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## USAID'S HEALTH EVALUATION AND APPLIED RESEARCH DEVELOPMENT (HEARD) PROJECT

### ISWP Standards Working Group June 6, 2020 Meeting Recap

The ISWP Standards Working Group met by conference call on Wednesday, June 6, 2020 from 12:00 p.m. to 1:30 p.m. U.S. Eastern Time. This document provides a recap. Call recording: [link](#).

Next call: Wednesday September 9, 2020, 12:00 p.m. U.S. Eastern Time/4:00 p.m. GMT. We are shifting from Adobe Connect to Zoom platform for Standards group meeting.

Join Zoom Meeting on September 9th by clicking link below:

<https://pitt-rst.zoom.us/j/96859187694?pwd=djZCTUpQOWhrZUsvYkswYUZENEJiQT09>

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1. **ISWP Updates- Dr. Pearlman:** ISWP's ten-member Forming Committee, comprised of a cross-section of sector stakeholders from low-, middle- and high-income countries, is working with a consultant on a plan to become a standalone organization. The initiative includes an assessment of interest and opportunities to continue to work on standards and product testing. It is expected that ISWP will exit the university by late spring 2021. The University of Pittsburgh is awaiting approval from USAID for a costed extension to

support ISWP's work through the transition.

The ISWP Standards Working Group was established to identify key gaps among wheelchair products and standards. The group has evolved to a Community of Practice to help both Working Group members and the broader ISWP membership understand more about product testing standards.

2. **Mobility Worldwide**: Andy Maynard, Mobility Worldwide, described the prototype of the Rotational Molded body cart (scooter like) which is mainly built of plastic, including a plastic cushion. The front assembly is handmade. The model body is about 3-4 parts.

The seat cushions are molded and have been tested. Pressure mapping was done in Kenya during second quarter 2020 to determine stiffness, softness and appropriateness for users.

Regarding the molded wheels, accelerated testing (double drum) has been done to identify failures and improvements. The test simulates 5 years (traveling a distance of 5 miles a day each day) of usage, and the drums have wedges to simulate rough terrain. The drums also have sandpaper to simulate wear. They are currently in the third test and will be testing the plastic wheels, as well. This test includes the user with cargo that adds to a total of 200 pounds. Dr. Pearlman suggested consulting the ISO 7176-8 standard as the accelerated test is similar to what has been done in this test. It would be important to relate the results to the standard test, as well as to perform the curb drop test.

The product is being distributed to Mobility Worldwide's international partners. Recipients will be asked about the environment where they use the device and about its performance to continue to improve the design and ultimately move to a higher level of production.

Mobility Worldwide is holding its international conference on Friday, September 25, 10:00 a.m. – 1:00 p.m. U.S. Eastern Daylight Time/2:00 p.m. – 5:00 p.m. GMT via Zoom. More information: [link](#).

3. **Bamboo Ability Group, Ghana**: Yetsa Tuakli-Wosornu explained that the abundant existence of bamboo in Ghana and the need for mobility aids were catalysts to start the

project. They partnered with a well-established bike company in 2019 to build prototypes. The wheelchair consists of the frame and sideguards made out of bamboo, using standard wheels with hand rims. The bike factory provides a good pathway for testing and an opportunity to develop in-country testing methods.

The device was tested with basketball players. It was informally called “the African chair.” Yetsa shared a video of the project: <https://youtu.be/8UURmmEh4ew>. The wheelchairs shown have 4 and 3 wheels and fixed foot support. The video also includes footage of the cushions being sewn.

Standards Working Group members recommended exploring a combination of materials with bamboo that could help to strengthen the frame and include 3D printed locks on the chair. Don Schoendorfer suggested researching how to grow bamboo in a curved fashion to improve the ability to bend the wood. Jon Pearlman mentioned there have been bamboo wheelchairs designed in the past (e.g., CPD in Bangladesh) and suggested Yetsa research those. The AT2030 project also may be an opportunity for collaboration ([link](#)).

4. **CONADIS:** Alba Polanco explained there currently are no policies in place for wheelchair service provision or quality standards. CONADIS, the National Disability Council in the Dominican Republic, is working to improve this as a result of a November 2019 National Social Security Council (NSCC) Resolution to include manual wheelchairs, pressure relief cushions and special strollers in the health insurance scheme. The resolution mandates that CONADIS will authorize the wheelchair that will be delivered to the user. CONADIS has created a committee that involves users, universities and stakeholders and has considered ISO 7176. They plan is to adapt these standards to create the norm in the country for manufacturers and imported products. CONADIS is interested in collaborating to create a lab to follow ISO standards and is interested to learn what materials and equipment are needed for product testing.
5. **WIKI:** Stephanie Vasquez presented the new product testing Wiki, which is a resource for information about wheelchair product testing hosted in [www.wheelchairnetwork.org](http://www.wheelchairnetwork.org). The Wiki includes information about product features, articles available such as static stability, determination of mass and maneuvering space, seat and wheel dimensions, and ISWP tests such as rolling resistance and caster testing. Stephanie encouraged wheelchair testing experts to collaborate on the site and provide feedback to improve content. The Spanish version is in development. Standards WG members are invited to a webinar promoting the Wiki on Tuesday, June 30, at 7:00 a.m. U.S. Eastern Daylight Saving Time.
6. **Group updates:**

- a. **Free Wheelchair Mission (FWM):** Through its test track, FWM identified a solution for addressing failures on its products by welding the caster assembly to the frame and replacing the bearings.
- b. **GRIT:** No ongoing activities at the moment. They have had issues due to COVID-19 regarding shipping and deliveries.
- c. **Latter-day Saint Charities:** The organization has had some delays due to COVID-19 and restrictions in customs, but things are improving.
- d. **Pitt/ISWP:** Anand Mhatre presented results on caster failures from power wheelchairs. Results were analyzed per group (2,3,4). As the wheelchair group number increases, the high-risk failure also increases.

Joe Ott and Holly Wilson-Jene presented a fact sheet on how rolling resistance affects manual wheelchair usage. A key finding from Joe’s research is that rolling resistance can make propulsion more difficult for users. Results showed that tire pressure, weight, and toe in/out increase the weight perceived by users when propelling their wheelchairs. The fact sheet presents a simplified relation to rolling resistance and the difficulty of propulsion compared to weight equivalents. Joe recently completed his dissertation. Holly will be taking the lead on this project as part of her PhD studies.

**Participants:**

Guests:

- Andy Maynard, Mobility Worldwide
- Alba Polanco, CONADIS (National Disability Council, Dominican Republic)
- Laura Ramirez, CONADIS (National Disability Council, Dominican Republic)
- Yetsa Tuakli-Wosornu, Bamboo Ability, Ghana, and Yale Para and Adapted Sports Lab
- Angélica Rodriguez, INTEC (Santo Domingo Technical Institute)

Standards Working Group Members:

✓	Bonnie Gonzalez, Free Wheelchair Mission
✓	Ben Judge, GRIT
	Keoke King, Participant Assistive Products
	Daniel Martin, Shonaquip
	Matt McCambridge
	Norman Reese, LeTourneau University
	Chris Rushman, Motivation
✓	Don Schoendorfer, Free Wheelchair Mission

	Mark Sullivan, Convaid
✓	Scott Walters, Mobility Worldwide
✓	Eric Wunderlich, Latter-day Saint Charities
✓	Jon Pearlman, University of Pittsburgh
✓	Mary Goldberg, University of Pittsburgh
✓	Krithika Kandavel, University of Pittsburgh
✓	Anand Mhatre, University of Pittsburgh
✓	Joe Ott, University of Pittsburgh
✓	Maria Toro Hernandez, University of Pittsburgh
✓	Stephanie Vasquez, University of Pittsburgh
✓	Nancy Augustine, University of Pittsburgh