**Engineering Sustainable Medical Care in Developing Countries**

**National Academy of Engineering: Grand Challenges**

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**Introduction:**

There is a large disparity between the accessibility to basic medical care between the developed and developing world. This leads to a high prevalence of curable diseases that are left untreated or insufficiently managed in such developing countries. This lack of well-being has a drastic effect on the community, such as a decrease in education and ultimately a loss in development that leaves such communities dragging further and further behind the rapidly growing developed world.

**Entrepreneurship:**

While completing my internship I discovered the need of operations, management and logistical skills needed to supply developing countries with the equipment and supplies needed to improve healthcare. With this in mind, I enrolled in a class focusing on operations and strategy where I learned techniques such as production management and lean manufacturing that are vital in ensuring that support given to developing countries and their medical care systems is sustainable and efficient. It is important when supplying such aid that strategies are implemented that allow the support to continue until such a time that the country can become self sufficient.

**Service:**

I completed an internship for Project C.U.R.E in the summer of 2019. While at Project C.U.R.E, I learned about the supply of technologies that are sent to developing countries for use in medical clinics. In order to implement medical solution strategies in developing countries it is important to understand the supply and the state of the infrastructure available. This internship allowed me to get hands on experience with the products that are commonly used in such struggling communities and greater showed the need for an improvement.

**Global Perspective:**

While home in South Africa I had the opportunity to shadow two different Orthotics and Prosthetics Practices, one privately funded and one publicly funded. This allowed me to observe first hand not only the difference between healthcare availability between developing and developed countries but also the difference within a developing country between the fortunate and the impoverished. This gave me a clear understanding of the dynamics at play and started my drive towards completing this program.

**Design Project:**

My senior design project is focused on developing a tool to be used in an alternative procedure for cataract surgery in developing countries where the current standard is small incision cataract surgery. Small incision cataract surgery is a complex procedure that required a trained ophthalmologist to conduct which are in short supply in developing countries leaving such communities with a rising prevalence of cataract that is a treatable and curable disease. The project aims to develop a simple procedure that would allow general surgeons that are more abundant to conduct cataract correcting surgeries, thus increasing the availability of cataract correction in affected communities.

**Interdisciplinary:**

When working across countries and often across language barriers it is important to be able to interact in a manner that is respectful of different cultures to ensure that impactful, meaningful and efficient work is done. With this in mind I decided to complete a cluster in Culture, Communication and Media. This skill set is vital to all engineers looking to make a difference globally. It ensures that I am better prepared to tackle the challenge of developing more sustainable medical care in developing countries.