

SPRING 2018

# BAYLOR GLOBAL HEALTH

Our Progress  
What's Coming  
Just Imagine . . .

Baylor  
College of  
Medicine

**I**

Innovate

**D**

Discover

**E**

Educate

**A**

Advance

There's a question we're often asked when we talk about Baylor College of Medicine's global health focus: "Why go global, when the U.S. faces so many homegrown challenges in healthcare?" On the surface, the question seems to make sense. But if you dig deeper, you'll find that the answer lies in our increasingly interconnected world—where an exotic infection can travel as fast as a Boeing 777 to countries whose ER doctors might not be aware of Third World maladies. And where what we learn in assisting remote communities in faraway regions can also be applicable to the most remote community of all: Mars. (In case you're wondering, we're working on that, too, with our partners at NASA).

We already have seen the ripple effects of innovations that occur in countries where resources are slim. What happens in the urgency of disasters, need and emergency treatment pushes everyone's technologies forward. The economies of developing countries are tied inextricably to our own economy and they demand healthy, able citizens.

Most importantly, we believe in providing healthcare as a basic human right. In fact, it's the most fundamental one of all. Health is, and always will be, global at Baylor College of Medicine.

*Paul Klotman*

**Paul Klotman, M.D.**  
President and CEO  
Executive Dean

**“It is a lesson which all history teaches wise men, to put trust in ideas, and not in circumstances.”**

—RALPH WALDO EMERSON

# Around the World with Baylor Global Health

## Off-the-Grid Healthcare

Meet the SmartPod, a mobile hospital designed to go anywhere. ([Page 4](#))

## Helping Children Walk Again

Creating 3D printed prostheses for amputee patients in Sri Lanka and Tanzania. ([Page 8](#))

## New Mothers, New Lives

Building critical C-section capability in The Gambia. ([Page 6](#))

## The Future of Healthcare in a Weekend

Hosting healthcare hackathons, producing real solutions. ([Page 10](#))

## Medicine on Mars

Working with NASA to make remote surgeries a possibility. ([Page 12](#))

In 2017, Baylor Global Health went to three continents in the quest to improve health outcomes across underserved communities. In 2018, we'll be containing epidemics, increasing access to safe surgery, and deploying our remote hospital pods to support displaced refugees around the world. We'll also be assisting astronauts as they prepare for the healthcare challenges they'll face in route to Mars.

Thank you for reading our first annual report and for believing in what we can accomplish together. We are deeply committed to improving healthcare worldwide. If you wish to contribute to saving lives, you can do so online.

**DONATE NOW**

[connect.bcm.edu/global-health](http://connect.bcm.edu/global-health)



*Sharmila Anandasabapathy*

**Sharmila Anandasabapathy, M.D.**

Director, Baylor Global Health



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BAYLOR GLOBAL  
INITIATIVES

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### SMARTPOD DEPLOYMENT IN LIBERIA

If needed, the pod can be a fully sealed, four-bed unit for the world's remote populations, with complete control of air, water, waste and equipment. It's a lifesaving replacement for the tents and concrete buildings that typified the 2014-2015 Ebola outbreak. If the pods had been available then, perhaps fewer than 11,000 would have died.

# A Former Shipping Container is Transforming Remote Access to Healthcare

The Baylor Global Health SmartPod is a portable healthcare innovation. The self-contained, fold-out, multi-bed treatment unit is ready for the jungle, wreckage site or natural disaster. Already in use for post-Ebola care and research in Liberia, the pod is now being refined for other lifesaving challenges.

The design is based on the ubiquitous shipping container, but it's higher tech. In its folded transport shape, the eight-by-10-foot box is packed with whatever equipment and supplies are needed, then shipped, trucked or helicoptered in. On a flat space, it takes four people about 15 minutes to unfold the pod into a 403-square-foot facility. In another few hours, equipment is unboxed, solar power or generators come on, and the pod is ready for patients.

**“We’re starting to see more natural disasters and outbreaks. There is no border for disease.”**

—SARAH MICHEL  
Director of Business Development,  
Baylor Global Health



[Read more](#) about how we deployed our SmartPod solution in Liberia with USAID.

## VITALSTATS

**11,000+**

Ebola deaths

**100%**

Chance of future pandemics

**<50%**

The per-surgery cost of a brick-and-mortar facility



## **SMARTPOD DEPLOYMENT IN THE GAMBIA**

There is no denying the social and economic benefit of safe childbirth. For women, having access to medical care allows them to return to their families, communities and jobs. Women with an obstetric fistula, a childbirth complication that can be prevented with access to healthcare, are often shunned by society for their condition. In The Gambia, we are working on providing SmartPods for deliveries and C-sections, and training for healthcare workers to care for these women. Better health outcomes can lead to better economic outcomes—locally and globally.

# Transforming the Lives of New Mothers

In The Gambia, Baylor Global Health is working with Baylor Horizons Training Center to deploy its SmartPod unit to bring lifesaving surgeries for thousands of women each year.



**“When I first stepped into the public hospital, I was traumatized by my experiences. The suffering I witnessed I had never encountered before. The decision was therefore very clear in my mind: Yes we can, and yes we will, bring the best healthcare in the world to The Gambia.”**

—JAMES N'DOW, MBBS  
Adjunct Professor, Baylor College of Medicine and Baylor Horizons Training Center



## VITAL STATS

**951 million**

women without access to emergency obstetric care

**3 million**

women suffering from fistulas

**20%**

of deaths preventable with a C-section

**\$12.3 trillion**

in economic productivity at risk from 2015 to 2020



### **3D PRINTED PROSTHESES IN SRI LANKA AND TANZANIA**

Baylor Global Health's aim is to offer a better-fitting, faster-produced, lower-cost prosthetic socket. The solution is the super-fast, ultra-precise 3D process, which has many fewer steps than the complex, multi-dozen series of molds, polymer pourings, and adjustments needed for U.S. levels of care.

PHOTO CREDIT: KEITH BARKER

# In the Wake of Tragedy, a Beacon of Hope in 3D Printed Prostheses

“It if doesn’t fit and it hurts to wear, it’s not really going to matter what the foot or leg looks like,” said Jared Howell, who is leading efforts to improve not only the quality of the prostheses he is fashioning for patients, but also the quality of life.

Today, in some areas of Sri Lanka and Tanzania, prostheses and orthoses are decades behind. Or worse. Sockets, limbs and braces are fashioned from wood, plastic, rubber, hammered aluminum and whatever else is available locally. And these crude but noble attempts may technically solve the problem of providing a prosthesis, but they often leave patients—most notable children—without enough comfort to enjoy running, playing and just being a kid.

Some areas enjoy more advanced materials, with molds and other fitting techniques, but funding, training, and clinician shortages mean up to 95 percent of those who need help can’t get it.

Baylor Global Health is leading a plan to bring the 21st Century technology of 3D printing to Sri Lanka and Tanzania. The goal is to print prostheses—and perhaps eventually orthoses—better, faster and cheaper using a 3D process only recently available anywhere.

**“3D printing brings a unique opportunity to change a whole nation.”**

—JARED HOWELL  
Director, Orthotics and Prosthetics, Baylor College of Medicine

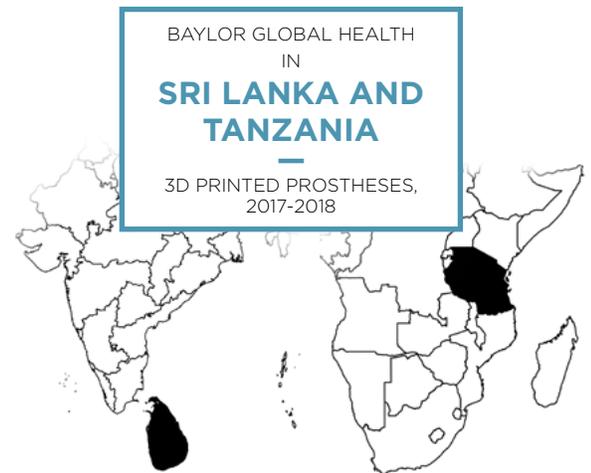


PHOTO CREDIT: KEITH BARKER

## VITALSTATS



**95%**

who need help  
can't access it

**25%**

cost savings for each  
prosthetic created  
by 3D printing



## **GLOBAL HACKATHON IN HOUSTON**

**Baylor Global Health's hackathon features multidisciplinary teams and mentors from computer science, business, medicine, engineering, design, business and even psychology. Sparked by synergy, they compete to devise solutions to vexing problems faced by Baylor faculty and others who work in healthcare worldwide. Their goals: usability, affordability and innovation.**

# In the Lab: Creating Affordable Innovations

Someday, thanks to a team of innovators at Baylor Global Health, a four-year-old girl in the southern African nation of Swaziland may no longer cry when she has to take the nasty-tasting brew of medicines that keep her HIV virus at bay. Instead, the child will first be given a new berry extract product called Flavor, which tricks her tongue just long enough for her to take the HIV drugs without sensing their horrid taste.

Flavor is among dozens of concepts dreamed up at the annual Baylor Global Health Hackathon in Houston. In only its third year, the brainstorming event has produced ideas ranging from diabetes management apps to a prenatal care training program for traditional healers in Malawi.



## NEW INNOVATIONS

Additional ideas crafted during the annual Hackathon include:

### Shield O2

An oxygen concentrator backpack that supplies sustainable oxygen to those providing care in remote and resource-constrained environments.

### The Pregnancy Wheel

Designed for women in remote villages, a tool that can be used to improve pregnancies through informed tracking and early indication of warning signs.

### High Performance Delivered

A modular protective sleeve that can be modified based on patients' needs to reduce the number of limb amputations among people with diabetes.

### Diabetic Foot App

A smartphone application based on cloud technology that aims to prevent foot amputations among people with diabetes in Sri Lanka.

**“When we share our insights and innovations to the developing world, we can solve problems before they become so large and costly. It’s the right thing to do morally and the right thing to do in terms of building a more sustainable, healthy global community.”**

—RIMA PATEL  
Hackathon participant and creator of Diabetic Foot App



In 2018, Baylor Global Health is working with NASA on using virtual and augmented reality for remote surgical guidance.

## Baylor Global Health

Designed for the demands of the world we live in, our programs at Baylor Global Health are embeddable, affordable, sustainable, replicable and technologically advanced. We love what we do and we are inspired by the impact we are having in communities across the planet—and beyond! We hope that you are inspired by what we can accomplish together with your financial support.

Thank you for considering a donation to help us transform healthcare worldwide.

Together, with commitment and creativity, we can make an impact that transcends borders and generations.

**DONATE NOW**

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