

ANNUAL REPORT 2019

# D-REV

SOON TO BE  
**EQUALIZE**  
HEALTH

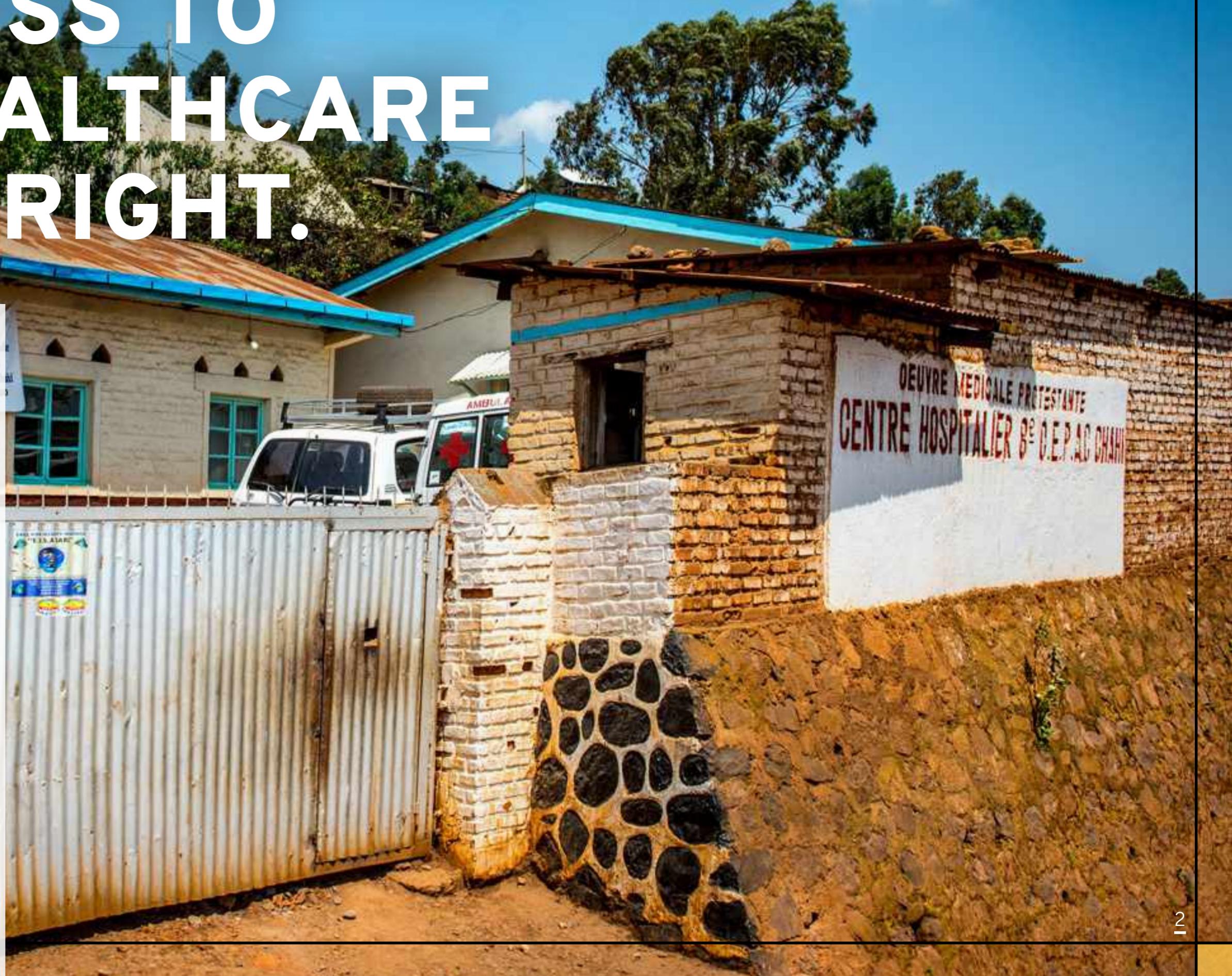


# EQUAL ACCESS TO QUALITY HEALTHCARE IS A HUMAN RIGHT.

D-Rev exists to design and deliver solutions that close the quality healthcare gap for underserved populations.

We do our work with urgency. Even with great medical advances, too many people living in low-and-middle income countries are dying from easily preventable or treatable diseases.

We identify the health areas that are most disproportionately impacting mothers and young children living in low-resourced areas. We design, develop, and scale quality, user-centered solutions as quickly as possible. Our goal is that no one—no matter where they are born or give birth—suffers or dies from an easily treatable condition.





# Dear Friends,

At D-Rev, 2019 was an exciting year with significant organizational growth and exponential impact. By year end, our products have treated over 820,000 patients. Building on our USAID-supported research into product uptake, we expanded our work to include tele-trainings to provide clinicians with continuing education opportunities and stronger community support networks. We also implemented another aspect of D-Rev's model: spinning off a product, the ReMotion Knee, to D-Rev's long-term partner, the Range of Motion Project (ROMP).

Even with these successes and learnings, there is more work to do. I'm haunted by the huge disparities that still exist in maternal and newborn health:

**A pregnant woman or newborn dies somewhere in the world every 11 seconds.<sup>1</sup>**

**Every two minutes, a woman dies from preventable pregnancy and childbirth complications.<sup>2</sup>** And a woman living in a low resource country is 130 times more likely to die from pregnancy or childbirth related deaths than a woman living in a high income country.<sup>3</sup>

**Globally, there are approximately 7000 newborn deaths every day. That's 2.5 million deaths per year.<sup>4</sup>** Of these, 1

**million newborn deaths occur in the first 24 hours.<sup>5</sup>**

The message is clear. We need to do better for every mother and baby. Every family deserves the opportunity for basic health.

Yes, progress has been made to advance healthcare. But there is stark underinvestment in women and young people, who are the future of our societies and planet: *quality* healthcare is not accessible to every mother and child, and current innovation methods are not fast enough, particularly at referral facilities. We can create a more equitable world, and we can do it now with investment in user-centered approaches. Without this, however, these gaps will only continue to grow as COVID-19, climate change, and other threats continue to strain governments and health systems.

**We, at D-Rev, are committed to designing quality medical technologies and strengthening the infrastructures so treatment is *globally* accessible—and soon—within ten years—not in the undefined distant future.**

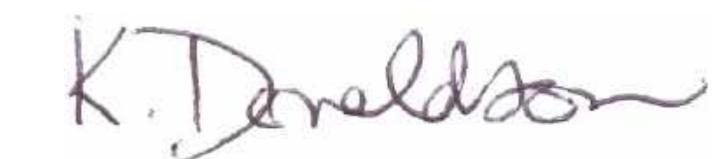
That's why we spent 2019 developing a new, aggressive strategy to accelerate the pace of our and others' work. We also recognize

developing needed technologies—no matter how appropriate for users—is not enough. Healthcare workers using our products at hospitals and clinics must be trained and supported so that, together, we can sustainably close healthcare gaps.

In 2020, you will see big changes at D-Rev (including a new name!) that are grounded in a renewed sense of urgency and action. We will be growing our team across the globe, starting new projects in more high-impact health areas, and collaborating with leaders in global health to expand access to the best healthcare solutions available for everyone.

We are especially grateful to our partners who have enabled our impact to date and are invested in accelerating and expanding our impact. We do this work with your support so that everyone—starting with mothers and children—will have equal access to world-class healthcare. Because the time to *equalize health* is today.

With urgency,



Krista Donaldson

# D-REV BY THE NUMBERS

# 817,000

total patients treated



Percentage of patients treated that are babies

99.9%



## ReMotion Impact

777

amputees fit in

33

countries, in addition to the

9,0000+

fit with earlier  
versions of the  
ReMotion Knee

# \$26

per DALY averted  
cost-effectiveness  
to D-Rev donors



100+

healthcare providers  
who provided feedback  
on CPAP prototype,  
representing

20+

hospitals in India and  
East Africa



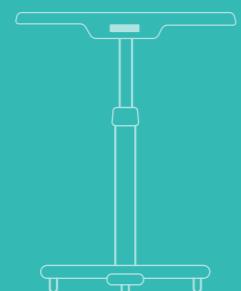
**countries  
where  
products  
are sold**

# 71

new countries where  
Brilliance was sold

# 3

Cambodia  
El Salvador  
Zambia



**Brilliance  
devices  
sold**

# 8,656



of countries where our products are  
sold are low-or-middle income

# 80%+

# 4

regions  
where  
D-Rev  
staff is  
based

(India, East Africa, South  
East Asia, and the US)

number of clinicians trained  
in D-Rev's first two ECHOs,  
started in 2019

# 81



Increase in  
impact since  
2018

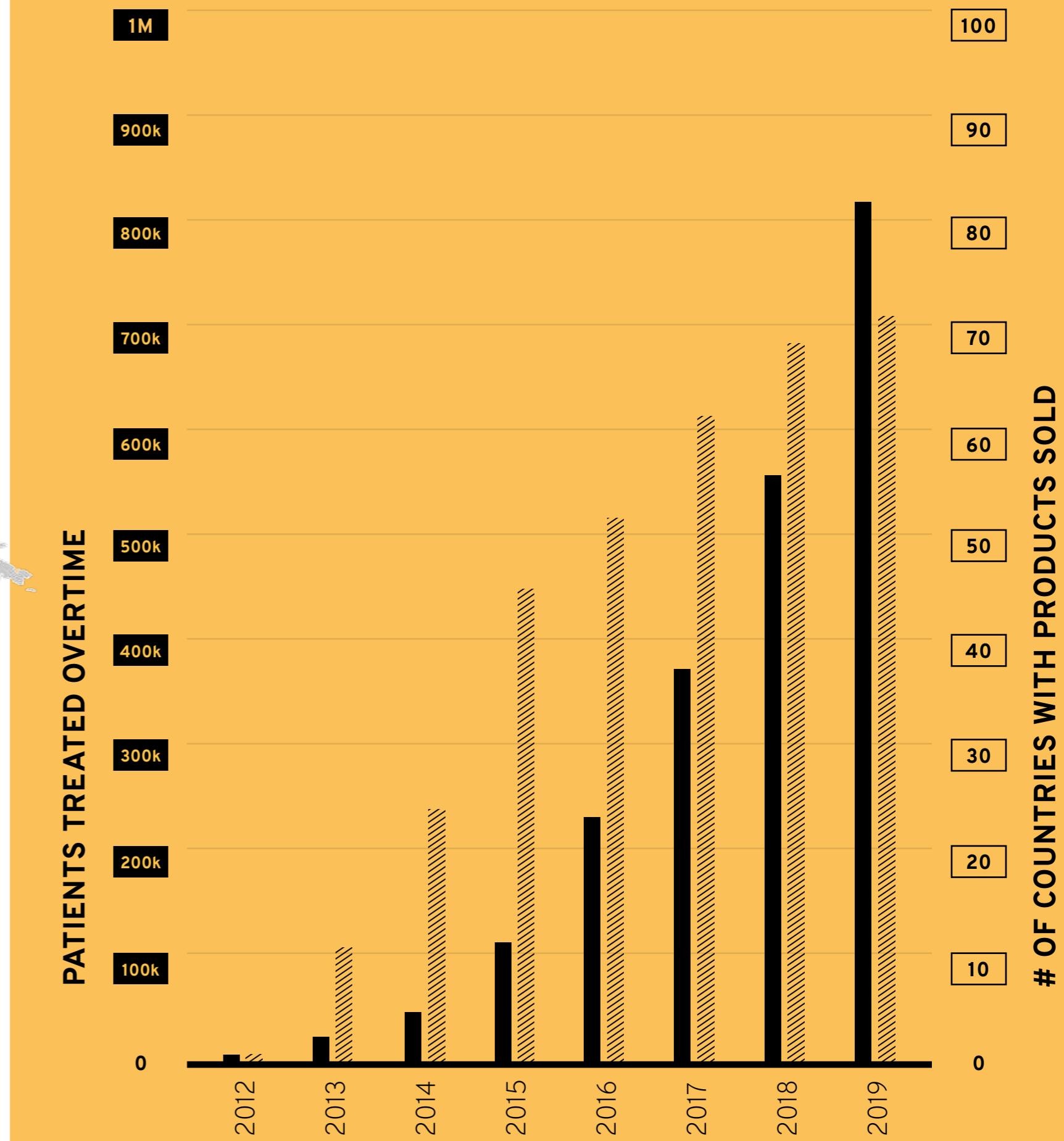
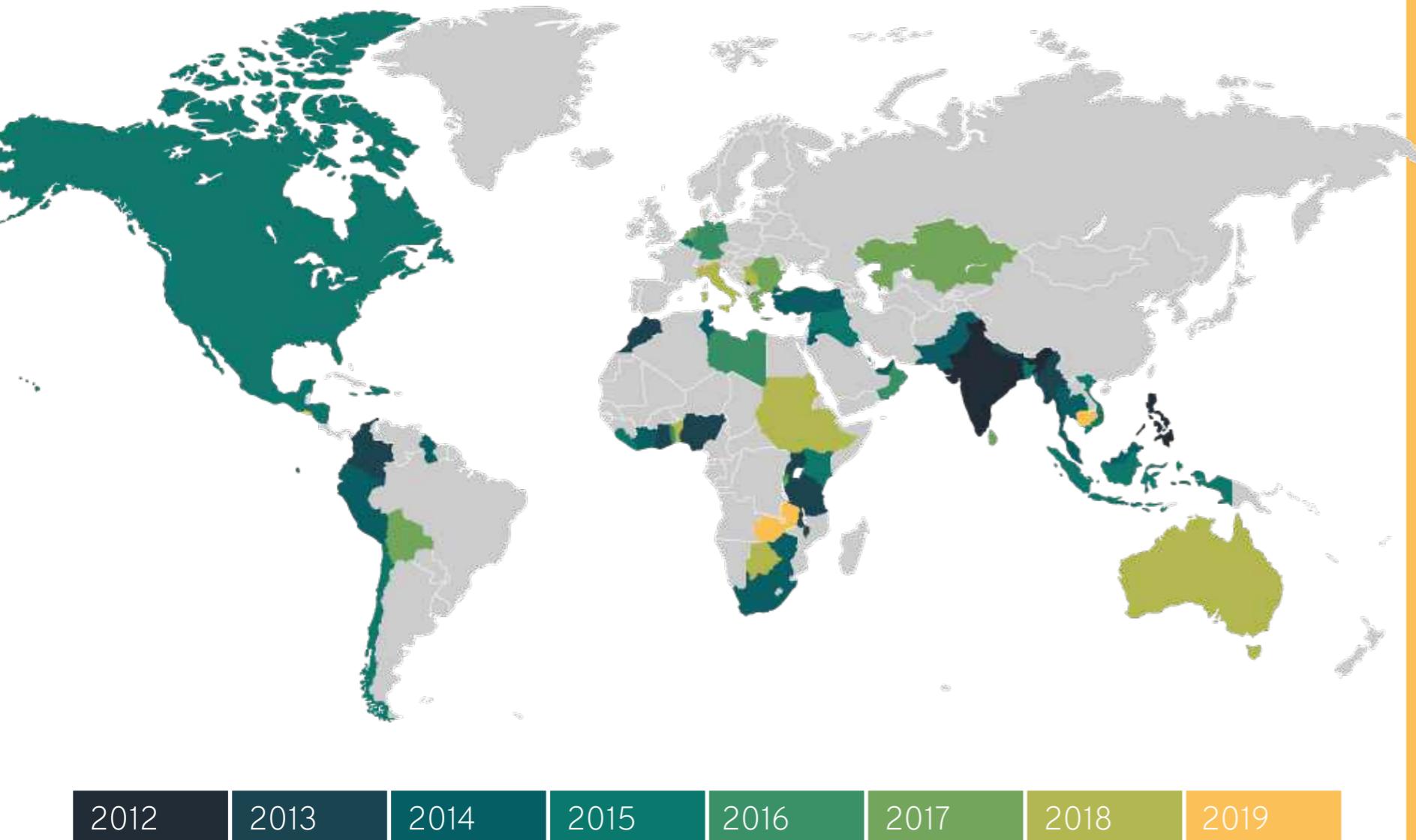


# 100+

global health experts and leaders  
convened at Newborn Health  
Symposium, Kigali Rwanda

# D-Rev's Geographic Footprint + Impact Since Launch

Since D-Rev's first product, Brilliance, launched in 2012, D-Rev has grown exponentially both in geographical location and in impact. In 2012, our products treated 44 patients. In 2019, they treated over 250,000. Over the last seven years, we've scaled from 2 to 70+ countries, and our products have been used to treat over 800,000 total patients.



# D-REV'S DESIGN PORTFOLIO





## Smart CPAP SAVING NEWBORN LIVES FROM RESPIRATORY DISTRESS SYNDROME

One out of every 10 births in the world is a baby born prematurely. 30% of these premature babies have difficulty breathing and RDS is the major contributor. RDS generally begins at birth for premature babies and results in nearly 100% mortality if left untreated. The technology exists to treat every one of these babies, yet in

low and middle income countries 20% of premature babies with RDS still die.

Continuous Positive Airway Pressure (CPAP) can treat mild to severe RDS cases at a broad range of health facilities. Yet babies are still dying because most CPAP devices are:

- 1 NOT SUITED FOR THE CROWDED CONDITIONS FOUND AT LOW-RESOURCED HOSPITALS**
  - 2 TOO EXPENSIVE FOR THESE HOSPITALS TO ACQUIRE, MAINTAIN AND SERVICE**
  - 3 REQUIRE HARD-TO-FIND, HIGHLY-SKILLED CLINICIANS TO OPERATE THEM**
- BUT, MOST OFTEN—ALL OF THESE FACTORS AT ONCE.**

Leveraging the latest advances in medical research and sensor technology, D-Rev's CPAP device will provide world-class respiratory support treatment to premature babies while lessening the burden on thinly stretched hospitals.

## D-REV PARTNERS WITH THE BILL & MELINDA GATES FOUNDATION

In 2019, we were very pleased to announce new grant funding from the Bill & Melinda Gates Foundation to support our “smart CPAP” device. As part of the foundation’s Maternal Newborn and Child Health “upstream” investment portfolio, we are thrilled to partner with Bill & Melinda Gates Foundation to stop newborn babies from dying from preventable causes.

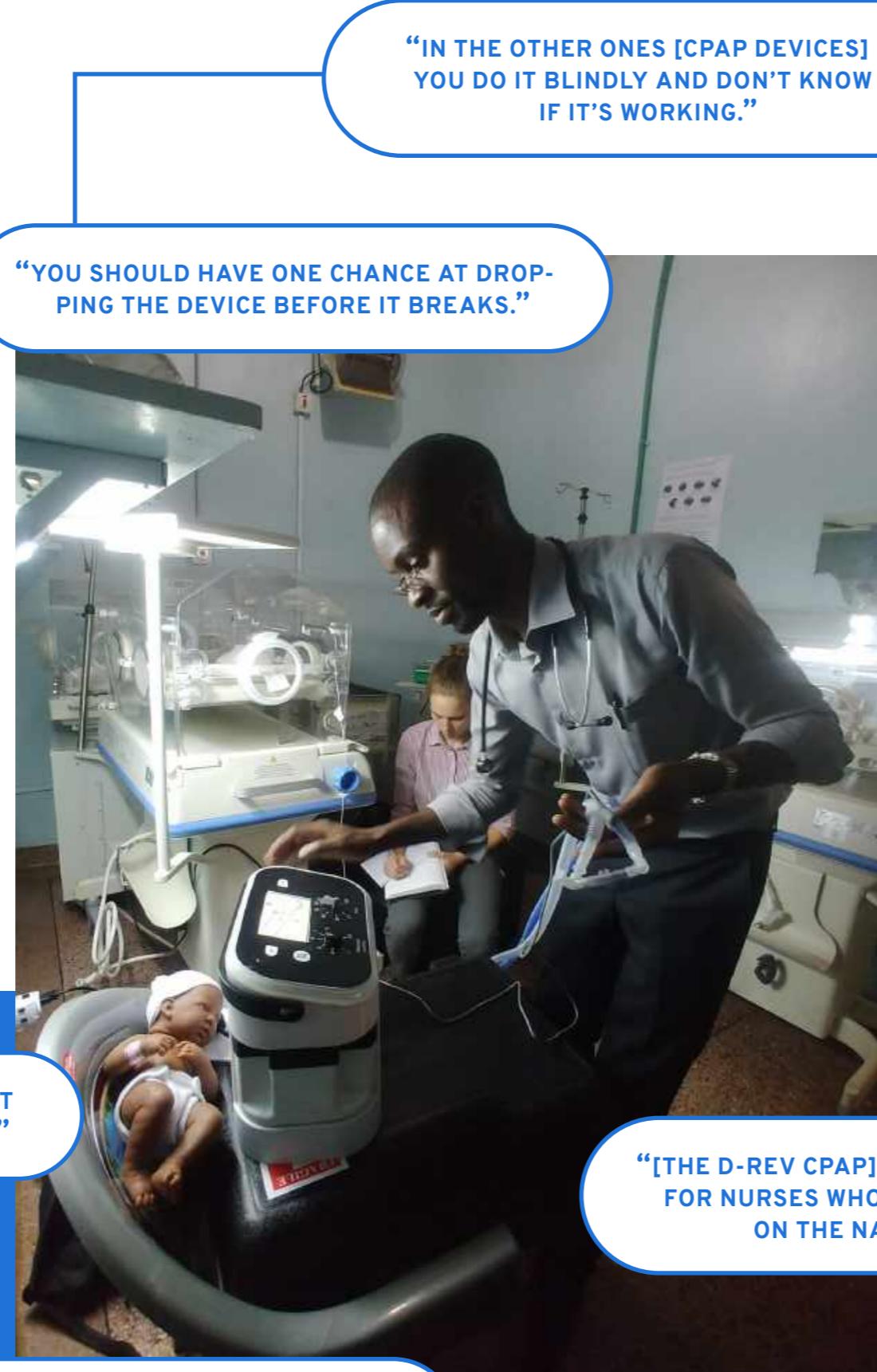


## HOW D-REV'S "USER OBSESSION" TRANSLATES TO "LIVES SAVED"

We listened to dedicated doctors, nurses and biomedical engineers in India, Rwanda, Uganda, and Kenya as they detailed their success and challenges, and then tested and provided feedback on several iterations of our CPAP prototype. With each revision we are closer to meeting the needs of dedicated clinicians in low-income settings to provide better respiratory treatment and save more newborn baby lives.

During just our Human Factors Testing (usability testing), we collected user feedback on our CPAP from over 80+ doctors and nurses in nine hospitals in India and eight hospitals throughout East Africa. Here's some highlights from what we heard:

"WE NEED LONG BATTERY-LIFE, AT LEAST 8 HOURS FOR NIGHT POWER OUTAGES."



"IN THE OTHER ONES [CPAP DEVICES]  
YOU DO IT BLINDLY AND DON'T KNOW  
IF IT'S WORKING."

"YOU SHOULD HAVE ONE CHANCE AT DROPPING THE DEVICE BEFORE IT BREAKS."

"I LIKE SOFT SOUNDS ON A MACHINE SO IT DOESN'T WAKE UP THE BABIES."



"I WANT THE DEVICE TO BE WHITE SO I  
KNOW WHEN IT'S DIRTY."

"I THOUGHT THE  
[LCD] SCREEN WAS A  
TOUCH SCREEN."

"THIS IS ONLY FOR 1 BABY? SOMETIMES 5  
BABIES NEED CPAP, WE NEED A SPLITTER  
FOR CPAP!"

# ReMotion

## THE FUTURE OF D-REV'S \$80 PROSTHETIC KNEE

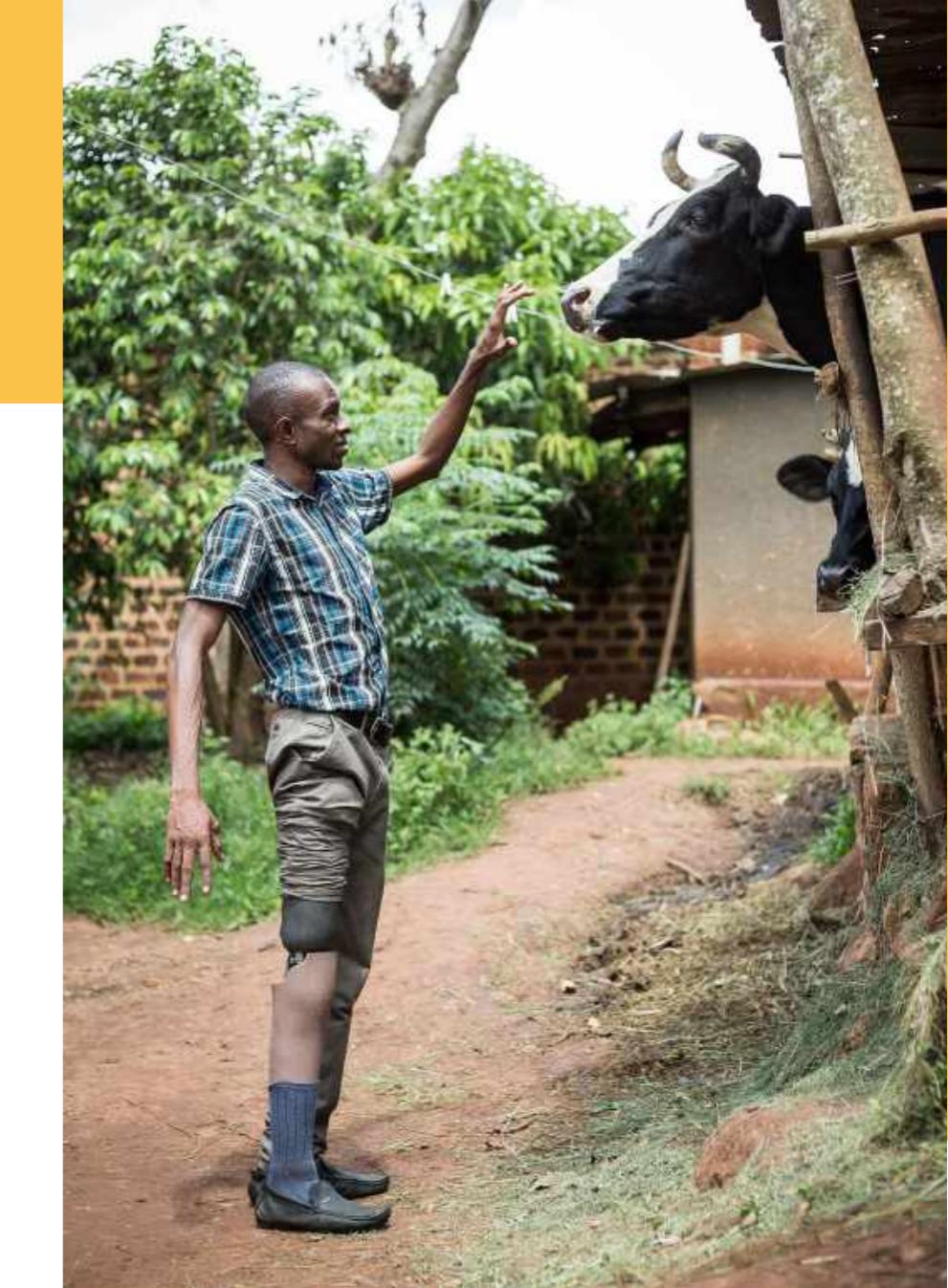


Ten years ago, D-Rev ignited a design revolution in the global health community with the ReMotion Knee. This human-centered designed prosthetic knee is a pioneering example of how to create an affordable, accessible, life-changing medical product for people living in low-income markets.

A collaboration between the Jaipur Foot Organization BMVSS and Stanford engineering students, the Remotion Knee was specifically designed to allow people living in poverty to effectively rejoin the workforce, provide for their families, and avoid the stigma that amputees can sadly face.

At the time, no prosthetic even remotely matched ReMotion's price point of \$80 USD. With ReMotion's affordable price and world-class technology, over 10 years, we enabled mobility for 777 people in 33 countries. We have also seen the prosthetics market become more inclusive. There are more prosthetics options than ever before, and more amputees who now have access to them.

To ensure Remotion continued to address critical gaps identified in the market and have the maximum impact, D-Rev spun off ReMotion to [Range of Motion Project \(ROMP\)](#) in 2019. ROMP's acquisition



of ReMotion will enable us to develop more high-impact, life-saving solutions for critical newborn and maternal conditions around the world.

ReMotion will always be an inspiring, foundational part of D-Rev's story. More importantly, ReMotion will live on in the lives of the users whose lives have been transformed. They are the living, breathing, walking—and running—examples of how good design can change the world.

# Brilliance

## THE IMPACT OF D-REV'S GROUND-BREAKING PHOTOTHERAPY DEVICE FOR NEWBORN JAUNDICE

Brilliance, D-Rev's radically affordable, yet technologically-advanced phototherapy device to treat severe jaundice, is the cornerstone solution in our newborn healthcare portfolio.

Jaundice is the number one cause of newborn readmission to hospitals globally. In high-income countries, treatment for jaundice is typically a minor disruption in a baby's progression to a healthy life. However, there are still 6 million babies per year, the majority in low-and-middle income countries, who are not effectively treated due to lack of access to quality treatment, lack of clinician training, or in many cases both.

Because of its low-cost and high performance in even the most resource-constrained hospitals, Brilliance has scaled to almost 60 countries and is on its way to treat over 1 million patients in 2020. We will build upon these successes as we design and launch more high-impact newborn healthcare solutions over the next several years.



**887,500**

babies treated



**696,400**

babies who otherwise would not have received effective treatment



**11,000**

deaths and disabilities averted

# RESEARCH & LEARNING





## Strengthening Health Eco-Systems to Improve Newborn Health

You can't solve a persistent problem in global health with just one technological solution. While products or devices that are designed using user-centered approaches are needed for a solution, even that is incomplete. Developing a solution means understanding everything that is needed to provide quality of care—and addressing or bridging all of those gaps. That's why

this year we have continued strengthening our design process, delivery methods, and scaling support. We've improved clinician support (ECHO teletrainings), and collaborations (Newborn Health Symposium) to holistically close the gaps that exist in delivering quality newborn healthcare in low-resource settings.



# Further Investing in the Newborn Jaundice Ecosystem



The NICU was buzzing with activity at the Fort Portal Regional Referral Hospital (FPRRH) in western Uganda. It was mid-morning and moms were hovering over their new babies, while nurses bounced between the 17 tiny NICU patients, checking monitors and alarm bells. Almost none of the babies in the NICU had been named yet—a grim precaution, as the babies' fate was still so uncertain. The mothers' faces bore equal parts adoration and concern for their new infants, knowing full well the fragility of their situation.

As one of the thirteen government funded regional referral hospitals in Uganda, the Fort Portal Regional Referral Hospital offers specialized health services for the most complex cases in the region. The head of pediatrics, Dr. Katutu, shared that over 500 babies are born at FPRRH each month and, alongside infection and anemia, jaundice is one of the most common reasons that infants are readmitted to the hospital within the first month of life.

One of the greatest tragedies of neonatal jaundice lies in the fact that treatment is generally easy and inexpensive, yet so many infants are subjected to severe lifelong consequences when left untreated. The occurrence of the disease is widespread, affecting an estimated 60% of babies born worldwide.<sup>6</sup> Studies have shown that even when jaundice is identified, the lack of effective phototherapy units plays a significant role in the impact of the disease. An estimated 14.1 million babies per year require phototherapy, but nearly 45% of these babies lack access to this effective treatment.<sup>7</sup>

D-Rev has worked hard to close the quality healthcare gap for the treatment of neonatal jaundice with Brilliance, but we've learned that many neonatologists lack the confidence to diagnose and treat newborn jaundice, contributing to ineffective treatment. In response, D-Rev is further investing in the treatment of jaundice by supporting the clinicians who treat it. In late 2018, we formed a partnership with ProjectECHO (Extension for Community Healthcare Outcomes) in India to deliver the first newborn health-focused ECHO Teletrainings. We also partnered with the Rwanda Pediatric Association and Rwandan Ministry of Health to convene a first-of-its kind Newborn Health Symposium to convene neonatologists from around the East African region to share knowledge and create a community of practice.

Effective jaundice treatment seems both within reach and just out of grasp. With these further investments and partnerships, D-Rev continues to make progress in the fight against this devastating disease.

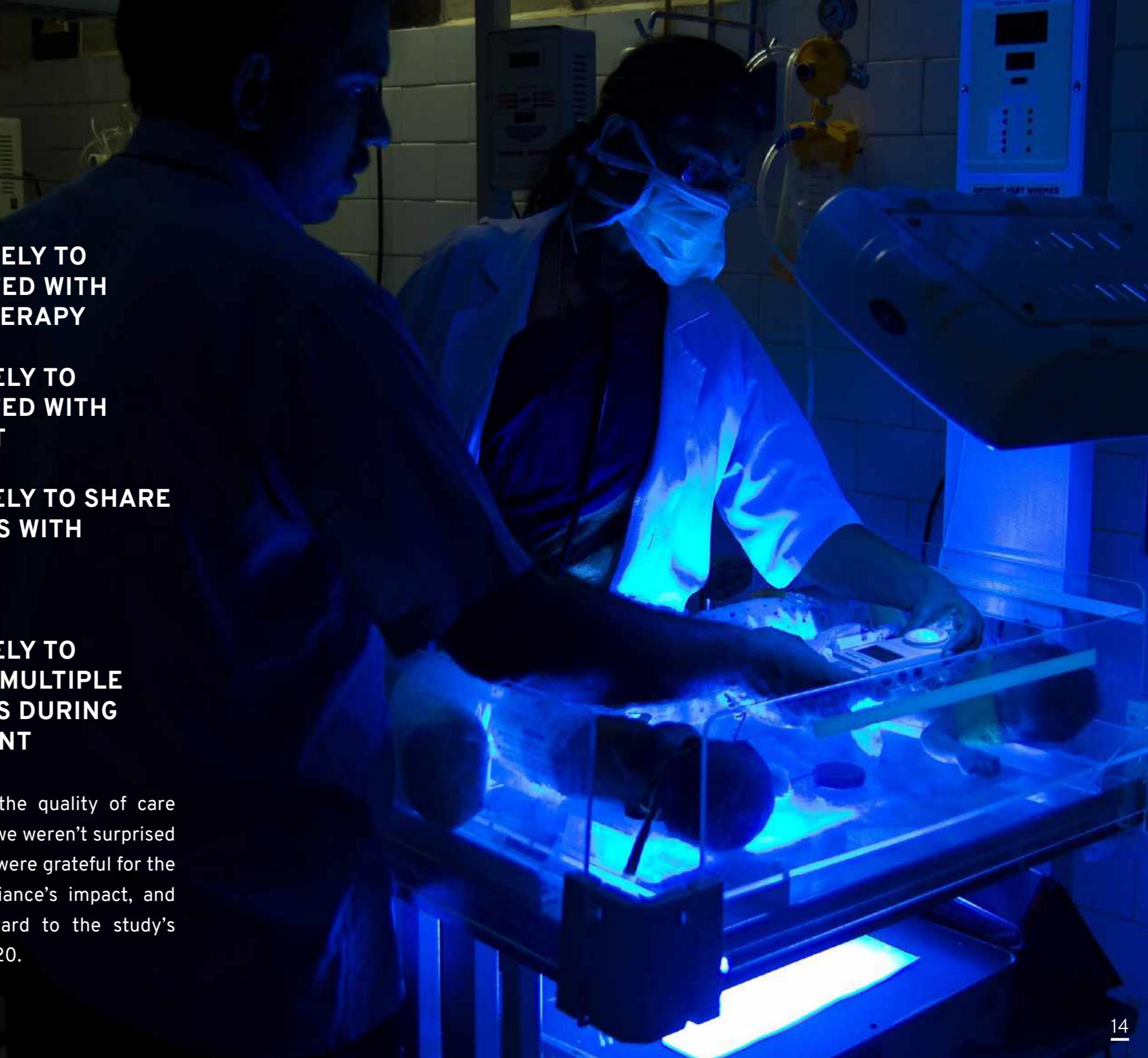


# Brilliance in Rwanda Study Findings

Even though Brilliance continues to scale successfully on its own through the market, we strive to constantly reevaluate our product and delivery models to better understand our impact. D-Rev had the rare opportunity to participate in a project with the Government of Rwanda and Child Relief International that resulted in a randomized control trial (stepped-wedge) evaluating the impact of Brilliance on quality of care provided at 46 hospitals in Rwanda. The study ran from 2017 to 2018, and in 2019, the study's authors presented their findings: After Brilliance devices were installed, newborns were:

- 1 MORE LIKELY TO BE TREATED WITH PHOTOTHERAPY**
- 2 LESS LIKELY TO BE TREATED WITH SUNLIGHT**
- 3 LESS LIKELY TO SHARE MACHINES WITH OTHER INFANTS**
- 4 LESS LIKELY TO REQUIRE MULTIPLE MACHINES DURING TREATMENT**

In other words, the quality of care increased. While we weren't surprised by the result, we were grateful for the evidence of Brilliance's impact, and are looking forward to the study's publication in 2020.



# East African Newborn Health Symposium: Collaborating for Improved Health Outcomes

Newborn healthcare in East Africa is changing rapidly. Access to new technologies, adoption of more effective training, and progress in healthcare policy have helped to set the stage for unprecedented advances in care. Yet, the region still experiences high newborn mortality rates compared to high-income countries. That's why in March, D-Rev partnered with the Rwanda Pediatric Association and Rwanda Ministry of Health to convene over 100 leading neonatal practitioners, health policymakers, and innovators with the goal of improving newborn health outcomes by building a community of care in the region. The symposium was the first of its kind in East Africa.

Among the top themes discussed were: the importance of **holistic training**, the strength derived from building strong **communities of practice**, and the **commonality of challenges** across regions.

## SYMPOSIUM ATTENDEE FEEDBACK:

"I PERSONALLY APPRECIATED LEARNING ABOUT DIFFERENT TECHNOLOGIES IN PLACE AND OTHERS UNDER DEVELOPMENT FOR IMPROVING THE NEWBORN HEALTH."



"COMING FROM A COUNTRY WITH ONLY A FEW NEONATOLOGISTS, IT'S GREAT TO BE PART OF A LARGER COMMUNITY DEDICATED TO NEWBORNS."

"THIS WAS THE BEST CONFERENCE I'VE EVER ATTENDED. EVERY PRESENTATION DELIVERED SO MUCH LEARNING!"

## THANK YOU TO THE SYMPOSIUM PARTICIPANTS AND ATTENDEES:

- Hon. Dr. Diane Gashumba, Minister of Health, Rwanda
- African Paediatric Fellowship Programme
- PATH
- USAID
- Partners in Health
- Jhpiego
- ICAP
- And many more!
- UNICEF
- Doctors with Africa

# D-Rev's Newborn Health ECHO Tele-trainings For Pediatricians & Neonatologists

D-Rev focuses on strengthening the health systems in geographies with high infant mortality rates. In late 2018, we piloted a specialized newborn health tele-training program using the acclaimed ECHO model after learning that an alarming number of clinicians were referring sick babies to other hospitals due to lack of confidence in their own clinical skills. In 2019 we expanded our tele-trainings to offer more clinicians in India free, easily-accessible medical training that is tailored to the patient cases and resource challenges specific to their regions. Our network of local medical experts, such as respirologists and pulmonologists, led the sessions democratizing specialized knowledge by reaching clinicians in even the most isolated areas of India.

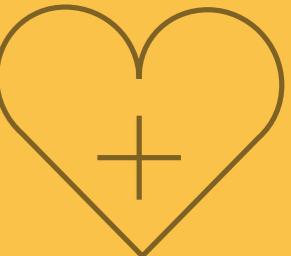


**"I AM NOW TREATING PATIENTS WHO BEFORE I WOULD HAVE REFERRED OR TURNED AWAY. MY KNOWLEDGE AND SKILLS AROUND MANAGING NEONATAL RDS HAS IMPROVED...I HAVE PURCHASED OR AM USING EQUIPMENT MORE OR BETTER THAN I DID IN THE PAST TO TREAT NEONATAL RDS [AND] I HAVE BEEN MORE ENGAGED WITH OTHER DOCTORS."**

**— DR ADITYA SINGH, D-REV ECHO PARTICIPANT AND PEDIATRICIAN FROM UTTAR PRADESH, INDIA**

Patients treated by participating doctors

6,963



19

number of ECHO sessions

32

number of unique participating doctors

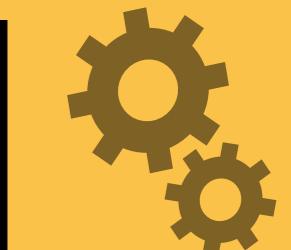


81

number of India's districts represented



21



number of cumulative hours of training

24

number of unique topics covered

Snapshot of topics covered



- Neonatal jaundice
- Feeding problems in newborns
- Prematurity, newborn management with HIV-positive mothers
- Respiratory distress
- Birth asphyxia
- Sepsis
- Meningitis
- PPHN - Persistent pulmonary hypertension of the newborn
- High risk babies
- Inborn errors of metabolism in a newborn
- Newborn care at home for parents

A photograph showing a group of people, likely children and adults, sitting together in what appears to be a classroom or community setting. Some individuals are wearing headscarves. In the foreground, a child is looking up at the camera. The background is slightly blurred.

A  
HIGH IMPACT  
FUTURE



## How D-Rev Identifies our “High Impact” Focus Areas

**NEWBORN HEALTH**  
**CHILD HEALTH**  
**MATERNAL HEALTH**

D-Rev’s goal is to achieve maximum impact. So how do we decide where to focus our efforts? We look at where the burden of disease is greatest—not just in terms of lives lost, but also in terms of disproportionate outcomes. We choose health areas where we can find a balance between making a big difference for large populations of people. We use metrics such as disability-adjusted life years (DALYs) to help us understand what is driving preventable health loss around the world, prioritize projects, and measure our success.

We also consider how crowded the innovation space is and whether the necessary interventions are within D-Rev’s capacities. But the most important factor is whether we can achieve meaningful impact at scale in high-need areas.

DALYs, in combination with other more traditional metrics like number of lives saved and disabilities averted, help us understand where a novel, effective solution can make the biggest impact. By far, it is in the areas of maternal, newborn, and child health where we see an enormous amount of preventable health loss in low- and middle-income countries. After careful consideration, D-Rev is committed to developing solutions that support strong and healthy families, starting with maternal and child health.



# WHAT'S NEXT?

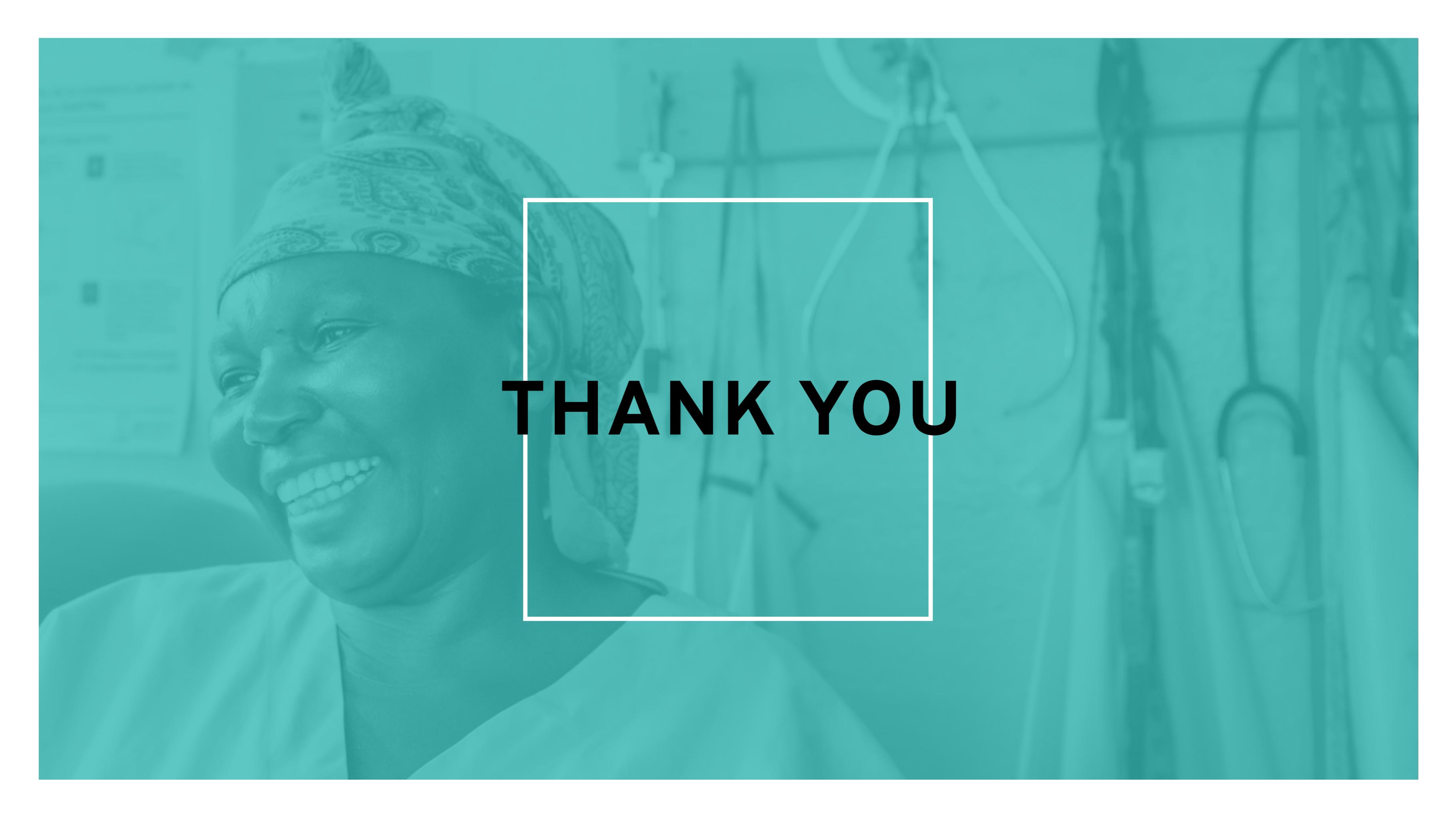
## ACCELERATING NEWBORN AND MATERNAL HEALTHCARE SOLUTIONS TO WHERE THEY ARE NEEDED THE MOST

D-Rev's strategy is to identify high-impact health areas that are disproportionately affecting people living in low-resource settings, understand the factors contributing to the inequity, and design solutions that will scale sustainably to the people who need them the most. We have spent 2019, researching our next focus area and are thrilled to announce that in 2020 we will officially be expanding into maternal health.

Early problem identification is leading us to examine solutions for postpartum hemorrhage (PPH), which

is responsible for ~27% of maternal death globally. Despite the devastating impact of PPH and other preventable conditions on women, their children, and their families, maternal health is one of the most under-invested areas in global health.

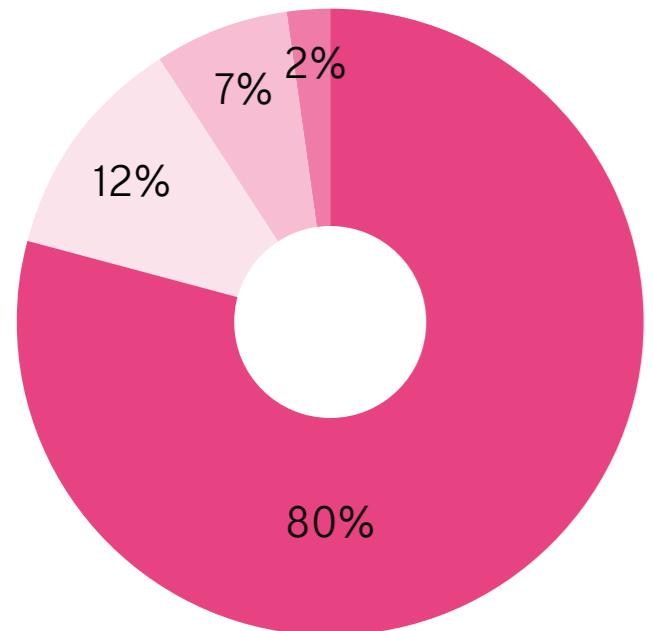
In every focus area, we are committed to providing equal access to world-class healthcare, no matter where you give birth, and no matter where you live.

A photograph of a woman with a warm smile, wearing a colorful, patterned headwrap and a light-colored top. She is positioned in front of a man who is mostly out of focus in the background. The man appears to be wearing a dark suit and tie. The overall atmosphere is professional yet friendly.

**THANK YOU**

**total revenue  
2019**  
**\$2.84M**

2018      \$2.16M

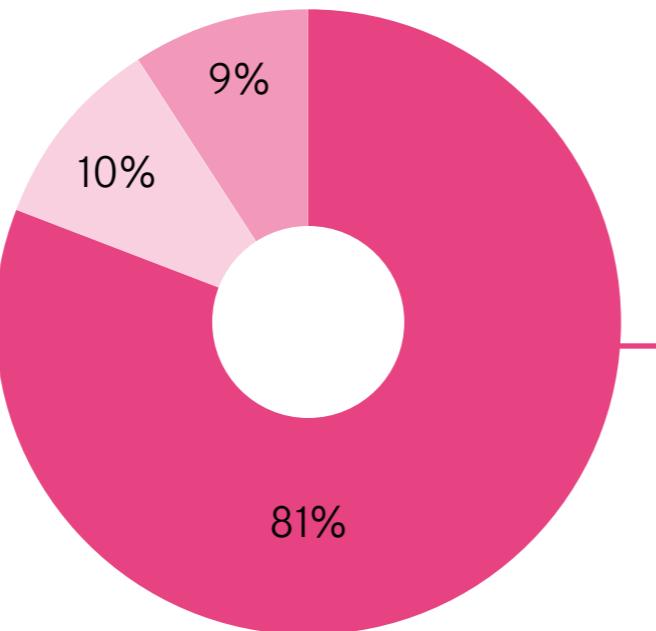


**revenue by source**

- foundations
- misc above the line
- bilateral
- individual

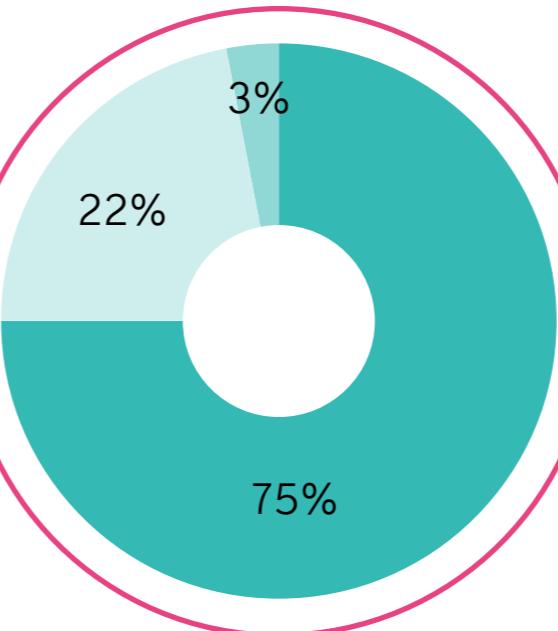
**total expenses  
2019**  
**\$2.28M**

2018      \$2.12M



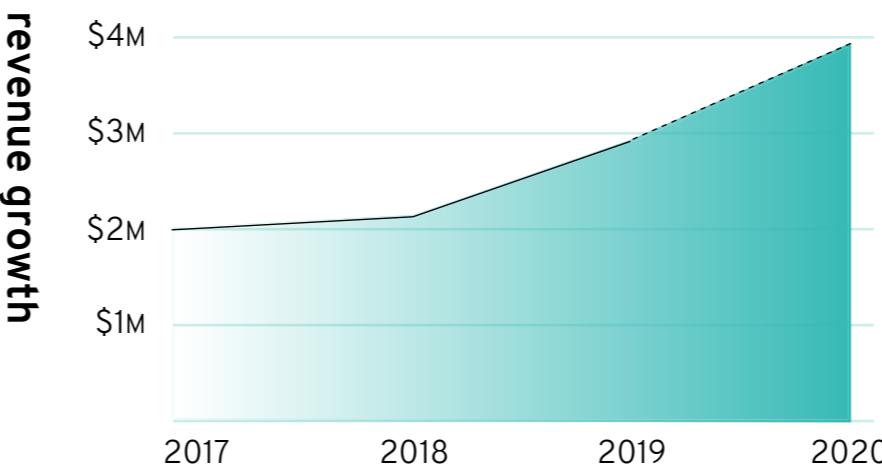
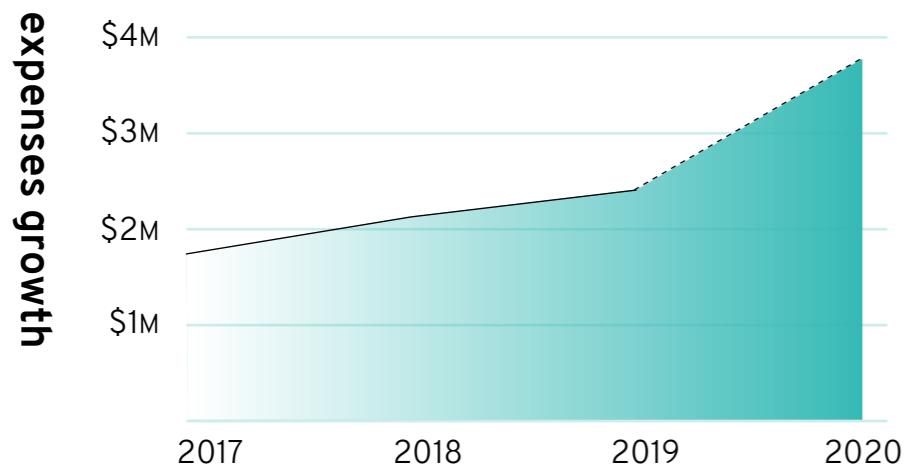
**expense allocation**

- programs
- fundraising
- operations



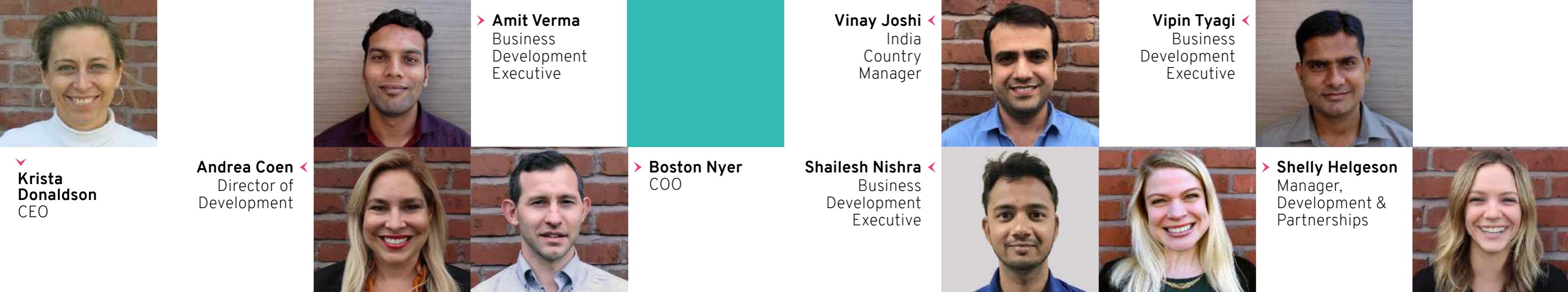
**program allocation**

- NPD (CPAP + lactation support)
- Mobility
- Newborn Health (brilliance)

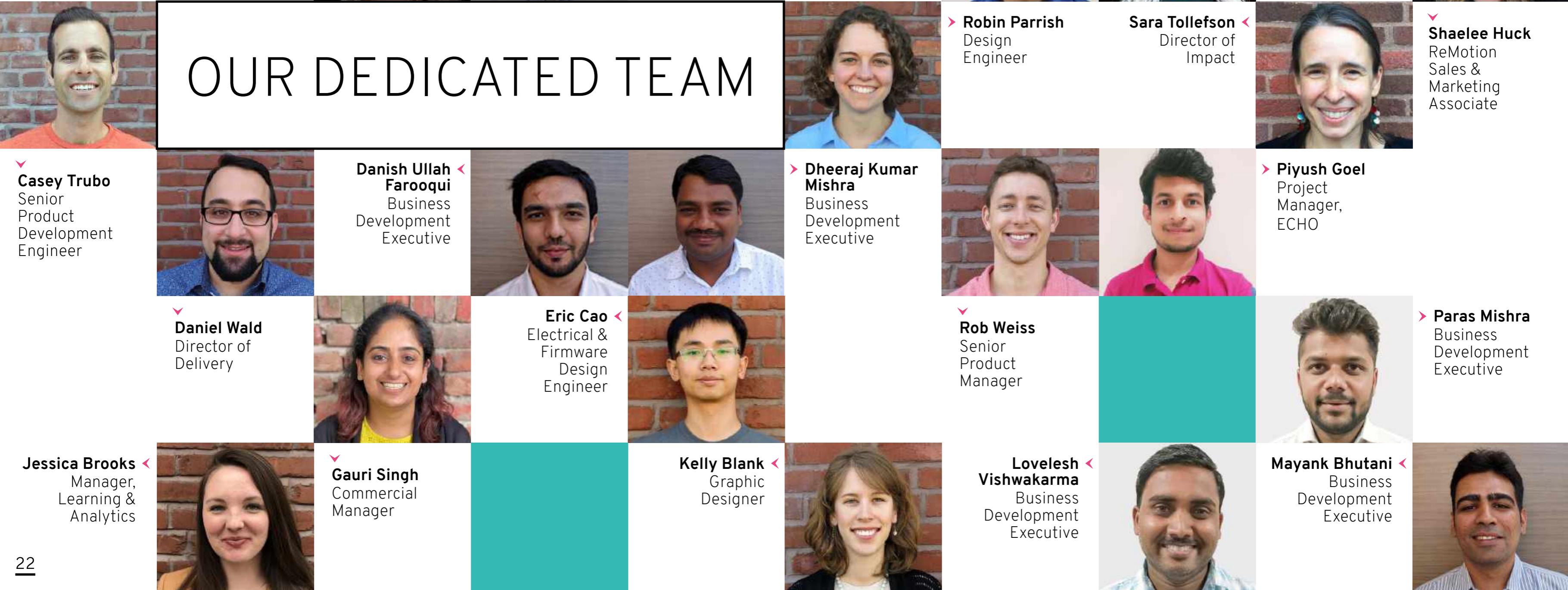


# PARTNERS

- Autodesk Foundation
- Ping and Amy Chao Foundation
- CRI Foundation
- Dartmouth College
- DHL
- Draper Richards Kaplan Foundation
- Fidelity Investments
- Bill & Melinda Gates Foundation
- GLG
- India Academy of Pediatrics - Uttar Pradesh
- Jaipur Foot
- LifeEnabled
- Natalie Orfalea Foundation
- National Neonatology Forum
- New Opportunities Fund
- Newman's Own Foundation
- The Ray and Tye Noorda Foundation
- Mulago Foundation
- One Heart Worldwide
- PATH-India
- Peery Foundation
- Phoenix
- ProjectECHO
- ROMP: Range of Motion Project
- Rwanda Ministry of Health
- Rwanda Paediatrics Association
- The Reis Foundation
- Stanford University School of Medicine
- Syrma Technology: Electronics Manufacturing Services
- Transparent Fish Fund
- USAID Development Innovation Ventures
- Vitol Foundation
- Wilson Sonsini Goodrich & Rosati



## OUR DEDICATED TEAM





D-Rev



“

GOOD HEALTH IS THE FOUNDATION FOR INDIVIDUALS TO FULFILL THEIR POTENTIAL; FOR FAMILIES TO FLOURISH; FOR COMMUNITIES TO PROSPER AND FOR NATIONS TO THRIVE.”

DR. TEDROS ADHANOM GHEBREYESUS,  
DIRECTOR-GENERAL FOR WHO