

Dr. David Stockton

“A Low Cost Orthopaedic Traction Device for Low- and Middle-Income Countries”

Dr. Stockton from the University of British Columbia received the award for his role in the project “A Low Cost Orthopaedic Traction Device for Low- and Middle-Income Countries”, which addresses unreliable access to fracture care in low- and middle-income countries (LMICs). This collaborative project resulted in a prototype of an affordable alternative to high-cost fracture tables commonly used in high-income countries, and directly impacted patient care.

Patients that have a femur fracture in LMICs are often the sole breadwinner for their families. Delayed, poorly performed, or a lack of surgery can result in economic hardship that not only affects the individual but is felt throughout their family.

In 2017 Dr. Stockton partnered with three engineering students to address this problem. At the time Dr. Stockton was both an orthopaedic resident and an engineering student, which further supported communication and coordination between the two disciplines. Drawing on the insights of experienced orthopaedic surgeons the team produced a physical prototype, complete with design drawings. The compact device can be used, in conjunction with a C-arm, to reliably hold the leg in traction during femoral nailing. The device is placed at the end of any existing operating table and can manipulate the operative leg in a similar manner to high-cost traction tables.

In 2018 the prototype was transported to Uganda for introduction at the Mulago Hospital in Kampala during a trip with the UBC Uganda Sustainable Trauma Orthopaedics Program (USTOP). A stakeholder engagement session was held with orthopaedic residents at the hospital, inviting their feedback to further refine the device design. In addition, one of the project’s aims was to have the traction device be inexpensive, as well as locally sourced and serviceable, so the team collaborated with a group of local biomedical engineers to ensure access to replacement parts. Except for a few mechanical parts, the vast majority of the device can be manufactured and serviced locally using existing carpentry shops. It is the project team’s hope that this collaboration and sense of local ownership over the device will help with its long-term success.

The device continues to be used at the Mulago Hospital, and the project team is working to raise funds to disseminate the design to other LMIC hospitals.