THE PROBLEM

People with disabilities are among the most marginalized worldwide, with children at an even higher risk of stigma, abuse, neglect and death. 80% of people living with disabilities reside in developing countries and at least 20% of the world’s poorest people are living with disabilities, according to the World Health Organization and World Bank. Mobility impairments – resulting from congenital conditions, trauma, debilitating diseases or other reasons – are the most common forms of disability worldwide, and they are increasing every year.

38M people need prosthetics or orthotics annually

At least half of all people living with disabilities cannot afford health care. For people with physical impairments – especially children – access to an assistive device, whether a prosthetic limb or an ankle brace, is life-changing. Children with mobility impairments, who need on average 25 assistive devices throughout their lives, must frequently forgo these essential prosthetics or orthotics. Often, health conditions will worsen without an assistive device. Without these crucial prosthetic or orthotic devices, people with physical impairments are unable to go to school or gain employment. They also struggle with daily activities and are regularly excluded from family and community engagements. As a result, the cycle of disability and poverty continues.

By using 3D technology to transform the global production of prosthetics and orthotics (P&O), we can change the lives of millions of people.

Clinical trials were successfully conducted at four sites in three developing countries to pilot this innovative lower limb production technology.

We will combine this new medical technology with youth-focused, ability-centered activities that empower and strengthen communities to redefine what it means to live with a disability.

Together, our project team designed this “High Tech, High Touch” initiative to radically impact children and adults with disabilities, their families, communities and countries.

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With $5 million, the Center of Excellence in Kenya will build the infrastructure to sustain 3D PrintAbility and pilot the ability-centered curricula nationwide. As services scale up, the center’s health workers will train partner facilities in the 3D PrintAbility toolchain – rapidly reducing costs and expanding device availability. Stakeholder consultations and engagement will lay the groundwork for long-term inclusion efforts.

But improved access to P&O devices is not enough. We will engage children and adults, who have received devices and rehabilitative treatment, along with their families and communities in resiliency training, play-based learning, and adaptive sports and arts groups – proven to promote inclusion on a local level. We will collaborate with decision makers to build their capacity to create and execute inclusive policies and practices.

3-YEAR PROJECT SUPPORT NEEDED

With $5 million, the Center of Excellence in Kenya will build the infrastructure to sustain 3D PrintAbility and pilot the ability-centered curricula nationwide. As services scale up, the center’s health workers will train partner facilities in the 3D PrintAbility toolchain – rapidly reducing costs and expanding device availability. Stakeholder consultations and engagement will lay the groundwork for long-term inclusion efforts.

With $10 million, the center will expand the capacity and infrastructure for 3D PrintAbility to other countries in Sub-Saharan Africa and institutionalize the new technology to reach even more people. The inclusive, play-based learning activities will be replicated through training and technical assistance to each partner site.

CENTER OF EXCELLENCE

We will develop a Center of Excellence in an established specialized hospital to implement this innovative P&O technology and lead inclusive programming for children and youth with mobility impairments and their peers, families and communities.

The center will partner with other local, national and regional clinics to scale both project components. Initially these partner facilities’ health workers will be trained to identify people in need, and then scan and rectify residual limb images digitally. As both demand and supply increase, and competencies are built, the whole 3D PrintAbility toolchain can be installed in additional facilities.

3D PrintAbility
- Reduce cost of devices for people in need
- Decrease device production time and labor
- Expand reach to unserved people

Ability Centered Programs
- Instill resiliency among vulnerable children
- Foster social-emotional learning
- Engage peer networks in support and advocacy

THE SOLUTION

3D PrintAbility. Nia’s comprehensive, disruptive 3D printing toolchain, can dramatically improve P&O device production rates and availability while reducing costs for both health care providers and people living with mobility impairments. Instead of taking a week to produce just 1 prosthetic socket using the traditional plaster casting method, a single prosthetist can fabricate 20 devices in the same period using 3D PrintAbility. We intend to transform an outdated industry into one that serves millions of additional people in need of these critical devices.