design, the weakest area at the FINS locations.
- C Manufacture of prosthetics components should be expanded. FINS should, at some time in the future, copy the essential *steel* pyramid alignment modular components, including foot adaptors, ankle clamps, tube clamps, socket attachment pyramids, a simple pyramid knee joint, and connector dishes for plastics and aluminum sockets. This would provide alignment adjustment for both the Jaipur and plastic technology limbs. Training in the use of adjustable pyramid alignment modular parts should be postponed until the ability to manufacture these component parts has been demonstrated. These parts and the ability to align prostheses will dramatically improve all prosthetics technologies in Sri Lanka. The designs for these parts are in the public domain.
- C Sri Lanka would benefit from improved plastics technology limbs and related fabrication techniques. The blended technology (plastic and aluminum) limbs being used are not wholly satisfactory. If limbs are properly made, the additional costs for plastics should be outweighed by improved comfort, function, and durability.
- C While intra regional opportunities may provide exposure to new methods and techniques, no War Victims Fund programs are using the true Jaipur technology. As necessary, FINS may wish to contact other organizations regarding the ordering of materials and supplies. The WVF may wish to organize intra-regional meetings or workshops to provide opportunities to share designs, knowledge, and experience.

LIST OF ACRONYMS

AK	Above knee
BK	Below knee
DCOF	Displaced Children and Orphans Fund
FINS	Friend in Need Society
FSN	Foreign Service National
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
ICRC	International Committee of the Red Cross
LPVO	Local Private Voluntary Organization
LTTE	Liberation Tigers of Tamil Elam
MILMO	Vertical Alignment Fixture
MSF	Medecins Sans Frontières
NGO	Nongovernmental Organization
NORAD	Norwegian Development Agency
PTB	Patellar Tendon Bearing
PVD	Peripheral Vascular Disease
PVO	Private Voluntary Organization
R4	Results, Review and Resource Request (internal USAID)
SpO	Special Objective (USAID internal)
UEP	Upper extremity prostheses
USAID	United States Agency for International Development
USDH	United States Direct Hire
WVF	War Victims Fund

MAP OF SRI LANKA



INTRODUCTION

The Democratic Socialist Republic of Sri Lanka (formerly known as Ceylon) is an island nation of approximately 19 million ethnically, linguistically, and religiously diverse people. Sinhalese, the ethnic majority, make up approximately 75 percent of the population and are concentrated in the densely populated southwest. Ceylon Tamils, ancestors of South Indians who settled on the island centuries ago, total about 12 percent and live predominately in the north and east. Other minorities include Indian Tamils (6 percent), Muslims (7 percent), Burghers (descendants of European colonialists), and aboriginal Veddahs.

A former colony of Portugal, the Netherlands, and then the British Commonwealth, Sri Lanka achieved full independence in 1948.

Successive democratic governments focused on socialist policies and strengthened social services have helped Sri Lanka achieve a 98 percent primary school attendance rate, an 88 percent literacy rate, an infant mortality rate of 19 deaths per 1,000 births, and a life expectancy of 73 years. Per capita gross domestic product is approximately \$600.

Perhaps not so serendipitous, Sri Lanka is shaped like a giant teardrop falling from the southern tip of the vast Indian subcontinent. The country suffers from a long history of civil unrest and over a decade of civil insurgency. The tragedy has left approximately 50,000 dead, has displaced several hundred thousand internally, and has generated a massive exodus of refugees. Uncounted are the civilian survivors of landmine blasts, shelling, and crossfire.

Offensives and counteroffensives by the military and the Liberation Tigers of Tamil Elan (LTTE) continue to prohibit any return to normalcy in the north and east of Sri Lanka. Populations remain transient, contained in government “welfare” centers, and dependant on outside assistance and aid.

The War Victims Fund

In 1991, the War Victims Fund (WVF), which is administered by the Office of Health and Nutrition of the U.S. Agency for International Development (USAID), provided \$420,000 to the Colombo Friend in Need Society (FINS/Colombo), a 150-year-old indigenous charity

The tragedy of Sri Lanka stems from its ethnic intolerance and militant readings of religious philosophy. The Sinhalese are predominantly Buddhist, the Tamils mainly Hindus, and there are sizeable Muslim and Christian Burgher (descendants of Dutch colonists) minorities. The Sinhalese speak Sinhalese, the Tamils and most Muslims speak Tamil and the Burghers often speak English. The Muslims are scattered all over the island and are thought to be descendants of early Arab or Indian traders. They have largely steered clear of the civil conflict, though there have been clashes between Muslims and Tamils in the east. The Tamils in the hill country are recent low caste arrivals brought in by the British to work on the plantations. They share little in common with the Tamils of the north who have been in Sri Lanka for over 1000 years. The hill country Tamils have generally managed to avoid being drawn into the current ethnic conflict.

William McGowan, *Only Man is Vile - The Tragedy of Sri Lanka*

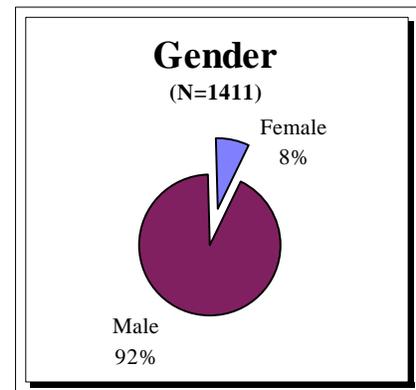
organization, for a two year grant to allow FINS to expand its prosthetic assistance program. In February 1996, a new one-year, \$100,000 grant was signed with FINS to improve the administration and workshop facilities of its three branch workshops as well as produce and provide approximately 2,000 prosthetic, orthotic, and wheeled mobility devices to disabled people. The grant was amended in November 1996 with an additional \$200,000 in WVF money, and targets were revised to provide more than 3,500 prosthetic and orthotic devices. The grant completion date is February 1999.

A team of two sent by the WVF visited Sri Lanka on May 30 - June 14, 1997, to assess the progress of the current FINS grant and recommend any appropriate modifications. The team also attempted to suggest possible activities for future support using resources of the WVF and managed by USAID/Sri Lanka. The evaluation methodology included a review of the current literature, interviews with key persons, and site visits. The team visited FINS/Colombo and the provincial FINS branches in Galle and Kandy. The security situation on the Jaffna peninsula necessitated cancellation of the team's planned trip to FINS/Jaffna. However, the team met with Colombo-based FINS/Jaffna staff as well members of nongovernmental organizations and international organizations with first-hand knowledge of the Jaipur program and staff in Jaffna. These meetings provided adequate information, and the canceled trip did not affect the team's broad findings or recommendations.

ORTHOPAEDICS IN SRI LANKA: AN OVERVIEW OF NEED

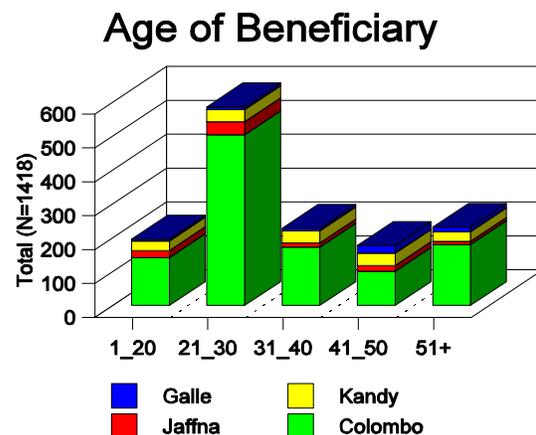
Little is known about the true orthopaedic need in Sri Lanka. Although government statistics on the number of amputees under military charge exist, these data are not available for review. The number of civilian amputees can only be estimated from hospital registrations and the records of public and private foundations that serve these populations. The World Health Organization estimates that approximately 2 of every 1,000 persons in developed countries are amputees, placing the number of amputees in Sri Lanka at roughly 34,000.

It is clear that Sri Lanka's client population is much smaller. A middling estimate of the client population today is 7,000; this figure includes 2,000 military amputees and 5,000 civilian amputees. Recent military offensives and Tamil counteroffensives will surely raise these totals. According to Medecins Sans Frontières (MSF), a French NGO implementing a USAID-funded program in five provincial hospitals in or near current hostilities, the number of amputations over the past six months (civilian amputations only) has averaged nine per month.



Male amputees far outnumber female amputees, as shown by the figure here. The data shown are from a sample of all regional areas of the country.

Most amputees from the four FINS centers are in the 21-30 age group (see figure). As clearly represented in the Colombo numbers, this cohort is skewed by direct military casualties. Military policy dictates that all persons injured during active duty receive two limbs. Military amputees receive one limb from the military rehabilitation unit and purchase the other from the FINS Colombo branch. Although the FINS centers are reimbursed for most of their costs (none of the cost for these limbs is reimbursed under the War Victims Fund grant), this policy has added heavy responsibility to the FINS program, most notably the Colombo branch. FINS/Colombo manufactures and fits limbs for a substantial number of former military personnel. Approximately half of the beneficiaries present



at FINS/Colombo during the team's visit were from the government forces.

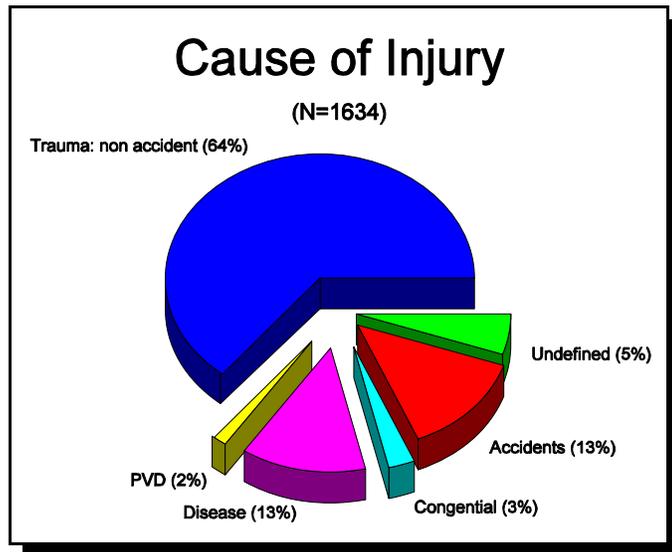
The age distribution of beneficiaries at the four centers is consistent with distributions seen in other war-affected countries and comparable with the age distribution of amputees seen during the conflict years of 1985-1995 in Sri Lanka. During that period over 35 percent of all limbs manufactured were produced for beneficiaries in the 21-30 year range, and 50 percent of all limbs were produced for beneficiaries aged 11 to 30.

Colombo is producing the greatest number of limbs by far. Amputees migrate to the Colombo facility because it is reputed to produce the highest-quality limb in the shortest period of time. Some amputees also find transportation to the capital to be easier even though a provincial branch of FINS may be closer.

In Kandy, most beneficiaries come from the eastern conflict areas surrounding the towns of Trincomalee, Polonnaruwa, and Batticaloa. A small number also come from the northern provincial areas around Vavuniya and Anuradhapura.

Most amputations in Sri Lanka follow nonaccident, traumatic injury, for example, stepping on pressure mines, grenade and mortar blasts, stray small arms fire, and trap gun accidents (see figure). Traumatic injuries caused by accidents and disease are the second most frequent cause of amputation. Motor vehicle injuries are high, and Sri Lankans also suffer from a high rate of train mishaps. Commuter and interprovincial train travel is a convenient and inexpensive mode of transportation, and trains are extremely overcrowded. Most train-related injuries occur when passengers are attempting to get on or off a moving train.

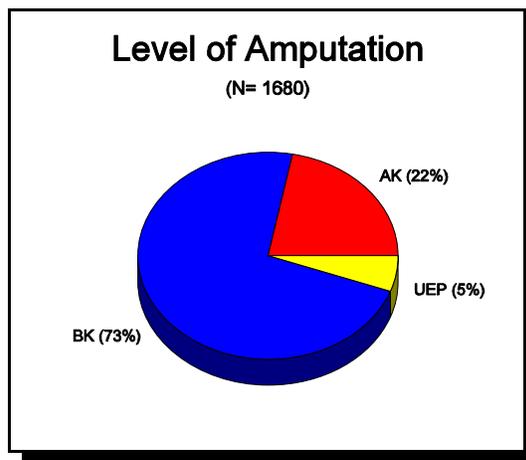
Disease-related injuries include conditions ascribed to as gangrene or infections leading to amputation. The root cause of the infection is not indicated by available data. Anecdotal evidence suggests that many injuries in this category are a result of nonaccident trauma.



Consistent with the causality, the predominant type of amputation is below the knee. Due the high incidence of trap gun injuries, there is also a fair number of through the knee amputations. These have been aggregated into the above-knee category for this report.

Reported upper limb injuries are few. The predominant cause of these types of injuries appears to be motor vehicle accidents and shell blasts.

The number of persons requiring orthotic devices was not reported, but visual observation puts the number fairly high. Where reported and recorded, the predominant cause is polio, congenital deformities, and paraplegia (spinal cord injuries). The chief orthopaedic surgeon at the Anduradhapura provincial hospital reports having performed more than 1,000 club foot operations.



Recommendation

1. Accurate statistics must be developed in order to implement a program that addresses the real rather than the perceived need. FINS should be at the forefront of these activities. In collaboration with the National Committee (see next section), FINS could collect and provide fairly accurate baseline data within the catchment areas of its branches. An inexpensive campaign could be begun by simply writing to all provincial hospitals (or the Ministry of Health) to obtain statistics on the number of amputations conducted over a specified period of time. Statistics should also be obtained from any military facilities that perform amputations.

ASSISTANCE ACTIVITIES ADDRESSING WAR VICTIMS

Prior to the 1980s, a small number of hospitals attempted to fill the need for artificial limbs by producing limbs in small workshops located at the hospitals. The number of limbs produced was not significant. In the 1980s, the need for prosthetic devices increased exponentially due to escalating Tamil unrest, and the government hospitals were unable to meet the demand. The Friend in Need Society, the oldest social service organization in Sri Lanka, undertook the Jaipur Foot Project in 1985 and since then has produced and delivered more than 5,000 limbs-- a proud achievement but a sad testament to the ever-increasing demand for artificial limbs. FINS remains the single largest provider of artificial limbs in Sri Lanka. Last year, the four FINS branches together produced more than 1,000 limbs. While the centers are well on their way to achieving numerical grant targets for lower limbs, their production of upper arm prostheses, orthoses, and other devices are well below the targeted rates. This is discussed further in the technical section of this report.

The decades following 1956 saw intermittent outbreaks of communal violence and growing radicalization among Tamil groups. By the mid-1970s Tamil politicians were moving from support for federalism to a demand for a separate Tamil state - 'Tamil Elam'...In 1983, the death of 13 Sinhalese soldiers at the hands of Tamil militants unleashed the largest outburst of communal violence in the country's history. Hundreds of Tamils were killed in Colombo and elsewhere, tens of thousands were left homeless, and more than 100,000 fled to South India.

Sri Lanka Background Notes - US Department of State

A small number of other facilities have sprung up to provide limbs to meet the growing need. The largest of these facilities is the Army Rehabilitation Center. This facility, which has been producing limbs for just over 10 years, has the capacity to produce about 360 limbs per year. The center produces a resin laminate socket and completes the limb with Otto Bock componentry. The average cost of a below-knee (BK) limb is 8,000 rupees (\$143); an above-knee (AK) limb, owing to its expensive but durable German componentry, averages over 30,000 rupees (\$536).

In response to the demand for a higher-quality limb, several small, private "clinics" have begun producing limbs for paying clientele. There are three such facilities in the Colombo area. One is run by an expatriate from Germany and the other two by Sri Lankans. (One of the indigenous facilities is managed by a former FINS technician.) The number of limbs produced at these facilities is insignificant compared with the output at FINS centers. More importantly, however, the price of these limbs is out of the reach of most Sri Lankans.

Several provincial hospitals also produce a small number of artificial limbs. However, these in-house facilities are considered ancillary and are often among the first units discontinued during times of cost cutting. At the two hospitals the team visited, a temporary, "post-operative" leg was provided by the hospital, but in almost all instances the patient was referred to the nearest FINS branch for a permanent limb.

A large number of establishments offer nonmobility assistance to the disabled, such as skills training, occupational therapy, employment, and housing. Most organizations that provide these types of services are small and indigenous and cater to a specific disability or clientele. Transportation difficulties and the modest nature of the facilities and programs appear to limit client access.

An extremely positive development was the passage last year by parliament of the Protection of the Rights of Persons with Disabilities Act, which provides for the establishment of a National Council for Persons with Disabilities to promote, advance, and protect the rights of Sri Lankans with disabilities. The council meets monthly, is chaired by the minister of social services, and appears to be empowered by the president to carry out its mandate. One of the first acts of this council will be to ascertain the number disabled in Sri Lanka and the number and type of organizations providing services to this population.

Recommendations

1. As the largest provider of mobility assistance to the disabled, FINS is acutely aware of the physical obstacles the disabled face. FINS is encouraged to offer its expertise and knowledge to the National Council.
2. Further follow-up should be made with regard to the real costs and real abilities to produce orthopaedic devices. This effort was begun during the last quarterly meeting. Although it is evident that costs vary from center to center, it appears that a fixed amount was allocated to each center based on production costs at FINS/Colombo. In turn, grant budget allocations were based on these amounts and production numbers. The production goals are not achievable within the FINS/Colombo set costs. USAID/Sri Lanka is encouraged to work with the FINS branches to determine (1) the real cost of producing an artificial limb (these costs will probably vary by center) and (2) realistic and achievable production goals based on remaining available grant funds. USAID/Sri Lanka is also encouraged to urge FINS/Colombo to reallocate the budget on the basis of workshop need and client demand.

MANAGEMENT AND ADMINISTRATION OF THE JAIPUR FOOT PROJECT

The Friend in Need Society

The Friend in Need Society has associated itself with Sri Lanka's disabled for more than a decade through its Jaipur Foot Project.² The program was pioneered by Professor Muller in Sri Lanka and Dr. P.K. Sethi of Jaipur, India.

FINS institutional mission is to provide support to enable the disabled to be self-reliant. In its early years, the program was geared only toward providing mobility assistance through the manufacture and provision of prostheses, orthoses, wheelchairs, and crutches. Through partnerships with international and nongovernmental organizations, FINS has expanded its mandate to provide some revolving loans and educational scholarships to the disabled. Its main focus, however, remains providing mobility assistance.

FINS management consists of numerous "volunteer" ex. officios including an honorary president, six vice presidents, secretaries, treasurers, and legal and medical advisers. There are also two main committees, the Transit Hostel Committee and the Technical Board, which meet monthly. A program coordinator manages day-to-day communications with the four FINS branches.

The Technical Board, as noted in previous reports, consists of a group of doctors, engineers, and therapists that oversees the quality of the limbs and appliances and introduces new technology. The Technical Board meets monthly in Colombo. From the information the team was able to gather (we were not able to attend a Technical Board meeting), the Board functions more like a patient review team, providing assessment, evaluation, and recommendations on specific cases rather than checking and maintaining standards of production and quality (though this does not imply that internal standards are not being met) or introducing new techniques and technologies.

The Jaipur Foot Project operates in four FINS locations: Colombo, Kandy, Galle, and Jaffna. Each branch of FINS functions under a separate management board, constitution, and set of governing rules. Only the main branch in Colombo is legally registered as a charitable organization. The management boards in the two branches visited are a "who's who" of the local and/or national community. For example, in Galle the board includes the loan officer of a major

²FINS is, in fact, manufacturing an entire Jaipur limb that is fitted with a Jaipur foot.

bank, the chief of the provincial police department, the director of a teaching hospital, and the director of one of the country's largest import/export companies. FINS/Colombo appears to provide only name, USAID funds, and Jaipur componentry to the branches.

War Victims Fund money was granted to FINS/Colombo by USAID/Sri Lanka. This necessitates oversight and central management responsibilities by FINS/Colombo. However, with each branch having a well-developed management board, FINS/Colombo does not feel it has the right to "interfere." Indeed, well-established centers such as Kandy take exception to centrally mandated direction. USAID attempted to proactively address this potential discord by asking FINS/Colombo to establish a program coordinator position as part of the grant agreement. FINS/Colombo assured USAID that this would not be necessary, and the request was dropped.

As anticipated, a few problems erupted, but they have abated as a result of quick intervention by USAID/Sri Lanka. At USAID's request, all branches now meet in Colombo quarterly to discuss problems and successes. These meetings have facilitated open dialogue and problem solving discussions. However, they are not attended by persons empowered to make decisions on behalf of the branches, which has greatly reduced the meeting's effectiveness.

Two of the FINS branches are moving very quickly toward financial sustainability. Through traditional fundraising efforts, the branches in Kandy and Galle are close to meeting their monthly operating expenses through interest income generated from fixed deposits. The "money in the bank," however, has generated the interest to expand either production facilities and/or mandates (i.e., a more comprehensive rehabilitation package like vocational/skills training or educational scholarships). Colombo, with a larger target population and componentry manufacturing facility, has proportionately smaller fixed deposit assets but receives greater volunteer participation at special events and corporate sponsorship and workshop functions/needs. Jaffna, functioning in a military-controlled "secure zone," is dependent on outside assistance.

USAID

The grant to the Friend in Need Society from USAID/Sri Lanka is the second such commitment. Both grants have come from the War Victims Fund. The total amount committed to date is \$720,000.

The grant is currently managed by a Foreign Service National (FSN) under US Direct Hire (USDH) supervision. The FSN managing this program is also responsible for the oversight of 10 other grant agreements under the mission's old PVO Co-Fi program as well as the HIV/AIDs and Displaced Children and Orphans Fund (DCOF) Special Objectives.

In USAID/Sri Lanka's 1995 Results Review and Resource Request (R4), the grant to FINS was incorporated into the Mission strategy as a Special Objective (SpO). Under this objective, the

Mission established as a results indicator the output measure of device production. In the 1997 Mission submission, the grant is again mentioned as a Special Objective, but there is no mention or reference to result(s) indicators. The Mission indicated that it is in the process of developing appropriate indicators and welcomes suggestions and/or recommendations from the War Victims Fund.

While Mission management states that the program will remain a Special Objective under the Mission's overall strategy, there is currently no SpO team to assist in the overall and/or results framework management. Furthermore, due to mandated Mission downsizing, when the current supervisory USDH departs in August the position will not be filled. Which Mission office will manage this program is undecided. Furthermore, although Acting Mission Director Louis Kuhn is committed to the success of this program, he will depart within the next several weeks. It is impossible to say what importance these activities will be accorded by the new director.

Recommendations

1. FINS should remain focused on providing mobility assistance to the disabled. Rather than diversifying into other areas, FINS should make appropriate referrals to the host of facilities providing services for the nonmobility needs of the disabled.
2. In the event that USAID again commits money centrally through FINS/Colombo, a program manager position should be a strict requirement. If current grant funds permit additional personnel, the program manager position should be initiated immediately. An equally effective step would be to delegate authority to the current coordinator, Ms. Rupa Jayadekera.

TECHNICAL QUALITY OF THE JAIPUR FOOT PROJECT

Prior Training

Jaipur Limb Technology. In 1991, training in prosthetics theory, biomechanics, and gait was provided at Colombo/FINS. One must be circumspect in analyzing the effectiveness of this training. Observations indicate that FINS/Colombo personnel offer a consistently average Jaipur prosthesis in relation to socket shapes. The AK socket shapes are poor to very poor. Poor socket shapes do not indicate a lack of hard work by the technicians but rather are a limitation of the technology. Since socket shapes must be created in hammered aluminum under the Jaipur Limb technology, the shapes seen nonetheless appear acceptable. The shapes seen in Sri Lanka are similar to those seen in other countries where the Jaipur system is used.

Plastic Technology Limbs. The FINS/Colombo workshop also makes plastic prostheses. The plastic (polypropylene or laminated polyester) BK socket components seen on this visit had quite good shapes, although they dated to the early 1960s socket shapes. Although there is evidence that training has been provided to create standard PTB (Patellar Tendon Bearing) socket shapes, the AK socket shapes are below average. The socket shapes are created using hand castings, and a plaster model is then shaped to the dimensions of the limb. The AK plaster casts and AK plastic sockets seen at FINS/Colombo did not illustrate proper socket shape or an understanding of the intricacies of AK socketology. Considering the proportion of AK amputations in Sri Lanka, this is an area where future assistance could be directed. In fact, such assistance was requested by the technicians at FINS/Colombo.

Prosthetics Alignment. The inherent limitation of the Jaipur limb system is that any alignment changes are performed by cutting wedge-shaped pieces from the shank or thigh of the artificial limb, bending the socket into a new alignment, and then rewelding the cut edges (slash and burn). This procedure is time-consuming and is accomplished with estimation; it is neither quick nor precise. Alignment changes are more or less permanent after the parts are welded back together each time an adjustment is made. Marginal outcomes result in most cases. The final alignments of prostheses seen during the evaluation, though not optimal, represent the best approximation that can be achieved within a limited fitting period. As would be expected, BK amputees tend to walk with a fairly normal gait, where as AK amputees have marginal to poor gait.

Use of Dynamic Alignment Equipment. Dynamic alignment apparatus fixtures are not available and are not used in any of the FINS branches in Sri Lanka. While upgrades in training were requested by the key technicians at FINS/Colombo, such requests did not include dynamic alignment using alignment fixtures.

Use of Thermoplastics, Modular Components, and Technology Blending

The 1991 training at FINS/Colombo included the installation of an oven for thermoplastic vacuum formation of BK and AK sockets. The long-term impact of this training has been marginal, since thermoplastics have only been used for sockets. The workshop is restricted in its production of plastics limbs by a limited amount of equipment and the lack of some abrasives necessary to properly finish the edges of the plastic. The workshop will never be able to produce good-quality plastic sockets in volume with the existing equipment and finishing abrasives. However, many of the technicians appear to have the talent needed to produce good-quality plastic limbs.

The Colombo workshop has attempted to integrate plastics into its current system by blending the technologies. It is the only center in Sri Lanka that is attempting this combination, though the team was told that Jaffna had an oven and plastics that were intended to be used for this purpose. Thermoplastic sockets are fitted into aluminum shank shells and aligned in the normal cut and weld Jaipur limb method. The team was told that about 30 percent of the limbs made at FINS/Colombo had thermoplastic sockets fitted into Jaipur-style aluminum shanks. From the team's observations, this number appears overstated. It has been a relatively simple matter to attach the plastic sockets to an aluminum shell with rivets.

Previous USAID reports state that training using thermoplastic sockets had improved patient comfort and function. When thermoplastic sockets have been used at the Colombo workshop, patients have reported a better fit to the technicians. However, the use of thermoplastics has had no discernible positive effect on the alignment of prosthesis. Albeit with a plastic socket, it is still a Jaipur limb.

The team was told that the International Committee of the Red Cross (ICRC) had sent a technician from Jaffna to Ethiopia-ICRC Heroes Center for training in the use of thermoplastics. However, the technician disappeared shortly after his return. During a meeting at USAID, the team discovered that the individual being interviewed was the missing technician. He and his family evidently escaped ahead of shelling and street fighting. They fled by bicycle, continued on foot, and finally arrived in Colombo by ship. Prior to this departure, the technician indicated that most of the supplies, including the stock of thermoplastics, had been looted during the hostilities.³ The electric oven remains at the Jaffna office (evidently it was too heavy to carry) and, when there is electricity, it is used to bake the Jaipur foot molds; when there is no electricity, the foot molds are rotated slowly in spit-like fashion over an open fire to evenly distribute the heat. Reports are that this method is working satisfactorily.

Previous USAID reports also indicated that adjustable modular components were being used.

³ Conventional wisdom is that the equipment and supplies were carried across the straits and are now being used to fabricate limbs for Tamil combatants.

The team did not see them being made or used. Crude modular ankle clamping components and knee joints are being made and routinely used in volume. The quality of the clamping components is adequate; the knee joint design is crude and marginal. No adjustable alignment modular components are being manufactured in Sri Lanka. All those seen have been imported, and most are pyramid alignment components. With adequate manufacturing capabilities, there is no reason why these parts cannot be copied in Sri Lanka; the patents for these parts have expired.

Although a Vertical Alignment Fixture (MILMO) was seen on the floor, it was covered with dust and obviously not in use. However, the MILMO device is not necessary when fitting Jaipur limbs; since the plastic limbs are generally limited to sockets blended with Jaipur shanks, the MILMO is not required. If dynamic alignment procedures are introduced using adjustable limbs, and if a technician were trained in its use, the MILMO apparatus will be quite useful.

A blended technology approach has been seen in other countries (for example, Laos, Vietnam, and Cambodia) in various forms. In Colombo, where a polypropylene socket is fitted and riveted into a hollow aluminum shank, it is difficult to determine whether this approach has any advantages over other "hybrid" systems. If compared to the "straight" Jaipur limb system, it does offer clear improvements in fit of the socket. However, as noted above, it does not offer improvements in the alignment of the prostheses. One serious limitation to the approach is that it requires appropriate cutting, grinding, and buffing tools, equipment that is not available at all centers. Furthermore, the Colombo workshop does not have an adequate amount of equipment and appropriate abrasives to permit mass production of these limbs. Therefore, without substantial investment, thermoplastics (sockets) can not be the standard approach to limb fitting in Sri Lanka. The same can be said about the capacity to produce laminated prostheses.

The Jaipur Foot

There was no evidence that the Jaipur foot being made in Sri Lanka had been modified in any way. While suggestions for modifications had been made by previous visiting trainers, the technicians at Colombo stated that it was too expensive to either rework the foot molds or produce new molds. Interestingly, they produced an article from the *Journal of Rehabilitation Research* that reported on a test of the existing Jaipur foot design and concluded that the "straight" Jaipur foot produced satisfactory results. Indeed, FINS has experienced foot longevity rates of between three and six years.

The Jaipur feet produced in Sri Lanka have the same durability as feet manufactured in Jaipur, Rajasthan, India and appear to be made in almost precisely the same manner. In comparison with variations of the Jaipur foot seen in Vietnam and Laos, the Sri Lankan foot is more durable. As Dr. Sethi warned, perhaps the modifications to the manufacturing process made in other countries have weakened the Jaipur foot system.

For Symes amputations, a Jaipur foot is manufactured with two aluminum uprights strips

projecting from the top of the ankle of the foot. These straps or strips are bent to the shape of the longer stumps and affixed to the shank of the prostheses. The team was unable to see how this design variation was manufactured.

Temporary Prostheses

Temporary prostheses are not standard protocol for amputees in Sri Lanka. The only temporary limbs seen were at a little workshop in the Kandy provincial hospital. The device was crude, consisting of a shapeless plaster bandage socket affixed to metal uprights with a peg leg-like distal foot piece. It was reported that three to four of these were being made each month. There is serious doubt as to the accuracy of this number.

Locally Made Prostheses Parts

Locally made prosthetic components include the Jaipur foot at FINS/Colombo and Jaffna; a crude, modular, no-friction control knee with or without a spring locking mechanism; simple side joints, simple leather cuffs, and straps for AK and BK limbs; and a crude and simple nonadjustable ankle clamping component. The team was told that no other parts were being manufactured. (Note: AK prostheses were most commonly fitted with side joints with drop locks or with the modular knee joint with or without the spring lock installed. By Western standards, all of these parts are crudely manufactured, yet they are functional.)

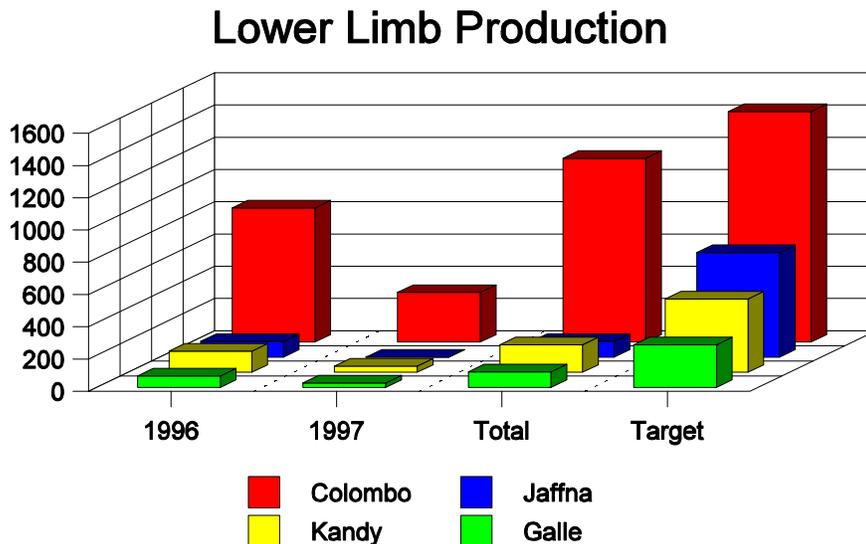
Recommendations

1. Provide additional training in AK socket design and prosthetics alignment using the Jaipur system. In the future, provide dynamic alignment training using adjustable leg fixtures with plastics technology.
2. Respecting budget parameters, alignment and fitting training must be provided within the parameters of the Jaipur limb fitting system. There is no reason to demonstrate sophisticated alignment procedures using tools and fixtures that FINS does not have.
3. The Sri Lanka Army prosthetics workshop in Colombo, while not part of the WVF grant, would benefit dramatically from training in socketology and alignment. The workshop is literally buried in young male amputees. With a four- to five- week training program concentrating on AK and BK socket shapes and the introduction of the VAPC alignment coupling, the workshop could be brought forward about 20 years.

SERVICE DELIVERY BY THE JAIPUR FOOT PROJECT

Production of Prosthetics

The figure below illustrates lower limb production at each of the centers since the inception of the grant agreement in February 1996.



Colombo, Kandy, and Galle should achieve their production targets. Production in Jaffna has been greatly affected by intermittent hostilities that have necessitated temporary halts in manufacturing and a lack of supplies. All goods flowing into the Jaffna peninsula must receive military clearance and approval. Since the grant began in February 1996, only two such requests by FINS/Jaffna have been approved. In addition, the military approving office removed several requested items from both of these shipments, including the screws used to attach to foot to the shank and all welding equipment. (Without welding equipment, it is virtually impossible to manufacture a Jaipur aluminum socket. The team suggested that Jaffna explore riveting the socket together.) All goods approved under the latest shipment were arbitrarily reduced by half, leaving the Jaffna branch with only a three-month supply of parts and materials. Even with the president of the country an honorary board member of FINS, FINS is unable to obtain needed supplies expeditiously.

FINS/Colombo and FINS/Jaffna are the only two facilities capable of producing upper-extremity prostheses (UEPs). They must purchase most components from India. To date, of a targeted 320 upper limbs, only 69 have been produced. A lack of human resources is the reason given for low

production.

The Colombo workshop is the only facility producing orthoses. Again, limited human resources have contributed to an inability to meet either demand or grant targets. To date, only 144 of a targeted 500 orthotic braces have been produced. The team projects that the program will not meet the grant targets established for either UEPs or orthoses.

Other devices targeted for delivery under the grant agreement include crutches, wheelchairs, and tricycles. Only a very limited number of crutches have been distributed, and no wheelchairs or tricycles have been delivered. None of these devices are produced directly by FINS. Instead, the orders are subcontracted out to other firms. In a unique arrangement, the crutches are being produced by Rehab Lanka, a project of the Sri Lanka Foundation for the Rehabilitation of the Disabled, which provides skills training and employment for the disabled. The project targets for these devices should be met by the grant expiration date.

Other Services

Amputee patients are identified by various means, including referrals by physicians/hospitals, through newspaper reports, and referral by NGOs and local community organizations in Sri Lanka such as ICRC, Save the Children, and the Rotary Clubs. Several local regional newspapers publish occasional stories about the project, and FINS is generally well known in Sri Lanka.

Amputees in Sri Lanka generally have access to some form of transportation to one of the four centers, although travel within Sri Lanka is problematic due to the civil war. For those traveling from the east, the Rotary Club has a well-established network for transportation. For those in the Wanni region, access is much more problematic. Amputees from this region often have to pass Tamil and Sri Lankan military check points, and they are often refused transit. When permitted transit, all persons must pass through the checkpoints on foot, which can be extremely difficult for an amputee. Some choose not to attempt travel for this reason.

Once at a facility, clients have access to a bed and meals. Although sparse, the dormitories are clean and neat. The average stay at the center is about three weeks.

The centers document all amputees using an intake form that identifies standard demographic characteristics, including, name, age, gender, cause of amputation, date of amputation, place of residence, and ethnicity. An applicant fills out this form and then returns it to the center, most often by parcel post. The center reviews the information to determine if the applicant is a good candidate for a Jaipur limb. If so, the center contacts the applicant, gathers more data, and then makes an appointment for the person to come in for a limb. Drop-in patients are accepted. (A copy of a typical application form is included as Appendix IV.)

Personnel

Most if not all of the technicians can read and write in Sinhalese; many are fluent in English. Two of the technicians in Colombo had training in India, at the All India prosthetics training center in Bangalore or in Jaipur. All others were trained as apprentices at the center in Colombo for periods of between three and six months. Technicians working in Colombo continue to learn from each other on an ongoing basis. The technician in Galle had the least amount of training and hence skill; he had received only three month's training as an apprentice at FINS/Colombo. The technicians at Kandy both had served apprenticeships at Colombo, and one had been to India. A technician in Jaffna had received training in Ethiopia at the ICRC center near Addis Ababa. Most of the technicians had received standard education of between seven and 12 years in Sri Lankan schools. Many of the technicians also have received training from Rob Singer during course work he presented in 1991 and 1993.

Capabilities of FINS Centers

Colombo. This center has the largest technical staff (10) and the varied potential for prosthetics limb production. It can produce Jaipur-style, laminated plastic, and thermoplastic limbs. It also has plaster facilities and the equipment to make plastic limbs. The FINS/Colombo is the only facility that conducts technology blending. The Colombo branch produces Jaipur feet for all of the FINS centers, although Jaffna also has foot molds. Colombo also arranges for the production of knees, knee joints, and leather straps.

This center is active and vibrant. Administration and general organizational capability appear strong. Colombo is represented by a very strong board of directors.

Kandy. This center has two technicians and produces Jaipur-style AK and BK limbs. It has stated it would like to produce thermoplastic and laminated-style limbs as well as orthotic devices. The center does not now have the equipment to produce any devices other than Jaipur limbs.

The center is located in a relatively new building that was built with a donation from NORAD and on land donated by the former prime minister. It is a large and spacious facility, although the workshop, on the lower level, is small. Kandy has the capacity to hostel 16 clients, is well organized and well run, and represented by a very strong board of directors.

Galle. Galle is a very small and rudimentary center with only one technician. It would like to train one additional technician as soon as possible. This is strongly encouraged, because limb production and repairs must be halted when Galle's sole technician is absent. Galle has the basic tools and equipment to produce Jaipur limbs only. It is the weakest of the FINS centers visited but has a strong board of directors that includes the local police chief, the director of the hospital,

a bank executive, and the director of a large import/export company. Galle has very limited hostel facilities.

Jaffna. The team was unable to visit this center. The center operates as security permits and is said to have the capacity to produce Jaipur limbs and thermoplastics prostheses. The number of trained technicians is not known. Jaffna has a set of Jaipur foot molds, but it is not known how many feet, if any, they can now produce.

A discussion of need across all of the centers was presented in an earlier section of this report. A few additional points are made here.

- C Sri Lankans are ethnically and religiously diverse. The distribution of amputees by ethnicity is equally diverse. No amputee is discriminated against by any center.
- C Vascular disease amputations are common in Sri Lanka, either with diabetes or without. Vascular amputations are reported to be on the increase in Sri Lanka, where smoking, rich diet, and obesity are more and more common in the larger cities.
- C Disease-caused amputations, such as cancerous tumors, infections, gangrene, and snakebite, were seen and are reported in Sri Lanka.
- C Congenital amputations or birth defects are not uncommon in Sri Lanka, although their incidence is not reported. Amputees with congenital amputations can be commonly seen at temples and other public places, begging (quite successfully) for donations.
- C Many polio victims were seen limping in streets and sitting in the markets. Spinal cord injuries are a common cause of disability in Sri Lanka.

User Satisfaction and Outcomes Surveys

User satisfaction studies have not been formally conducted in Sri Lanka. The team interviewed a number of amputees at each FINS center, and amputees generally gave high marks to the prostheses and the manner in which they were treated by the staff at the centers.

The team also visited the homes and work places of other amputees. Many of the amputees reported common stump problems typical of the tropical climate and socket fit problems typical of the simply shaped Jaipur socket. All survey information collected by the team must be considered anecdotal, however, as scientific collection methods were not used.

Outcomes are recorded by the center as a delivery that has occurred. At the Kandy workshop, a

photograph is taken of each amputee who receives a prosthesis. Where photos are not taken, there is good record keeping, although specific outcomes are not documented.

Imported Material and Production Cost Concerns

Generally, Sri Lanka and FINS do a better job of using locally available materials than the team has seen in other countries. Although the use of sheet plastics would require importation, economies of scale could be reached if purchasing for all FINS workshops was centralized. At present FINS can produce its own feet and knee joints and has sheet aluminum, polyester resin, stockinette, and sheet rubber available locally, although it may be imported for the country.

The cost of limb production in Sri Lanka is not high when the Jaipur limb system is used. However, the Jaipur approach produces a marginal, although durable, result. If more expensive plastic limbs are to be considered, the concern for durability should be paramount. The cost of a prosthesis can be reduced if the longevity of the product can be extended several years. For example, if it is necessary to replace a \$100 limb every year, the cost over three years will be \$300. If a \$300 limb lasts five years, it is inherently less expensive and should be considered. To establish this justification, FINS must conduct long-term studies of the Jaipur, hybrid, and true plastic limbs. Anecdotal evidence gathered by the team indicates that the Jaipur limb is extremely durable and often lasts three to five years.

Technical Recommendations

1. The current level of production of prostheses in Sri Lanka appears to meet the demand as it is presently known. When the civil war ends, more amputees may seek prosthetics care as travel becomes less arduous and dangerous. With an estimated 100,000 displaced people in northern provinces that cannot be visited safely at this time, there is concern that the known number of amputees is incorrect. All FINS workshops are working below capacity at this time and should be able to meet increased production demands. The team therefore does not recommend any scaling-up efforts at this time.
2. Caution is advised in making any recommendations or approving changes in workshop activities. There must be a thorough understanding of the costs of such improvements in relation to sustainability must first be exercised. For example, if the FINS centers expand into orthotics, which is badly needed, this would create personnel, tools, equipment, and facilities requirements not presently available at the FINS Centers.
3. There is a definite need for improved services. The prosthetics work at all FINS workshops is marginal in terms of modern prosthetics technique and submarginal in terms of the function and quality of component parts such as sockets and shanks. A strength of the program, however, is the production of Jaipur feet, which seem to be extremely durable and functional.

4. Sri Lanka is somewhat unique in terms of sustainability, since each of the four FINS workshops is a separate entity, coordinated by a locally selected board of directors. The team has no doubt that if USAID funding were to cease, the prosthetics workshops would survive. In anticipation of the impending grant completion, each of the FINS workshops is attempting to create trust funds to sustain the workshops. Kandy and Galle are close to achieving that threshold, whereas Jaffna and Colombo are not. Any further monetary assistance should be allocated on the basis of need.

5. The existing grant does not provide funding for training activities, an important need that should be seriously considered. All of the FINS centers have requested training. However, training in new technologies should not be conducted unless a corresponding capital expenditure budget is provided for the necessary tools, supplies, and equipment to produce prosthetic limbs. If and when prosthetics training is provided, consideration should also be given to teaching Sri Lankan prosthetists how to conduct apprenticeships and how to teach prosthetics. A good prosthetics technician is not necessarily a good teacher.

6. The existing pool of prosthetics technicians is fairly young. However, the age of retirement in Sri Lanka is 60 years old, and two of the best technicians in Colombo are in their fifties. Furthermore, there is no formal structure for the prosthetics education system in Sri Lanka. These problems should be addressed proactively.

APPENDIX I
SCOPE OF WORK

The Friend in Need Society was awarded a grant of \$100,000 for the period February 14, 1996, to January 13, 1997. Modification One dated 11/13/96 changed the end date to February 13, 1999, and increased obligated funds to \$300,000, extending grant completion date to February 13, 1999. FINSs cost sharing amount was raised to \$249,875. The FINS program is implemented at branches in Kandy, Galle, and Jaffna.

The purpose of this evaluation is to evaluate the progress of the FINS grant to date and make recommendations for the future. Listed below are general areas of inquiry where the team should focus. One other area of emphasis would be to find and interview as many previous recipients of FINS prosthetic assistance regarding use and user satisfaction and unmet needs.

I. Overview of Need - Define the national population and the client population of disabled.

Portion of national population disabled and estimated numbers by:

- type of disability
- cause of disability
- age group, sex, geographic distribution
- characteristics of client population

II. Overview of assistance activities and programs addressing needs of war victims.

The lines of inquiry should stay within the prosthetics and physical rehab sector.

III. Appropriateness of FINS program apropos the needs of war victims and other ongoing assistance programs.

- To what extent needs are satisfied by the project or from other sources
- What is the institutional mission of FINS? Has it evolved or changed since the last evaluation? Is it consistent with the contents of the current project?
- What is FINS policy with regard to addressing the needs of all ethnicities?
- What is their current planned geographic spread?
- How well is the management function of FINS performing?
- How well is the fundraising function of FINS performing?
- What are the future prospects for growth and sustainability?

IV. USAID Management Burden

How heavy is the management burden on the USAID mission? How does it fit in with the mission's overall strategic objective? What indicators are being used?

V. Technical Quality and Appropriateness of Services

1. A 1991 consultancy report by Rob Singer indicates he trained a "production manager, workshop foreman and physiotherapist, in the basics of biomechanics, gait, pathological gait, and AK/BK prosthetic theory."

- How effective was this training in preparing the staff to effectively provide services to their clients?
- Are further upgrades in training needed? If so, in what specific areas?

2. Also in 1991, the Colombo center was provided with a thermoplastic oven, and 4 technicians were trained in AK/BK measurement and evaluation, casting, cast modification, and thermoplastic prosthetic fabrication. Static and dynamic alignment methods were also taught, including use of adjustable modular components and a vertical fabrication jig.
 - What has been the long-term impact of this training? Are these methods still being used appropriately? To what degree are these methods used in general practice?
3. Previous reports indicated that the training in AK/BK theory, combined with thermoplastic training, had improved patients' comfort and function. Reportedly, thermoplastic, custom socket methods had been combined successfully with the aluminum shank and jaipur foot.
 - Describe how this is done at the centers.
 - Does this "hybrid" approach have advantages over other approaches? For example, how does the hybridized system compare to the ICRC system, laminated resins, modular systems, and the straightforward "jaipur" approach?
4. The jaipur foot used in Sri Lanka was supposed to have undergone some changes described by Marty Carlson. These included: 1) shortening and rounding the heel section to reduce the excessive knee-flexion movement generated by the previous model; 2) adding a tread pattern to the sole for better traction and improved durability; and 3) reducing fabrication time by using a single vulcanization process instead of two.
 - Have any of these changes occurred, and if so, is the foot any better?
 - How does the foot (design, appearance, fabrication process, function, and durability) compare to the actual foot used in India, and how does it compare to other options?
 - What kind of foot is being used for long amputations (i.e. Symes)?
5. Are "temporary" BK prostheses still a part of standard protocol for new amputees? If so, is this effective?
6. Has a system been established to produce locally made modular components (this had been proposed in previous reports)?
7. Is there still an effective, ongoing "technical board"?
8. Please record or acquire production figures for each center and any data on number, frequency and etiology of amputation or orthopedic disabilities in general.
9. Please collect/record as much data as possible regarding amputee user satisfaction studies or records being kept, including your own observations. Is there a system in place to record outcomes?
10. What other prosthetic/orthotic services exist in Sri Lanka? What has been the impact of the FINS program on other services in the country?

11. Please acquire photographs, if possible, of facilities, fabrication methods, static and dynamic alignment methods, typical sockets, etc.

12. Please make recommendations regarding the current level of service being provided to amputee clients, how that service might be improved and sustained, and the degree of future need for prosthetic production, training, manpower, etc.

VI. Other key issues include the mission's concerns about imported materials, costs and production efficiency, and institutional strengthening.

As a requirement of each assignment, the consultants are responsible for a written report. All reports need to include: a list of contacts, including names, titles, institution, address and phone numbers (if possible). The report must be completed using Word Perfect 5.1 or higher (for Windows) and copies of the report must be submitted in hard copy and on diskette. Draft summary should be left with the mission with an agreed upon date for the final report.

APPENDIX II
ITINERARY

Saturday, May 31	Team arrival in Colombo
Monday, June 2	<p>Initial discussion of Scope of Work and management and programmatic aspects of Friend in Need Society (FINS) grant with Ms. Rani Samuel of the Democracy/Humanitarian Assistance Office at USAID/Sri Lanka.</p> <p>Meeting with Mr. Gerard Peytrignet, Head of Delegation, ICRC. Courtesy call followed immediately by meeting with Ms. Michelle Blatti and Dr. Claude Felix of ICRC regarding north and east program assistance programs.</p> <p>Meeting with Mr. Andrew Wheatley, Save the Children (UK), Programme Manager North and East Sri Lanka, regarding Save programming, current situation in Jaffna and FINS/Jaffna program.</p>
Tuesday, June 3	<p>Visit to Friend in Need Society prosthetics program in Colombo. Meetings with Ms. Rupa Jayasekera, Program Coordinator, Kalyani Ranasinghe, Honorary President of the Board of Trustees, and Fatama DeVos, Honorary Secretary of the Board of Trustees, FINS/Colombo.</p> <p>Site visits to two JAIPUR limb beneficiaries at their work sites.</p>
Wednesday, June 4	<p>Visit to Friend in Need Society prosthetics program in Galle. Meetings with Director of center as well as several members of Board of Trustees, FINS/Galle.</p>
Thursday, June 5	<p>Meeting with Mr. Peter Meijer, Resident Representative, UNHCR, regarding current situation in north and east Sri Lanka as well as Friend in Need Society programs.</p> <p>Visit to Friend in Need Society prosthetics program in Kandy.</p>
Friday, June 6	Visit to Friend in Need Society prosthetics program in Kandy.
Saturday, June 7	Visit to Provincial Hospital, Anuradhapura.
Saturday, June 7, Cont.	Return to Colombo.
Monday, June 9	Literature review at USAID office.
Tuesday, June 10	Meeting with Ms. Kleven, 2nd Secretary, and Mr. Henry De Mel, Program Officer, Embassy of Norway, regarding NORAD's experience in providing support to the disabled and FINS in particular.

- Meeting with Ms. Yoganathan, Program Coordinator, FINS/Jaffna regarding Jaffna prosthetic program.
- Visit to Rehab Lanka, a private facility providing fee for service rehabilitation assistance.
- Wednesday, June 11
- Meeting with Brig. General Dudley Perera, Director of Military Rehabilitation Services, and Col. Sriyani Wavusawituavana, Deputy Director, regarding government services to military forces disabled during active duty.
- Visit to FINS/Colombo.
- Visit to Ranaviru Sevana, Sri Lankan Military rehabilitation facility (accompanied by Brig. General Perera).
- Thursday, June 12
- Literature review and report preparation.
- Meeting with Libby Kennard, Program Officer, Save the Children/UK Jaffna Office, regarding the situation on the Jaffna peninsula as well as the operations of FINS/Jaffna Jaipur limb program.
- Friday, June 13
- Debrief with FINS/Colombo and USAID.
- Team departs from Colombo.

APPENDIX III
LIST OF PERSONS CONTACTED

United States Agency for International Development (USAID) - USAID/Sri Lanka, 356 Galle Rd., Colombo; Tel: 574-333, Fax: 574-264

- C Ms. Rani Samuel, Grants Manager, Democracy/Humanitarian Assistance Office
- C Ms. Roslyn Waters, Office Chief, Democracy/Humanitarian Assistance Office
- C Ms. Nishana Fernando, Program Development Specialist, Program Office
- C Mr. Louis Kuhn, Acting Director

International Committee of the Red Cross (ICRC) - 29 Layards Rd., Colombo 5; Tel: 503-346/347, Fax: 503-348

- C Mr. Gerard Peytrignet, Head of Delegation
- C Ms. Michelle Blatti, Co-operation Delegate
- C Dr. Claude Felix, Medical Coordinator

Save the Children, United Kingdom (SAVE/UK) - 35 Bagatalle Rd., Colombo 3; Tel: 593-595/596, Fax: 593-353

- C Mr. Andy Wheatley, Programme Manager, North and East Sri Lanka
- C Ms. Libby Kennard, District Coordinator - Jaffna

Friend in Need Society (FINS)

Colombo - 171 Sir James Peiris Mawatha, Colombo 2, Tel: 421-651

- C Ms. Rupa Jayasekera, Program Coordinator
- C Ms. Kalyani Ranasinghe, Honorary President, FINS/Colombo
- C Ms. Fatma DeVos, Honorary Secretary, FINS/Colombo
- C Mr. M.D.G.B Basnayake, Production Manager
- C Mr. M.K. Karunasena, Assistant Production Manager
- C Numerous prosthetic technicians
- C Numerous beneficiaries

Galle

- C Mr. Jagath Dahanayake, Honorary President, FINS/Galle
- C Mr. Kanura Dissanayake, Member, Board of Trustees
- C Mr. Hemachandra Dias, Board Member/Chief of Police
- C Dr. J.B. Senaralth, Board Vice President/Director
- C Mr. Premalal Uduge, Board member/Bank of Ceylon Loan Officer
- C Mr. Jnaneseha Godage, Administrator and Workshop Manager
- C Mr. Sarath, Workshop technician
- C Numerous beneficiaries of jaipur limbs in Galle

Kandy - Digama Rd., New Town, Kundasale, Tel: 087-346-21

- C Mr. T.R.R. Rajan, Vice President, FINS/Kandy
- C Venerable Christopher Ramagke, President of Board
- C Mr. B.A. Jayasaka, Board member
- C Ms. Jeeva Rajan, Secretary of Board
- C Mr. Sinwardene, Kandy/FINS Finance manager
- C Mr. Amarasinghe, Kandy/FINS Administrator
- C Mr. Sicira Shanthra Kumara, Technician

Friend in Need Society - Sri Lanka Evaluation, June 1997

C Mr. M. Ramseen, Technician
C 8 limb beneficiaries (3 men, 4 women, 1 child)

Jaffna

C Ms. Yoganathan, Colombo-based Board Member
C Mr. S.J. Frances, Colombo-based Program Coordinator

United Nations High Commission for Refugees (UNHCR) - 7 Coniston Place, Colombo 7, Tel: 683-968/969, Fax: 683-971

C Mr. Peter Meijer, Resident Representative

Anuradhapura Provincial Hospital

C Dr. W. Athaputtu, Hospital Superintendent

Royal Norwegian Embassy - 34 Ward Place, Colombo 7, Tel: 692-263/699-457, Fax: 695-009

C Ms. Birgit Kleven, 2nd Secretary
C Mr. Henry De Mel, Senior Advisor

Military Rehabilitation Center - Sri Lanka National Army Headquarters, Baladaksha, Mawatra, Colombo 3.

C Brig. General Dudley Perera, Director of Rehabilitation
C Col. Sriyani Wavusawituavana, Deputy Director of Rehabilitation

Sri Lanka Foundation for the Rehabilitation of the Disabled - Kheththarma Temple Rd., Maligawatte, Colombo 10, Tel/Fax: 689-287

C Squadron Leader Cyril Siriwardane, USP, Honorary Secretary

BBC World Service - 19 1/1 De Fonseka Place, Colombo 5, Tel/Fax: 580-795

C Flora Botsford, Colombo Correspondent

APPENDIX IV
INTAKE FORM (Reproduced)

Colombo Friend in Need Society
Jaipur Foot Programme
171, Sir James Peiris Mawatha, Colombo 2

Application for a Jaipur Foot

Ref. No.

Name.....

Address.....

Age.....Sex.....Religion.....District.....

Cause of Amputation.....Right or Left.....

Hospital of Amputation.....Below/Above Knee.....

Name of Surgeon.....Date of Amputation.....

Occupation before Amputation.....

Present Occupation (if any).....

Present Monthly Income.....Married/Single.....

FamilyMembers.....

Have you any other disability? (If so please state).....

Are you able to pay the cost of an aluminum limb which is Rs. 3,000?.....

Cost of a plastic limb which is Rs. 5,500?.....

If you are unable to pay for it can you find a sponsor to do so?.....

Name of Sponsor (if any).....

Address.....

What do you propose to do after being fitted with a Jaipur Limb?.....

Date.....

.....
Signature of Applicant

P.S. Please draw the imprint of your good foot on the reverse of this paper.