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Transfer and Dissemination of Appropriate Wheelchair Technology

Since 1996, the Center for International Rehabilitation has been dedicated to providing assistive devices to landmine victims. The CIR, in collaboration with Whirlwind Wheelchair International and the Afghan Ministry of Martyrs and Disabled, designed and distributed a centrally fabricated, locally-fitted wheelchair designed for post-conflict countries and tested it in Afghanistan and Jordan. The following discusses the outcome of that collaboration.

by William K. Smith, Nikola Prvulov and Kathryn Jackson
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According to World Health Organization estimates, 0.5 percent of persons with disabilities in developing nations are in need of a prosthetic or orthotic device, or related rehabilitation services.¹ An additional 20–100 million are potential wheelchair users, 95 percent of whom do not have access to the mobility devices they require.² In 2005, the Center for International Rehabilitation collaborated with the Afghan Ministry of Martyrs and Disabled and Whirlwind Wheelchair International to address this problem.

The solution proposed by CIR President Dr. William K. Smith: commission and construct a low-cost, high-quality adult wheelchair appropriate for the rugged landscapes of developing and war-torn areas that combines the economies of scale and quality control of central fabrication with the adjustability and sustainability of local production. The CIR-Whirlwind Wheelchair was developed with consideration given to the needs of the rider, as well as the demands of his or her environment.³ The CIR-Whirlwind Wheelchair has special features that include an extra-long wheelbase for increased stability, wide, flexible front castor wheels for smooth transitions onto rocky terrain, a folding adjustable X-brace that allows for chair widths between 14 and 18 inches (36 and 46 centimeters), and five axle positions that can be adjusted based on the user's skill and body type.

Training

The CIR conducted a six-day training workshop in Kabul, Afghanistan, in June 2005 that focused on skills such as wheelchair assembly and repair, fitting and user assessment. The goal of this project was to test a distribution strategy that combined central fabrication with local assembly, fitting and delivery. During the initial phase, wheelchair kits were manufactured by Workshop for Rehabilitation and Training of the Handicapped Trust (or WORTH Trust, a social enterprise with the goal of employing people with disabilities), in a regional facility in Katpadi, India. The kits were then delivered to Afghanistan, where they were assembled, distributed and maintained through the cooperation of a local nongovernmental organization, the Kabul Orthopedic Organization.

The Study

Following their attendance at the workshop, physiotherapists and technicians issued CIR wheelchairs to 100 subjects. Each subject's wheelchair and seat cushion were adjusted to accommodate his or her physical needs and functional abilities. Participants also received train-



Wheelchair technicians and a wheelchair user test the adult wheelchair in Afghanistan.
PHOTO COURTESY OF ZANE EDWARDS

ing on the safe and efficient use of the wheelchair, and scheduled follow-up appointments at three and 10 weeks after the initial fitting. During those visits, the wheelchair users were interviewed, and the wheelchairs were inspected and adjusted or repaired as needed. Each of the 100 subjects was given ownership of his or her wheelchair upon completion of the study.

The Next Step

As a follow-up to the Afghanistan study, the CIR collaborated with WORTH Trust and WWI on the design and production of an adjustable pediatric wheelchair suitable for children between the ages of four and 12. Forty pediatric and 35 adult wheelchairs were shipped to the Al Hussein Society in Amman, Jordan, where the CIR held a wheelchair workshop from 22–26 June 2008. It was attended by physical therapists, occupational therapists, center directors and wheelchair technicians from several Middle Eastern regions.

During the five-day training, the instructors covered wheelchair assembly, fitting, seating (cushion fabrication) and maintenance/repair, and provided additional training to users and their parents. Workshop participants had the



Wheelchair designer Ralf Hotchkiss and a pediatric wheelchair user test the chairs in Jordan.
PHOTO COURTESY OF NIKOLA PRVULOV

opportunity to work with child wheelchair users on seating, fitting and user instruction. Wheelchair technicians from the Al Hussein Society were also given hands-on training on wheelchair manufacture in preparation for regional distribution. Following the training workshops, feedback and recommendations were collected.

The Future

The Al Hussein Society is conducting a quality-assurance study of the CIR wheelchair. The results of this QA study will help to ensure that the training modules and wheelchair design are a good match to the regional needs of users.

The project demonstrates the feasibility of combining central fabrication of wheelchairs with local fitting and servicing. Since production of the wheelchair is based on standard bicycle parts, the next step will involve setting up large-scale production and distribution within a country or region. The CIR is actively engaging in dialogues with its partners and funders about establishing such a production, training and distribution strategy in one or more post-conflict countries of the Middle East or Afghanistan. ♦

See Endnotes, page 113



Nikola Prvulov, CIR's Field Operations Manager, is bilingual in English and Serbian (Serbo-Croatian), and has extensive experience in the Balkans, having previously worked with organizations that include the United Methodist Committee on Relief, CARE and the American Refugee Committee. Prvulov has a master's degree from Aurora University (Illinois) in outdoor therapeutic recreation administration with an emphasis on special populations and an undergraduate degree from Unity College in Maine.

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Dr. William K. Smith, CIR's President and the founder of Physicians Against Landmines, is a graduate of Duke University. He completed medical school at Georgetown University and residency at Northwestern University and the Rehabilitation Institute of Chicago. Smith is a board-certified psychiatrist and trained prosthetist. A past recipient of the Scholl Recognition Award for Rehabilitation Research, he is a member of the United States Council on International Disabilities and has chaired the working group on post-conflict development and disabilities for the National Council on Disabilities.

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