USAID's Support to Global Health Research and Development
Webinar Series:
Global Health Grand Health Challenges

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USAID
FROM THE AMERICAN PEOPLE

Global Health Grand Challenges: R&D

USAID Bureau for Global Health's
Center for Innovation and Impact (CII)

Agenda

- **Background and CII Overview**

  Grand Challenges Model Overview

  Deeper Dive on Global Health Grand Challenges
  - Saving Lives at Birth
  - Fighting Ebola
  - Combating Zika and Future Threats

  Case Study: NEST 360

CII plays a complementary role to support innovation and scale for GH Bureau priorities

Role

Accelerate the development, introduction and scale up of priority global health interventions

Approach

Promote and reinforce innovative, ***business-minded*** approaches to address key bottlenecks in development, introduction and scale up

What we do

Catalyze Innovation

Scale for Impact

Identify Cutting-Edge Practices

Innovation is an important part of reaching our **shared global health goals**

We use a variety of novel approaches—from *Grand Challenges* to hackathons to prizes—to source groundbreaking solutions for tough and seemingly intractable health challenges.

USAID/GH is well positioned to support innovation:

- ✓ **Cutting-edge technical expertise** across high-priority global health challenges
- ✓ More than **60 country and regional missions** with connections to political leaders
- ✓ Partnerships with **leading global universities and corporations** to facilitate collaboration

GH/CII brings complementary skills in:

- pharmaceutical strategy
- public-private partnerships
- innovative finance
- strategic marketing
- health economics
- management consulting
- innovation strategy
- inclusive markets
- entrepreneurship
- biomedical engineering

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Case Study: NEST 360

Grand Challenges Program Model

WHAT

- **Focus global attention and resources** on specific international development **problems**
- Crowd-source **innovative solutions** to solving them

WHO

- Engage **non-traditional solvers** such as businesses, researchers, designers, and scientists

HOW

- Broad Agency Announcement (BAA), which allows us to:
  - **Communicate and co-create** with applicants; encourage **partnerships**
  - Fund projects **more flexibly** (both in structure and amount)

Grand Challenges Program Model

The four Global Health Grand Challenges include:

Supporting **116 innovations** aimed at saving the lives of mothers & newborns, with potential to save 150,000 lives by 2030

Rapidly sourced **14 innovations** in the midst of the Ebola crisis, developing and testing solutions to address key gaps in our outbreak response

Supporting **26 innovations** aimed at curbing the spread of Zika and stopping future global health threats from becoming global crises

Supporting **>10 innovations** with USAID/PRH and the Gates Foundation, with the goal of overcoming key roadblocks to more effective health supply chains

Quick Facts

- Funded >150 innovations across our portfolios
- Projects in >35 countries
- 25 innovations scaling or transitioning to scale
- Leveraged over $100 million in external capital

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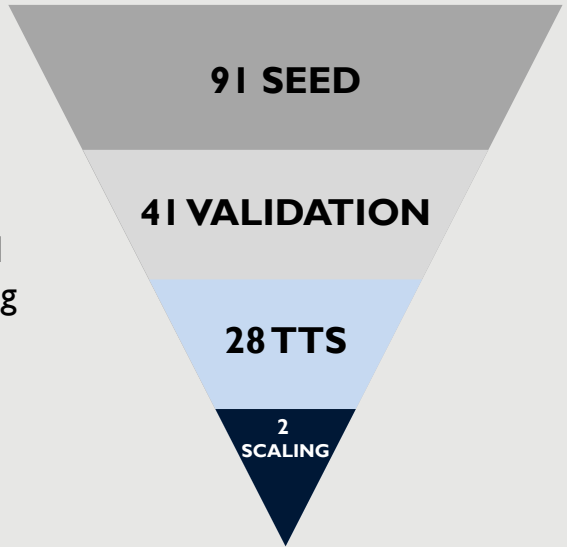
USAID's Flagship Grand Challenge: *Saving Lives at Birth*

SAVING LIVES AT BIRTH: A GRAND CHALLENGE FOR DEVELOPMENT

Diverse Portfolio of Innovations

- **7 rounds** of global calls for solutions, with the Round 8 call in progress
- Highly competitive: funded **3% of >4,000 apps (102 countries)**
- **Diverse portfolio of 116 innovations**

116 innovations, **144** awards



Driving Impact

- Already reached 1.5M mothers and newborns
- Potential for 80-100K lives saved by 2030
- Formed 9 new partnerships for scale

Catalyzing >$150M Investment (10 yrs)

- **USAID's** $20M investment leveraged **$80M** in donor funds + over **$100M** in additional project funds

Saving Lives at Birth DevelopmentXchange, Washington DC

SAVING LIVES AT BIRTH: A PARTNERSHIP OF USAID FROM THE AMERICAN PEOPLE · Norad · BILL & MELINDA GATES foundation · Grand Challenges Canada / Grands Défis Canada · UKaid from the British people · KOICA Korea International Cooperation Agency

SL@B supports innovations focused on ending deaths of children and mothers at birth

SAVING LIVES AT BIRTH: A GRAND CHALLENGE FOR DEVELOPMENT

Supporting innovations for neonates...

2.6 million neonatal deaths worldwide in 2015

Low-cost, rugged **devices and treatments for managing pre-term birth** and its complications

Diagnostics and treatments for neonatal infections like sepsis, tetanus, and pneumonia

Innovations to help manage **intrapartum complications** and expand access to safe c-sections

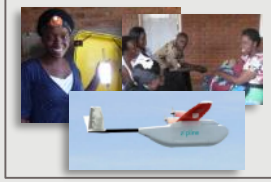
...and mothers

300,000 maternal deaths worldwide in 2015

New, accessible **interventions for managing post-partum hemorrhage**

New **tests and treatments for critical conditions** like preeclampsia

Innovative approaches to **vitamin & mineral supplementation**, supporting maternal & neonatal health



New community-based methods aimed at **broadening access to high-quality prenatal care**

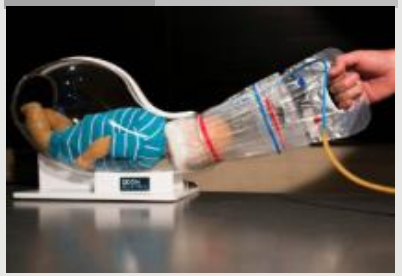
Providing cross cutting innovator support

- Our **Xcelerator partnership with Duke University and VentureWell** provides all of our innovators with a structured training program in business model development, market understanding, product design, and launch planning
- We foster a **community of innovators** through our annual **DevelopmentXChange** and other events to promote cross-fertilization and sharing of lessons learned

Four examples (of 100+) of SL@B innovations sourced via the Grand Challenge

SAVING LIVES AT BIRTH: A GRAND CHALLENGE FOR DEVELOPMENT

SEED > VALIDATION



WHO / Becton Dickinson, and Co.

The Odon Device: A low-cost, easy to use innovation for assisted vaginal delivery

Highlights:

- **Catalyzed by SL@B** – funded as Rd 1 Seed and Rd 5 Validation
- **Non-traditional innovator:** invented by Argentinian car mechanic
- **Catalyzed partnership –** funded WHO for clinical trials, and brought in BD to license device

TTS > SCALING

JSI, Inc.

Using Chlorhexidine for better cord care in Nepal

Highlights:

- **Scaling** to 74 of 75 districts in Nepal
- Gov. of Nepal has **included CHX on their EML**
- Global demand/interest: Nepal is seen as a **"Living University"**
- **Mission Engagement:** Nepal Mission invested ~2 million for scale up

TTS

Massachusetts General Hospital

Next generation uterine balloon tamponade (UBT) device to treat postpartum hemorrhage

Highlights:

- Implemented in 350 facilities
- 321 UBT uses with **97% survival**
- Over **20 countries expressed interest** in implementing UBT into their healthcare systems

Seed > TTS> SCALING

Rice University

Low-cost bubble continuous positive airway pressure (bCPAP) to reduce deaths from respiratory distress

Highlights:

- **Catalyzed by SL@B** – funded as Seed and TTS
- Over 2,000 neonates treated to date
- Currently **scaling to all public hospitals and largest PNFP provider** in Malawi
- **Mission Engagement**: Malawi Mission invested ~$1 million for scale up

SAVING LIVES AT BIRTH: A PARTNERSHIP OF USAID FROM THE AMERICAN PEOPLE · Norad · BILL & MELINDA GATES foundation · Grand Challenges Canada / Grands Défis Canada · UKaid · KOICA Korea International Cooperation Agency

Fighting Ebola Grand Challenge developed a pipeline of outbreak preparedness tools

FIGHTING EBOLA: A GRAND CHALLENGE FOR DEVELOPMENT

1,500 ideas

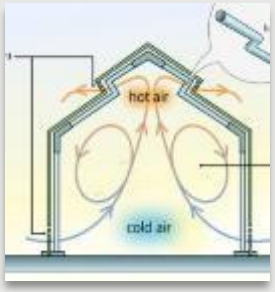
↓

14 awards

($8.9M)

Reimagined Suits

Healthcare Worker Tools



Reimagined Care Setting

Changing Behavior

ICT

Decontaminants

WIRED · The New York Times · FAST COMPANY · FORTUNE · The Washington Post · BBC WORLD SERVICE · npr · PBS · QUARTZ qz.com

Ebola GC supports innovations to identify, contain, and treat future outbreaks faster

FIGHTING EBOLA: A GRAND CHALLENGE FOR DEVELOPMENT

Innovations to quickly contain and treat outbreaks abroad help avoid a global crisis

Tools and treatments to track, contain, and treat outbreaks

Rapidly responding to the Ebola outbreak created an opportunity for 'reverse innovation,' where tracking and response tools developed for West Africa will inform the response to future outbreaks around the world, including in the U.S.

ICT tools for **fast identification, tracking,** and **containment**

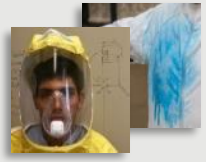
Behavioral interventions that support early identification and reduce spread

Improved healthcare worker tools to enable more rapid, effective treatment

Innovations protecting mission critical health workers

The Ebola outbreak took an unprecedented toll on health workers, accounting for 8% of all cases in communities that already faced severe health-worker shortages. Health worker safety is critical to rapidly containing outbreaks.

Reimagining the care setting to facilitate quick start-up, more comfortable patients, and safer healthcare workers



New **PPE**[1] and **disinfectant technologies** to protect mission-critical health workers

How we worked differently

Collaborative problem identification: **Innovated for a crisis during a crisis** by working with practitioners to identify gaps and develop opportunities for innovation to fill them

Rapid live feedback: **Brought 12 innovators into the field** for rapid testing, feedback, collaboration

Convened key decision makers quickly, in the midst of a crisis: **Integrated live feedback into the WHO's Target Product Profile** for new technologies, ensuring their availability in the next crisis

Accelerated public-private partnerships: Facilitated a commercial licensing agreement between DuPont and Johns Hopkins for **improved and potentially more commercially scalable** PPE suits

CII support now focused on supporting introduction and scale of select innovations

Kinnos

Highlight is a colorized bleach additive that increases visualization of decontaminated areas

Major Updates:
- BCG engagement facilitated selection of manufacturer
- MSF has requested a quote for recurring order of Highlight
- Developed Highlight infused bleach wipes

Baylor College of Medicine

The Emergency Smart Pod is a rapidly-deployable treatment center that can be assembled in < 5 min.

Major Updates:
- Deployed to ELWA Hospital; used for cataract surgery for Ebola survivors
- Will be used as an isolation unit for cholera or TB patients going forward

Shift Labs

Gravity powered infusion drip monitor that ensures an accurate flow rate.

Major Updates:
- Devices being used in 19 developing countries
- Partnered with ZMapp
- Nominated for SL@B Round 7 award to test application to maternal health use cases

Johns Hopkins University & Jhpiego

Redesigned PPE for HCWs that improves visibility and safety

Major Updates:
- Signed a licensing agreement with DuPont
- Completed DoD Contaminated Doffing testing

Combating Zika and Future Threats
supports a diverse portfolio of innovations

COMBATING ZIKA AND FUTURE THREATS
A GRAND CHALLENGE FOR DEVELOPMENT

850 ideas

26 awards
($30M)

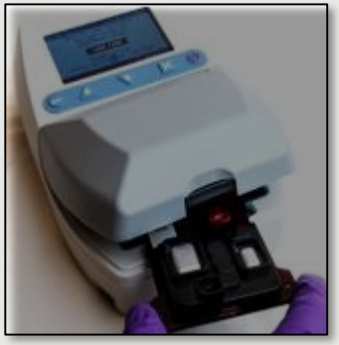

Vector Control


Personal & Household Protection

Vector Surveillance


Disease Surveillance


Community Engagement


Diagnostics

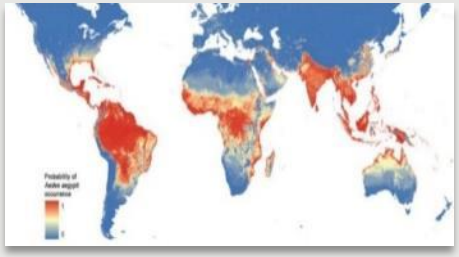

Unmanned Aerial Vehicles

devex Do Good. Do It Well.™ POLITICO The Washington Post CNN THE HUFFINGTON POST The Atlantic

Zika and Future Threats is building capacity to respond to vector-borne epidemics

COMBATING ZIKA AND FUTURE THREATS
A GRAND CHALLENGE FOR DEVELOPMENT

Pre empt epidemics before they start



New **vector surveillance approaches** to quickly identify emerging dangers

New environmentally-friendly **vector control tools** to reduce the threat from key vectors

Respond quickly to an emerging epidemic

New **community engagement & household protection approaches** to slow the spread of disease

New **diagnostics & disease surveillance tools** to support rapid identification of disease spread and coordination of treatment

Apply cutting edge tech to health crises

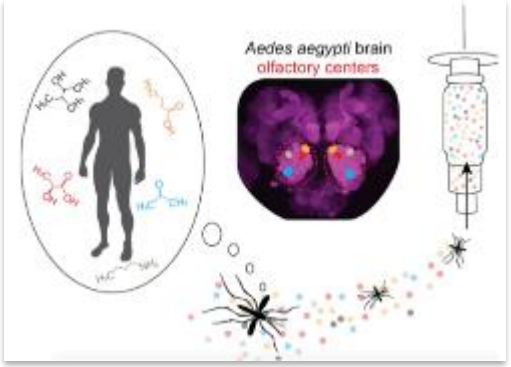
Using **UAV technology** to accelerate our ability to deploy vector control and respond to outbreaks in far-flung communities

We are helping innovators build the tools to respond to this Zika outbreak and the capacity to stop future vector borne outbreaks before they spread

CII now supporting ***Combating Zika and Future Threats*** portfolio intro/scale

COMBATING ZIKA AND FUTURE THREATS
A GRAND CHALLENGE FOR DEVELOPMENT

DEVELOPMENT



Johns Hopkins University

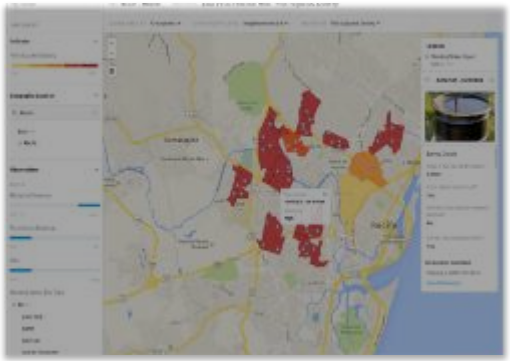
Problem

There are currently no attractive lures that can be combined with traps for effective and efficient vector control and surveillance

Solution

Development of a chemical lure that mimics the signature profile of the human scent to attract mosquitoes

VALIDATE > TRANSITION TO SCALE



Premise Data

Problem

Current data reporting mechanisms are slow and manual, which prohibits timely aggregation of localized data to maximize operational impact

Solution

Citizen-led disease risk mapping and vector monitoring that enables real-time reporting for community leaders and vector control workers

TRANSITION TO SCALE

Monash University

Problem

Dengue and Zika are estimated to threaten the health of over 4 billion people in tropical and subtropical regions of the world

Solution

Scaled deployment of Wolbachia-infected mosquitoes to block disease transmission in Colombia

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Case Study: NEST 360

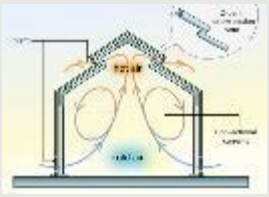
THANK YOU



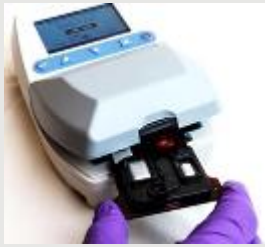










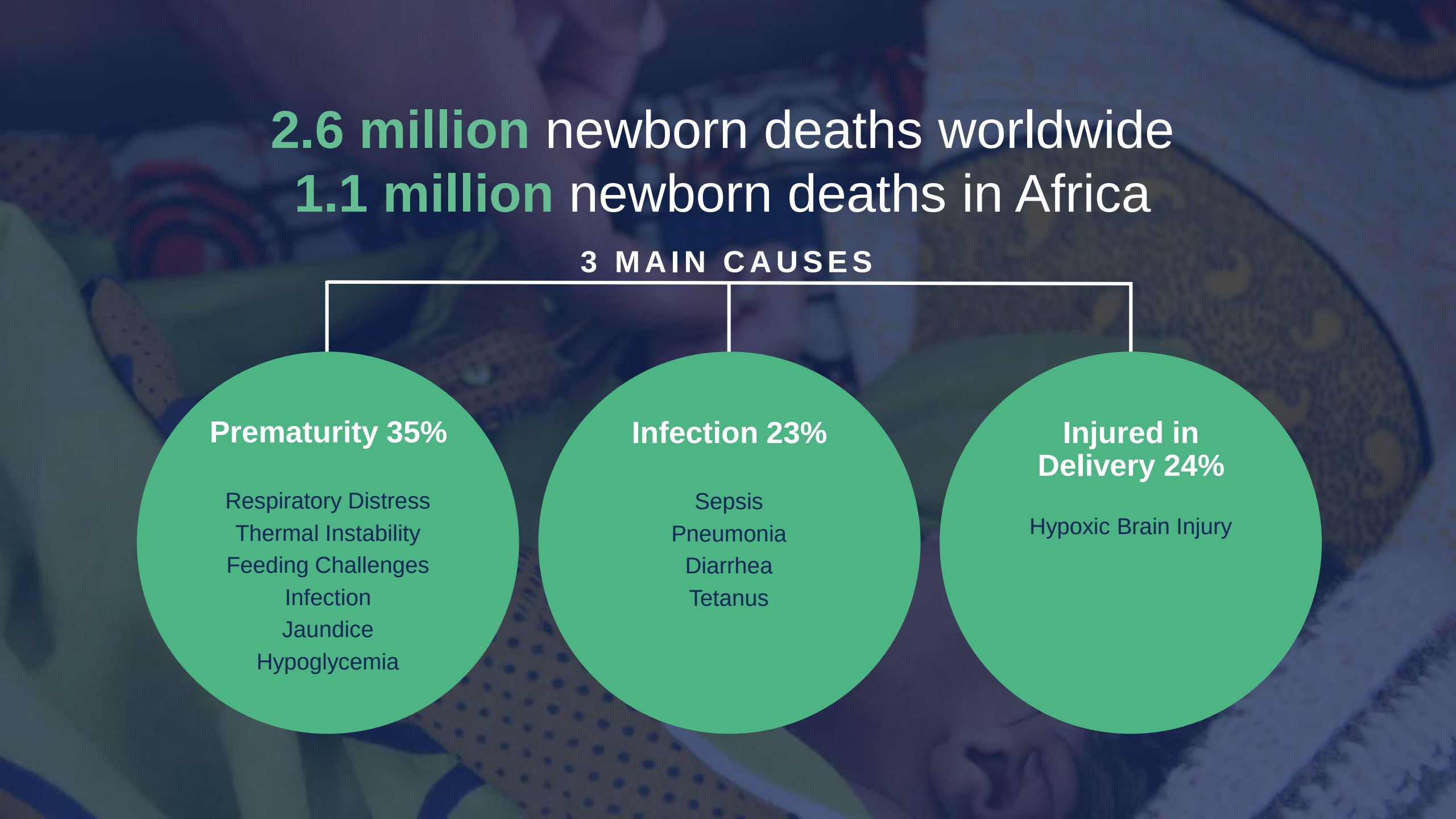




Our grand challenge model is enhanced through a variety of partnerships

GRAND CHALLENGE	DESCRIPTION	PARTNERSHIP CATEGORY	INNOVATOR	PARTNER
FIGHTING EBOLA: A GRAND CHALLENGE FOR DEVELOPMENT	JHU's **redesigned personal protective equipment(PPE)** suit licensed by Dupont; plans for production of the suit to begin Summer 2018.	PROOF OF CONCEPT	JOHNS HOPKINS BIOMEDICAL ENGINEERING	DUPONT
FIGHTING EBOLA: A GRAND CHALLENGE FOR DEVELOPMENT	WHO and MSF provided guidance throughout the development process for Ebola innovators. This engagement led to **pilot studies at MSF sites and updated PPE protocols by WHO**.	SCALE	FIGHTING EBOLA: A GRAND CHALLENGE FOR DEVELOPMENT	World Health Organization; MEDECINS SANS FRONTIERES DOCTORS WITHOUT BORDERS
SAVING LIVES AT BIRTH: A GRAND CHALLENGE FOR DEVELOPMENT	Spearheaded by the SL@B Partnership, BD licensed the product from Jorge Odón. After WHO-led clinical trials are complete, **BD will offer affordable-access pricing in developing countries.**	SCALE	ODÓN DEVICE	BD
SAVING LIVES AT BIRTH: A GRAND CHALLENGE FOR DEVELOPMENT	**Acceleration model of support and coaching** to advance business models and partnership opportunities to help scale innovations in target markets.	SCALE	Duke GLOBAL HEALTH Innovation Center; VENTUREWELL 20 years of idea to impact	Grand Challenges EXPLORATIONS; The Lemelson Foundation
COMBATING ZIKA AND FUTURE THREATS A GRAND CHALLENGE FOR DEVELOPMENT	Leverage Innovative Vector Control Consotium product development partnership (PDP) platform to **provide innovators with critical guidance on their product development pathways and commercialization**.	PROOF OF CONCEPT	VECTOR CONTROL; PERSONAL/ HOUSEHOLD PROTECTION	IVCC


NEST360°



2.6 million newborn deaths worldwide
1.1 million newborn deaths in Africa

3 MAIN CAUSES

Prematurity 35%

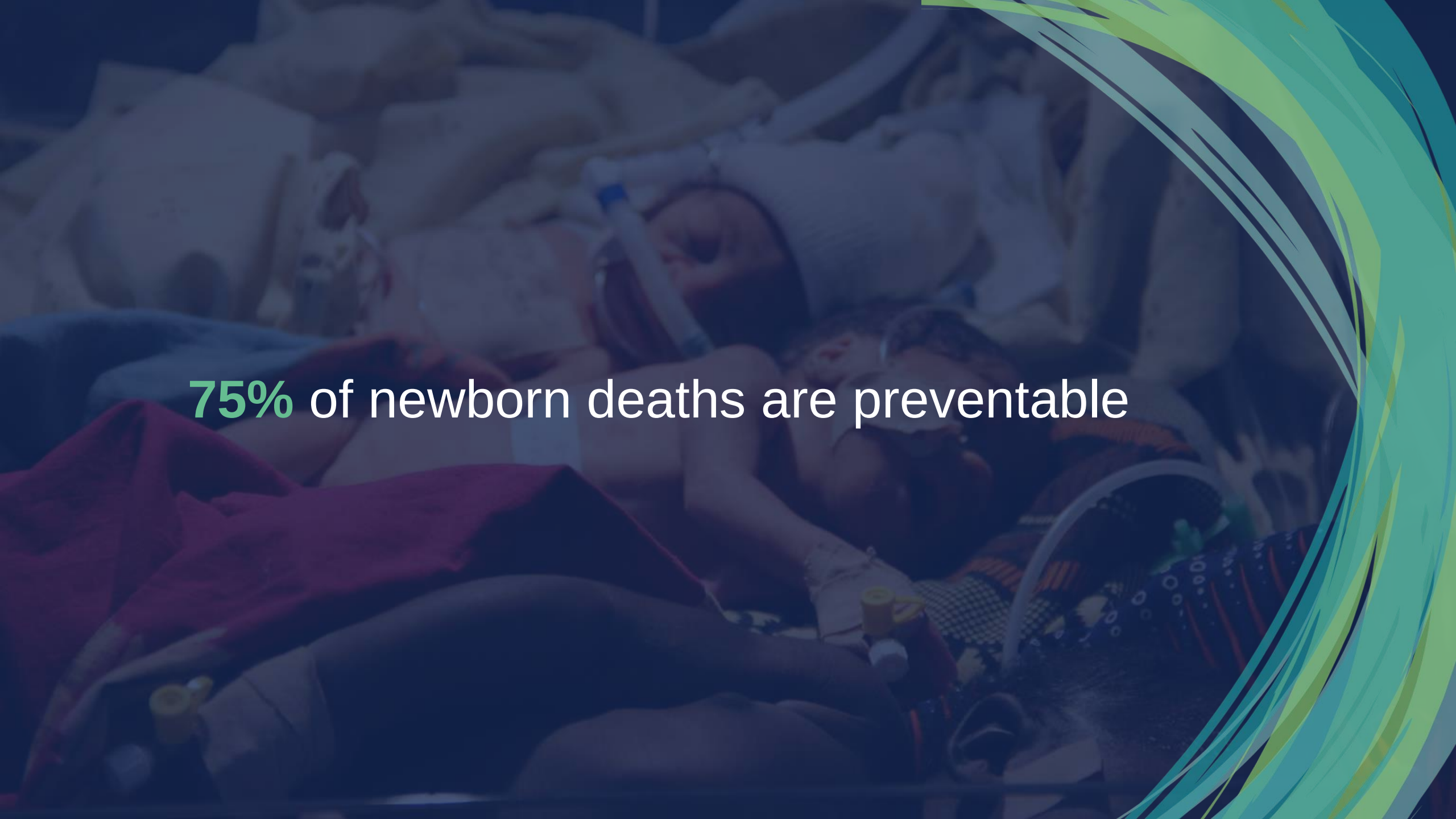
Respiratory Distress
Thermal Instability
Feeding Challenges
Infection
Jaundice
Hypoglycemia

Infection 23%

Sepsis
Pneumonia
Diarrhea
Tetanus

Injured in Delivery 24%

Hypoxic Brain Injury


75% of newborn deaths are preventable


ELECTRIC SUCTION
APPARATUS
ELECTRIC SUCTION
APPARATUS
AIRSEP


EFFECTIVE
AFFORDABLE
SUSTAINABLE


Pumani


#IMWsuperhero

NEST: Newborn Essential Solutions & Technologies

NEST 360 Product Categories

- **Breathing Support**
  - O2 Concentrator & Splitter
  - O2 Concentrator Protector
  - CPAP
  - Suction Machine
  - Pulse Oximeter
  - Apnea Monitor
- **Manage Jaundice**
  - Photo-therapy Lights
  - Bilirubin Monitor
- **Temperature Stability**
  - Radiant Warmer
  - Continuous Temp Monitor
  - Warming Crib
- **Hydration & Nutrition**
  - Syringe Pump
- **Prevent & Treat Infections**
  - Sepsis Diagnostic
  - Syringe Pump
- **Point of Care Diagnostics**
  - Glucose Monitor
  - Bilirubin Monitor
  - Hemoglobin Monitor
  - pH Monitor
  - Sepsis Diagnostic
- **Separate Neonatal Ward**
  - NEST Maintenance Tools
  - Back Up Power

8 Commercially available

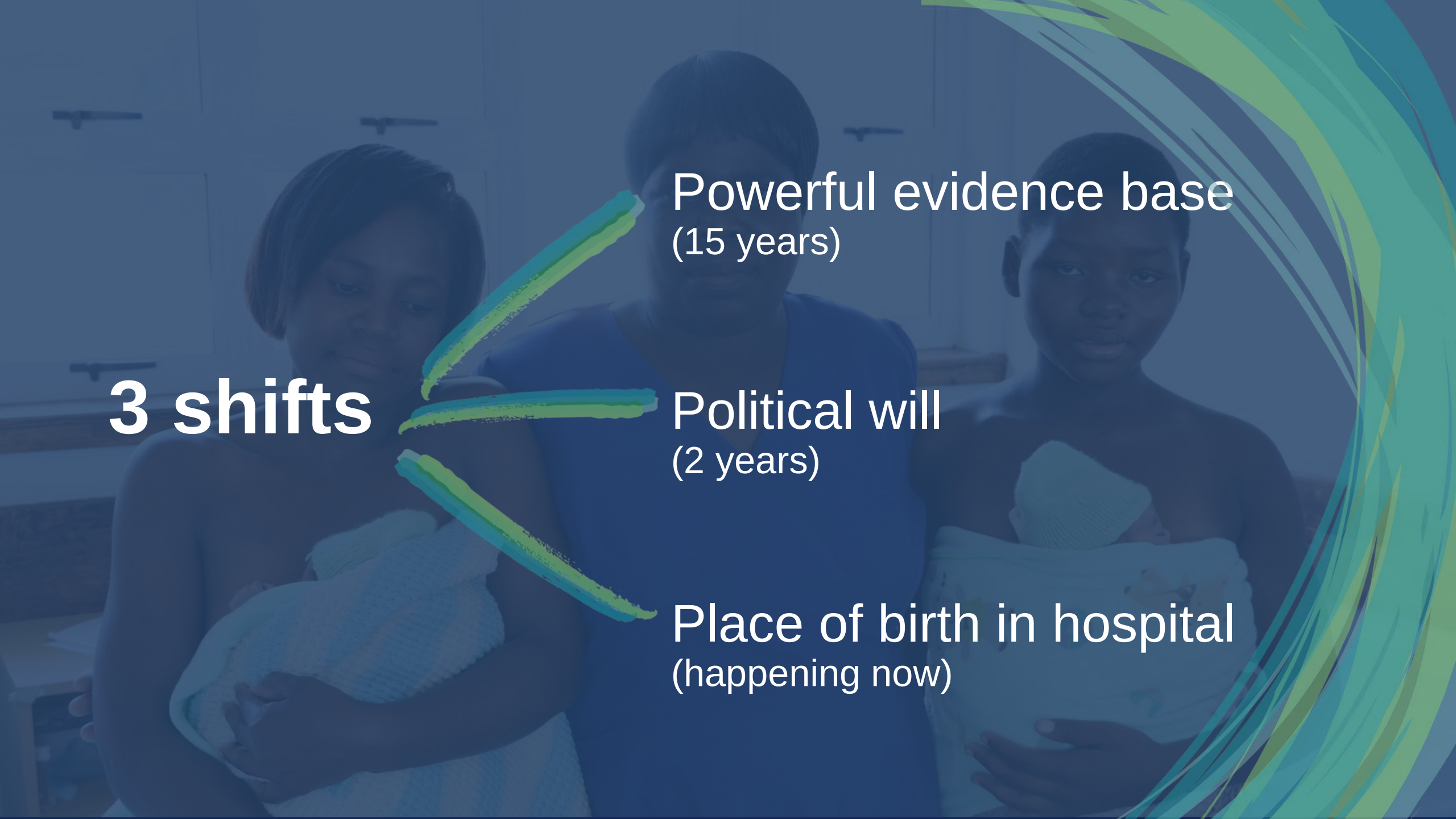
4 To be available (12-24 mo)

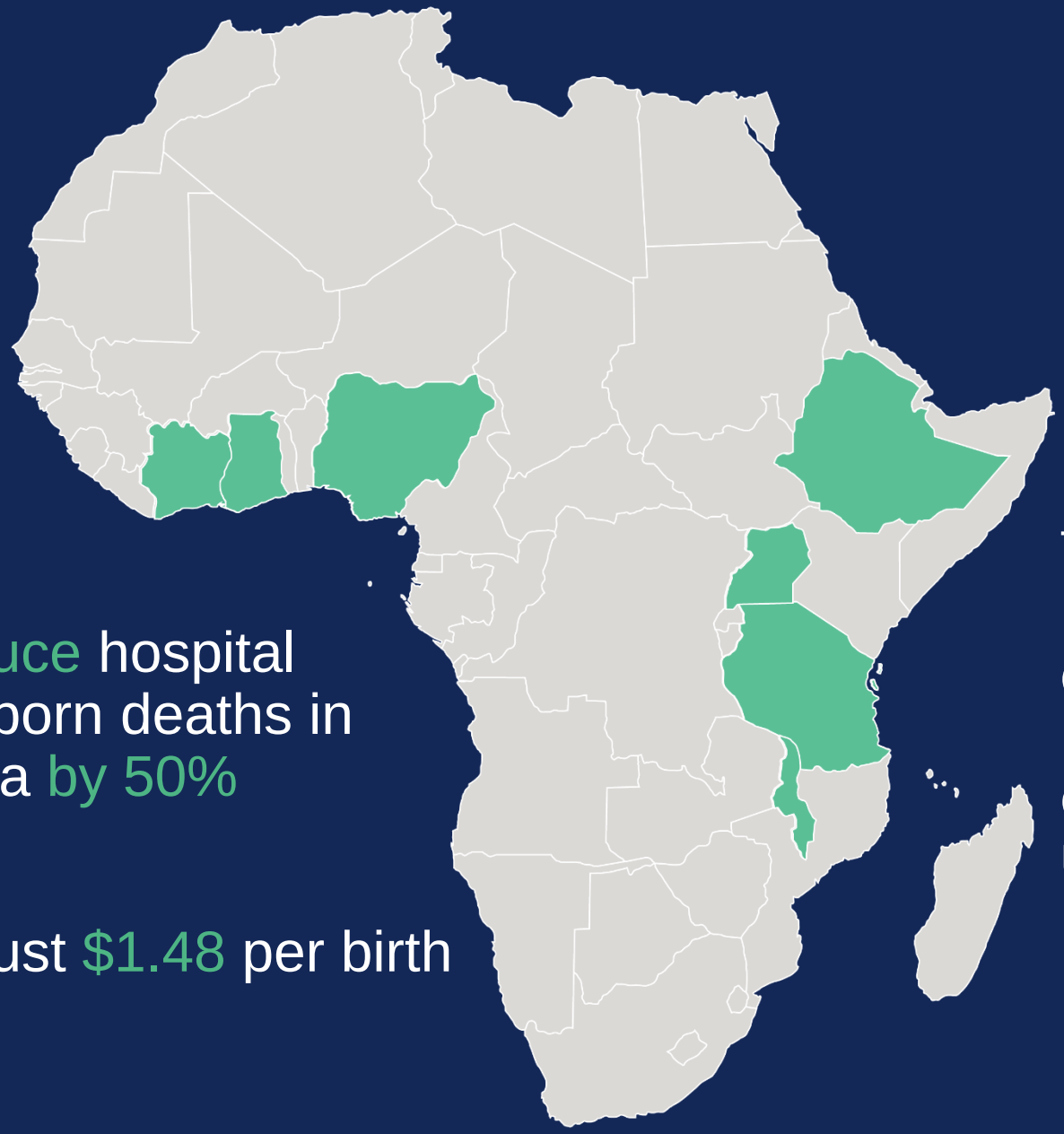
5 To be available (24-48 mo)

D-Rev: Jaundice Treatment

NEST: Jaundice Diagnostic

$1.48 per birth


3 shifts
Powerful evidence base
(15 years)
Political will
(2 years)
Place of birth in hospital
(happening now)



-50%

Reduce hospital newborn deaths in Africa by 50%

For just $1.48 per birth

Malawi – Evaluation of scale up
Tanzania – Step Wedge Trial
Nigeria – Evaluate Market Model
Cote d'Ivoire
Ethiopia
Ghana
Uganda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Q&A

Please submit your questions in the chat box on the screen to the right.

Any questions not addressed during the session can be submitted to **info@ghpod.com** and will be answered by email.

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Thank you for joining us today!

Please join us for our fourth seminar

Health Systems and Maternal and Child Health

Wednesday, April 11, 12-1PM

https://ghpod.adobeconnect.com/usaid_gh_rd/

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