

**Uganda Prosthetic/Orthotic Needs
Assessment -
Leahy War Victims Fund Report**

Ron Altman, C.P.O.

August 1998

The evaluation report was conducted under the auspices of the United States Agency for International Development. The evaluation was conducted by the Displaced Children and Orphans Fund and War Victims Fund Contract (HRN-C-00-95-0004-00). The opinions expressed are those of the author and do not necessarily reflect the views of the U.S. Agency for International Development or PRGI, Inc.

For additional information or copies of this report, contact

Displaced Children and Orphans Fund and War Victims Fund Contract

1300 Pennsylvania Ave, NW
North Tower, Suite 405
Washington, DC 20004
phone: 202-789-1500 fax: 202-789-1601
e-mail: fred@dcfwvf.org

Contents

Abbreviations	ii
Map of Uganda	iii
Executive Summary	iv
Uganda Prosthetic/Orthotic Needs Assessment	1
Introduction	1
Methodology	1
History	1
Findings	1
Statistics for 1992 to 1997	2
Infrastructure	3
Key Elements	4
Regarding the WRF Proposal	4
Recommendations	5
Appendix	A-1
Responses to Questions from the Technical Scope of Work	A-1
Orthopaedic Workshops in Uganda	A-5
Addendum	A-7

Abbreviations

AVSI	International Service Volunteers' Association
CBR	community-based rehabilitation
HVO	Health Volunteers Overseas
IATOP	International Association of Technicians in Orthotics and Prosthetics
ICRC	International Committee for the Red Cross
ISPO	International Society of Prosthetics and Orthotics
LWVF	Leahy War Victims Fund
NGO	nongovernmental organizations
NUDIPU	National Union of Disabled Persons of Uganda
OXFAM	Oxford Committee for Famine Relief
P&O	prosthetics and orthotics
PVO	private voluntary organizations
PWD	people with disabilities
SACH	Solid Ankle, Cushioned Heel
TATCOT	Tanzania Training Center for Orthopedic Technologists
WHO	World Health Organization
WRF	World Rehabilitation Fund Inc.
USAID	U.S. Agency for International Development

Executive Summary

This report (1) assessed the present state of prosthetic and orthotic services in Uganda and what is needed to improve the quality, quantity, and sustainability of those prosthetic and orthotic services and (2) evaluated an unsolicited proposal submitted by the World Rehabilitation Fund Inc. (WRF).

Many nongovernmental organizations (NGO) have been involved with prosthetics and orthotics (P&O) in Uganda during the past 30 years. WRF first became involved in Uganda in 1970. Since then, other donor organizations have conducted programs in Uganda—with limited success and sustainability. Much of the trouble in the past has stemmed from a lack of detailed information about the exact need for P&O programs. Experts now working in Uganda say that additional clinics are unnecessary; they claim that no gaps exist in Uganda's P&O community. The 10 different rehabilitation workshops now active in Uganda seem to provide ample resources.

Some of those resources should be better focused on improving coordination between the different NGO, private voluntary organization (PVO), and governmental groups that conduct P&O activities in Uganda. National organizations such as the National Union of Disabled Persons in Uganda (NUDIPU) should continue to influence change in the provision of services to persons with disabilities by linking NGO, PVO, and governmental groups. Uganda has the elements in place that are necessary to develop a national prosthetic and orthotic service; it now needs to establish a cohesive prosthetics/orthotics community, a culture that is fundamental to any effort to sustain and improve services to the disabled. Those involved in prosthetics and orthotics services should be brought together before a plethora of fragmented, disparate workshop projects overtake the country.

It would not make sense to arbitrarily introduce another piecemeal project without regard for the existing needs and infrastructure. The WRF proposal recognizes that coordination is needed, but does not detail how its program would enhance or fit in with the P&O efforts underway. Recommendations for how the Leahy War Victims Fund (LWVF) should go about improving the P&O support culture in Uganda are given at the end of the assessment.

Uganda Prosthetic/Orthotic Needs Assessment

Introduction

This report is an assessment of the present state of prosthetic and orthotic services in Uganda and what, in this reviewer's judgment, is needed to improve the quality, quantity, and sustainability of those prosthetic and orthotic services. This assessment is also intended to evaluate an unsolicited proposal submitted by the World Rehabilitation Fund Inc. (WRF), of New York, an activity that was supported by the U.S. Agency for International Development's (USAID) Leahy War Victims Fund (LWVF).

Methodology

The methodology for this assessment consisted of readings; interviews; observations; patient evaluations; assessment of prosthetic fit and function; visits to facilities, workshops, the prosthetic school, and hospitals; and interviews with orthopaedic technologists, technicians, physician representatives of nongovernmental organizations (NGO), and government officials.

History

Uganda has had a long and uneven experience with prosthetics and orthotics; multiple NGOs have been involved with prosthetics and orthotics in Uganda over the past 30 years. In 1970, the original WRF prosthetics expert, Juan Monros, taught a course at the Mulago hospital. Apparently, numerous courses were taught during the early 1970s, but prosthetic education was discontinued in 1974. Contact with the International Association of Technicians in Orthotics and Prosthetics (IATOP), an organization of technicians trained in the original WRF training programs and supported by the WRF, ceased around 1976. Subsequently, others revived efforts in the 1980s and the 1990s, focusing on Mulago, the International Committee for the Red Cross (ICRC), the British Red Cross, USAID, and the Oxford Committee for Famine Relief (OXFAM). All of those projects have ceased to function.

Findings

The consequences of these past efforts at training and service and the continuing efforts of the Ugandans, together with the present day activities of the government and NGOs, present an interesting but troublesome picture of prosthetic and orthotic services. At present, approximately 60 people work in 10 orthopaedic workshops in Uganda: 4 government regional workshops, 3 former leprosy orthopaedic workshops, 1 new workshop built by the International Service Volunteers' Association (AVSI), 1 newly renovated workshop being run by ICRC, and a one-

man workshop run by a local NGO in Kampala. The workshops are uniformly distributed around the country. Twelve orthopaedic technologists will graduate from the prosthetics diploma program, a three-year course, at Mulago. However, the government is under a hiring freeze and therefore placing these people will be difficult.

How many amputees are there? How many polio victims are there who can benefit from orthotics services? As expected, there are no complete answers, although estimates abound. No authoritative compilation exists and I do not wish to add to the misinformation (per the WRF proposal, 14,000 to 17,000 amputations are needed per year due to unexploded ordinance.) The usual estimations from such sources as the World Health Organization (WHO) would be relatively accurate. This assessment did not include an assessment of all the hospitals' admission statistics, but as an example, the highest level of amputations performed at the Lacor Hospital was in 1996. That year, 120 amputations were performed, most of those related to the war.

Statistics for 1992 to 1997

In one hospital, out of 10,840 admissions to the surgical ward, 1,684 were war related. This is just one small picture from one hospital, but it is a hospital located in the north and one to which many trauma cases from elsewhere are referred. The number of amputations performed at this hospital was the impetus for establishing the prosthetic workshop at Gulu. A grant of US\$750,000 from the Netherlands to AVSI resulted in the newest workshop. This workshop is called an Otto Bock workshop, which has caused confusion and misunderstanding. It is in fact a well-equipped prosthetic/orthotic facility geared toward traditional exoskeletal fabrication methods. This facility is using the Bock manual locking wood knee setups, which have been in use for many years—wood ankle blocks with Solid Ankle, Cushioned Heel (SACH) feet. The sockets are thermoplastic attached to the knee with Bock rigid foam. The prosthesis is covered with suede-finish thermoplastic foam, which is brown. The workshop has sufficient tools and equipment to turn out prostheses using differing methods of fabrication. AVSI has included the makings of 200 prostheses in the grant.

The ICRC representative (who has been in the country for some time) believes that there is a sufficient number of personnel in Uganda to meet the needs. Furthermore, these workshops have been operating through the war years, so although the output may be less than desired, there have been no gaps in production. Deficiencies in prosthetic and orthotic (P&O) services are easily observed. Attention has not been paid to the orthotic needs, and little information is available. Although the National Union of Disabled Persons of Uganda (NUDIPU) has the potential for conducting good surveys, because of their network they do not have the resources to conduct such surveys. With the right kind of management and oversight, they could provide valuable information.

Ample evidence exists about the orthopaedically handicapped population in Kampala and elsewhere. A significant number of Ugandan handicapped have had polio and are now fixed in a flexed position; they ambulate by dragging themselves through the streets. The author hesitates to

recommend any major initiative at this time, having seen the disastrous results of well-intentioned interventions that were attempted in similar circumstances when the medical capability was not there.

The most widely used orthotic appliance is the traditional English caliper—the Thomas ring with two round uprights and no knee joint. With the advent of thermoplastics, the integration of prosthetics and orthotics becomes quite easy. The far more difficult, and at this time impossible, issue to deal with is the fixed deformity.

Infrastructure

What is most important is the existing larger infrastructure that provides the foundation necessary for improving, expanding, and sustaining prosthetic and orthotic services. Although that infrastructure is in need of repair, it no longer needs to be made up of disjointed projects that have little chance of enduring. As a result of the efforts the Ugandans have made to see the rights of the disabled recognized, they are far ahead of most of us in understanding where they need to go. In addition, they are aware of the standards that need to be achieved.

Perhaps the single most significant finding was learning about the NUDIPU. The NUDIPU was formed to create a unified voice for persons with disabilities. Their mission is to advocate for the equalization of opportunities, participation in policy planning, and implementation of disability programs, in close coordination with government, NGOs, and the general public. The union's purpose is to influence change in the provision of services to persons with disabilities in Uganda. As a result of NUDIPU's participation in the constitutional assembly in 1994, the Ugandan constitution provides five seats in parliament for representatives who are directly elected by people with disabilities.

One of Uganda's programs of advocacy relates to orthopaedic appliance services. The program is intended to reduce limitations faced by people with disabilities (PWD), and to see that PWDs acquire appliances that can enable them to become fully participating members of society.

The second most significant finding is that Uganda has been addressing as best it can the issue of disability in the country. The following publications are illustrative:

- C *The Scope and Nature of Disability in Uganda*, published in March 1997;
- C *The Essential Services for Medical Rehabilitation of Persons with Disabilities in the District*;
- C *Standards and Policy Statement for Orthopedic Equipment and Aids*, which includes an action plan; and
- C *Guidelines for Community-Based Rehabilitation (CBR) in Uganda*, which repeatedly addresses the issue of consulting with and involving the disabled target group.

Key Elements

Uganda has the three key elements in place that are necessary to develop a national prosthetic and orthotic service. These elements define a system that is capable of providing appropriate functional services consistent with universally accepted standards. The key elements are as follows:

1. Representation of the disabled.
2. Constitutional provision for and government interest in the disabled.
3. An infrastructure of education training and service.

Uganda has a residual core of experienced, previously trained individuals, as well as newly educated technicians, who are completing a three-year program modeled on the Tanzanian Training Center for Orthopedic Technologists (TATCOT) program in Tanzania. Given the concern for the integration of the disabled in their society, the standards relating to services, and the existence of a P&O infrastructure, the obvious need is to address the overall state of disrepair of that mechanism so that it can begin to meet the functional needs of the disabled. A wonderful opportunity now exists to establish a cohesive, coordinated prosthetics/orthotics community, a culture that is fundamental to any effort to sustain and improve services to the disabled. Those involved in prosthetics and orthotics services should be brought together before a plethora of fragmented, disparate workshop projects overtake the country.

Regarding the WRF Proposal

In recognition of the conditions that exist today, it would not make sense to arbitrarily introduce another piecemeal project without regard for the existing needs and infrastructure. The WRF proposal seemed to lack an understanding or knowledge of who is doing what in Uganda. It raises questions about the lack of standards or indicators and about the duplication of efforts. The proposal lacks specificity, precision, and accuracy.

It is unfortunate that an approach to teach a specific technique was undertaken before an effort was made to ensure that a fundamental level of prosthetic principles was established. The WRF's own consultant recognizes that there are deficiencies in the prosthetic practices and resulting outcomes and advocates providing education in the principles of prosthetics fit and alignment. Without question, the single most significant impairment to the effectiveness of any project is having those who are unqualified making the decisions on the scope and level of prosthetic services to be provided.

Before any unilateral, arbitrary projects are started in Uganda, an immediate effort should be made to establish a P&O community out of the various government and NGO workshops that already exist. Ideally, the WRF would have undertaken an objective assessment of the existing

conditions, as well as of the needs and the wishes of the Ugandans, rather than responded to the provincial constraints of the local USAID office in establishing their priorities and direction.

As described elsewhere in this report, the Mahaveer method of construction is being used by the I.M. Patel NGO, a division of Doshi Hardware. Over the past year, 312 prostheses were provided to amputees of all varieties through the efforts of one prosthetist. However, this project lies completely outside the Ugandan mechanism for the delivery of rehabilitative services; there is no medical involvement, no outcome standards, and no accountability. One of the advantages of the Jaipur technology, as described in the Rotary Jaipur Limb Project, is the minimum involvement of medical supervision that it requires [ref Neff].

Medical and rehabilitative professionals, who are eager to become involved, are concerned about the delivery of appropriate services. In a country the size of Uganda, it is not necessary to complicate the delivery of prosthetic services with a multiplicity of methodologies. The WRF proposal does not address the fundamental prosthetics and orthotics needs of Uganda—needs that are nationwide and are not being met.

Recommendations

- The War Victims Fund should not support the WRF proposal, because it does not contribute to the existing national system.
- Although economic assistance is needed to improve the workshops, provide materials, and allow for expanded training, Ugandans can do some fundamental activities on their own:
 - Conducting organizational activities;
 - Conducting internal educational and training programs;
 - Integrating new, inexperienced personnel to help raise the level of performance, establishing standards, indicators, and outcomes assessment; and
 - Initiating quality assurance programs.

These functions are vital to creating the environment that will result in effective sustainable results.

The single most important ingredient in developing a sustainable effort is the creation of a support culture. Uganda must establish a community of all those involved in prosthetics and orthotics that includes the orthotists, prosthetists, orthopaedic technologists, technicians, and workers who staff the 10 existing orthopaedic workshops. Dr. Alice Baingana Nganwa, senior medical officer of the Disability and Rehabilitation Section of the Ministry of Health, addresses this fundamental need in her proposal for a national meeting of orthopaedic technicians and

technologists. She specifically addresses the isolation of those involved in orthotics and prosthetics, bringing together those who are involved and identifying their qualifications and level of participation in the rehabilitation effort.

- Establish a national organization (e.g., a Ugandan Society for Prosthetics and Orthotics).
- Establish individual as well as national membership in the International Society of Prosthetics and Orthotics (ISPO).
- Integrate NGOs (ICRC, AVSI, and Patel) into a national standards and outcomes program.
- Introduce appropriate continuing education programs for all participants. For the prosthetic/orthotic technologist, provide a short-term training program to establish a competency baseline for the provision of services. The initial advanced P&O continuing education program should concentrate on the principles of fit alignment and biomechanics.
- Inventory the physical resources available at each of the workshops.
- Develop a plan for improving the teaching staff, experience, and qualifications.
- Develop a plan for upgrading technical personnel at all levels.
- Establish and implement standards for workplace safety.
- Establish a methodology for assisting in payment of P&O services. Establish a continuum of NGOs and private voluntary organizations (PVO) to continue a support network for paying individual services
- Set up a system of accountability and a mechanism for compensation for workshop productivity.
- As the WRF has taken the initiative to once again become involved in Uganda, it should straighten out the chaotic conditions that exist there. The fund has a wonderful resource in Uganda, Dr Wanname Kale, an individual who understands Uganda's needs and has the vision to do something about them. With the support of the WRF, Dr. Wanname can accomplish the organizational and administrative work necessary for a support culture to develop. Without meaningful evidence that this important work is being accomplished, there is no basis for any proposal.

Appendix

Responses to Questions from the Technical Scope of Work

1. Please describe the current level of technology being used at the center(s) you visit, both lower and upper extremity fittings.

Current level of technology: As described throughout the report, many technologies are already at work. The one ingredient consistently missing from those "technologies" is an adequate foundation in the contemporary standards for fit and alignment.

2. Is the prosthetic system(s) used appropriate as to fit and function? Please describe quality of fit and function of prosthetic fittings you were able to observe and evaluate.

Appropriateness of the systems being used regarding fit and function: See answer number one.

3. Tim Straats describes the transtibial sockets he observed as representative of 1960's PTB design, and the transfemoral sockets as quadrilateral, but lacking in a complete understanding of quadrilateral principles. Would you concur? (We assume what he means by 1960's design is that the transtibial sockets provide specific weight bearing, primarily over the patellar tendon and the medial-tibial flare, but that the posterior trimlines are relatively high to provide counter pressure to the patellar "bar," and that the patellar "bars" are deep and rounded.) What we are looking for here is your assessment of whether the casting method, cast modifications, and sockets reflect an adequate understanding of prosthetic biomechanical principles for AK and BK, and whether they result in appropriate comfort, fit, and function.

Regarding Staats's comments: This is a fundamental component of the fit and function equation. Unfortunately, Staats recommends proceeding with a methodology while noting the fundamental deficiencies. Services should not be expanded until a reasonable foundation of prosthetics principles of fit, alignment, and biomechanical considerations have been established. This is not an overwhelming task, but it is one that should be done first.

4. Does the current system allow dynamic alignment changes? (If so, please describe how. If not, could the system be adapted to enable appropriate alignment changes?)

Regarding alignment: Ugandans are being deprived of the technical ability to adequately align prostheses, from the technology end, by methods that do not allow for alignment and by tools that do not allow for dynamic alignment. Appropriate technology may not be an appropriate issue since it fails to address the most important aspects of prosthetics practice. Some laymen have the misguided notion that the issue is only one of technology (i.e., one of materials and methods of construction). The emphasis on appropriate technology has become a distraction from the essential effort to provide appropriate, functional prosthetic

rehabilitation. Appropriate technology is on the verge of becoming synonymous with allowing inadequate functional outcomes. An understanding of the fundamental prosthetic principles and the standards for fit alignment and function is more important to achieving successful outcomes than the fixation of any particular methodology. If you can provide the indigenous practitioner with the correct understanding of and appreciation for the implications and effects of alignment changes—in particular, how alignment changes impact socket fit, socket comfort, and the ability to walk—then the practitioner will have no difficulty selecting the appropriate technology. The indicator of whether or not you achieve the appropriate technology is whether the simple non-alignable systems are preferred after the practitioners learn to correctly fit and align prostheses.

The Mahaveer method is and has been widely used in Uganda; several hundred Mahaveer-style limbs have been fit within the last year, as previously noted. Gerd Van de Velde of ICRC is involved in establishing a new effort in the west at Fort Portal. He noted that, although he had spoken incorrectly when he referred to some of the interesting characteristics of the Mahaveer method of construction, he had been reported as having complimented the Mahaveer method of construction. He agreed that there is a difference between having a highly experienced prosthetist (someone who can evaluate the configuration of the procedure in perspective) and having an experienced prosthetist who can discuss methodology with a layman (someone lacking the knowledge and understanding of prosthetics fit and alignment principles who would not be able to know when the results of less-capable practitioners were inadequate or inappropriate). The Mahaveer method does not provide the elementary aligning ability that is fundamental to the appropriate practice of prosthetics today in any setting. Nor does it allow for the teaching of generally accepted principles.

5. Does the prosthetic design/system permit repairs/replacement?

Repairs/replacement: As a finished product (i.e., a single piece of plastic) that is, conceptually, a good tool. The difficulty is how one arrives at that finished product. Also, what is the purpose of the product?

6. Is the Mahaveer system (HDPE formed over a modified cast) adaptable to all or most levels of amputation, i.e. knee disarticulation or long transfemoral levels, symes or long transtibial levels, etc.?

The method can be used on all kinds of amputation levels.

7. Are the technicians who use the Mahaveer system familiar with the percentage of shrinkage that occurs after the HDPE has cooled? How do they allow for plastic shrinkage? Do they have any objective means of recording allowing for shrinkage in the future?

Shrinkage: This question presumes a lot more than shrinkage. The simple answer is “no” to both the smaller and larger question.

8. Once a system has been fit and is ready for delivery, what sort of “checkout” procedure is used prior to releasing the patient?

It depends on where the person was fitted. Therefore, the answer is “yes” and “no.”

9. Is prosthetic training adequate and provided by appropriately trained personnel?

The answer is “no.”

10. What is the quality of amputations observed? Is there access to a local qualified surgeon?

Poor amputations are no justification for poor prosthetic solutions. Poor amputations require better prosthetic solutions.

11. Are any measures of patient outcomes or patient satisfaction in place? (If so please describe, or if not, please indicate some suggestions for what might be appropriate at the center(s).)

As addressed in the benchmark, there are no standards in place.

12. Does the prosthetic care provided at the center(s) you have observed satisfy the requirements for “appropriate technology” described during the Appropriate Prosthetic Technology for Developing Countries consensus conference in Cambodia?

In some cases the answer is “yes,” but the question fails to address the basic issue. The opportunity to significantly improve the level of services exists in Uganda because there is a cadre of practitioners at varying levels of competence and experience.

13. Please provide a more detailed description of the knee system used for transfemoral levels. (Photographs of transfemoral and transtibial systems and fittings would be appreciated.) Is this system appropriate? If not, is there some alternative approach that would provide patients with a better result?

Please see the photograph of the above knee prosthesis.

14. Have the 6 Ugandan and one Kenyan prosthetic Technicians received other training in prosthetics, or is the Mahaveer course the limit of their training?

All the Ugandan practitioners were experienced; some Ugandan practitioners—those trained in 1973—were very experienced.

15. Does the center of the NGO have a plan and the capacity to ensure that the care provided by the center will result in prostheses which are biomechanically appropriate, comfortable, durable, and culturally acceptable”

The answer is “no.”

16. What additional training would enable the technicians to provide appropriate prosthetic care?

The basic training as outlined by the WRF consultant. Another issue is more fundamental, however, as I noted in my recommendations.

17. What additional equipment and/or facility modifications would be necessary in order for the center(s) to provide appropriate prosthetic care?

Culture: The effect of culture depends on the case. In some cases, culture has nothing to do with the facilities but does relate to the system and its inability to change. Uganda should be helped to take responsibility for creating an environment conducive to change.

18. Does it appear that patients, particularly civilian victims of war, have access to the center(s), or would some form of regular outreach be possible and advisable?

The location of the various workshops is quite good. Please see the map.

19. Is there any demographic data available on patients, including numbers, cause of amputation, prosthetic and rehab. intervention, etc.?

Please see the report.

20. If possible, describe the relationship of the prosthetic services with the local government, and the national government. Does a national system exist? Who oversees rehabilitation services, policies, funding, and eligibility for services? Is it possible that any of the centers you have seen could potentially be positioned to be centers of excellence? Which centers (both those you have visited as well as any others of which you are aware, are best suited and located to provide services to civilian victims of conflict, land mines, or unexploded ordinance?

The unfortunate reality is that the Center for Excellence school and workshop at Mulago, where most of the efforts have been placed over the years, is poorly managed, is notorious for its ineffectiveness and lack of care, and has a poor reputation overall.

21. Did you observe other victims areas of need related to medical services, and in particular, rehabilitation of victims of war? For example, are there a lot of patients with needs for wheelchairs? Are other types of injuries more common than amputation? Is there evidence of recent onset of polio or other diseases and conditions that could be attributed to conflict in Uganda or neighboring countries?

The Whirlwind wheelchair representatives, who are beginning an extended stay in Uganda and Kenya, should have some good information about the need for wheelchairs. Walking is difficult in Uganda because of the hilly terrain, and handicapped access is limited because of

design problems and construction programs.

22. What recommendations do you have about the establishment of prosthetic/orthotic services for victims of war in Uganda? (What type of program(s) makes sense? Where are the greatest needs?)

This question has been answered previously.

Orthopaedic Workshops in Uganda

1. **Mulago** is in Kampala and is the oldest and best-equipped workshop. It was the site of the first international course in prosthetics in 1970 (the pictures are still there.) This facility was rebuilt by the British Red Cross in 1991.

Personnel: adequate

(Number of) Prosthetists	6
Woodworkers	4
Shoemakers	4
Physiotherapists	5

Equipment: adequate

Materials: adequate

Production: none

2. **Patel Charitable Trust** is in Kampala. It is a charitable division of Doshi Hardware.

Personnel: not adequate

Prosthetists	1
--------------	---

Equipment: adequate for the Mahaveer/Jaipur system

Materials: adequate production, 312 limbs in one year

3. **Mbale** is one of four government regional workshops set up by AVSI.

Personnel: adequate

Prosthetists	1
Woodworkers	2
Shoemakers	2
Physiotherapists	1

Materials: not adequate

Production: low

Management: problems

4. **Mbarara** is one of four government regional workshops.

Personnel: adequate

Prosthetists	2
Woodworkers	2
Shoemakers	2

Physiotherapists 2
Equipment: adequate
Materials: not adequate
Production: very low
Management: problems

5. **Gulu** is one of four government regional workshops.

Personnel: adequate
Prosthetists 3
Woodworkers 2
Shoemakers 2
Physiotherapists 1
Equipment: adequate
Materials: adequate
Production: 9 prostheses a month
Management: good

6. **Arua** is one of three former leprosy orthopaedic workshops. It is located in the northwest.

Personnel: adequate
Prosthetists 1
Woodworkers 3
Shoemakers 3
Physiotherapist 2
Equipment: adequate
Materials: adequate
Production: 10 prostheses a month (traditional wood laminated)
Management: well managed

Note: Arua is the proposed site for the WRF center for the northern part of Uganda.

7. **Kumi** is one of three former leprosy orthopaedic workshops. It is located in the east with close access to the north.

Personnel: adequate
Prosthetists 2
Physiotherapists 2
Woodworkers 2
Shoemakers 2
Physiotherapists 2
Equipment: adequate
Materials: adequate
Production: 15 prostheses a month
Management: Well managed

Note: This workshop was used as a training center by WRF for the Mahaveer training course.

8. **Buluba** is one of three former leprosy orthopaedic workshops. It is located in the south in one of the most heavily populated areas of Uganda.

Personnel: adequate

Prosthetist	1
Physiotherapist	2
Woodworker	3
Shoemakers	3

Equipment: adequate

Materials: adequate

Production: 10 prostheses a month

Management: well managed

9. **Fort Portal** is a newly renovated workshop and is being managed by ICRC.

Personnel: adequate

Prosthetists	3
physiotherapists	1
Cleaners	1
Guards	1

Equipment: ICRC

Materials: ICRC

Production: 15 prostheses a month, well managed

10. **Kabale** is a workshop under the management of NUDIPU. It is located in the southwest of the country it currently has no production.

Addendum

The Gulu workshop had a high degree of coincidence with the indicators used in the LWVF/USAID Prosthetics, Orthotics, and Rehabilitation Project Evaluation Form. However, the visual evaluation of the outcomes of their efforts revealed a less than adequate result. The outcome was not what it should have been given the extent to which the outcomes were "in compliance." For example, in 1.5 outcomes the difference between what a consultant might record as the quality of the fit and alignment and what might be recorded at the facility would probably be significant. Still, the measure was what was being recorded, and in that regard the outcomes were doing a good job.

As an indicator of where Uganda is in its ability to improve, the form shows that mechanisms are in place that only need to be repaired or given additional guidance.