

## International Society for Prosthetics & Orthotics (ISPO) UK Annual Scientific Meeting 2018

### Title: Widening Access to Sustainable Prosthetics Services: a Global Challenge

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Approximately 100M people need prosthetic and orthotic devices [1]. Low-cost, robust devices are only half the story; an estimated 80-90% cannot access P&O services "due to a shortage of personnel, service units and health rehabilitation infrastructures" [2]. Access is particularly poor for people in Low Resource Countries (LRCs) such as Cambodia, where prosthetic limb users are typically young and live longer lives of more physical work than those in the UK. Many LRCs have higher levels of trauma amputation from accidents, conflict and landmine injuries [3]. Services are set up primarily for trauma injuries but by 2035 it is estimated diabetes may affect over 500M people, and is growing fastest in LRCs [4].

The above access barriers could be addressed by data. We are developing tools to enhance P&O data, aiming to improve service access, train clinicians and improve efficiency of funding use. Researchers at the University of Southampton and the University of Salford are working with expert clinicians in Cambodia at Exceed Worldwide and with computer scientists at industry partner BluPoint Ltd., to investigate:

- 1) digital measurement tools to assess a user's residual limb anatomy, gait, typical daily prosthetic limb use patterns, and health status; and
- 2) the architecture for a portable digital patient casenote system: a robust and secure IT network for travelling prosthetists to visit provincial areas to provide evidence-based treatment for those in remote communities who cannot afford to travel.

Besides the science, the context makes this work challenging. Experience shows that care must be taken in applying healthcare technologies from Western countries directly in LMICs. As well as users' different needs, their relationship with clinicians and prosthetics are different for complex cultural, social and environmental reasons. We have framed our scientific research using an ethnographic study of P&O service providers and users to ensure the developed technologies are practical. We will also conduct business modelling research, producing tools to ensure that technologies are cost effective and can be implemented sustainably.

References: [1] 2011 World Report on Disability, WHO; [2] Sexton 2016, Rehabilitation of People with Physical Disabilities in Developing Countries, ISPO; [3] Marino 2015, Access to Prosthetic Devices in Developing Countries. IEEE Global Humanitarian Tech Conf; [4] Guariguata 2014, Global Estimates of Diabetes. Diabetes Res & Clin Practice.

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