Helping Babies Breathe:
Case study of a successfully translated development solution to address intrapartum asphyxia

Presented by:

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High Rates of Maternal & Neonatal Mortality

• Around 303,000 women die each year from pregnancy and childbirth complications (830 day)\(^1\)

• "Women make up 70 percent of Africa's labor force and produce 80 percent of food; therefore, **maternal deaths and disabilities are a direct cost to the economy**," Dr. Nomonde Xundu, South Africa.

• **2.5 million stillbirths** and **2.6 million neonatal deaths each year** (7,000 newborns a day).

• Globally, **46%** of all Under-5 years mortality occurs during the first month of life.

\(^1\)WHO: [https://www.who.int/news-room/fact-sheets/detail/maternal-mortality](https://www.who.int/news-room/fact-sheets/detail/maternal-mortality)
• Low- and Middle-income countries bear a disproportionate burden for maternal & neonatal mortality.

• In some settings, neonatal mortality (death during the first 28 days postnatal) accounts for up to 60% of under-5 years mortality (UNICEF²)

The 3 main causes of all newborn deaths are preventable and treatable:

- Intrapartum Asphyxia (35%)
- Neonatal Infections (28%)
- Sepsis and Meningitis (13%)

Other causes include:
- Diarrhoea (2%)
- Pneumonia (11%)
- Tetanus (2%)
- Congenital (9%)
- Other (6%)

The problem of intrapartum asphyxia

- Each year, there are about **10 million babies** who suffer from breathing problems at or around the time of birth (intrapartum asphyxia).
- Intrapartum asphyxia is **a leading cause of newborn death**: almost 1 million babies a year die from this common birth complication. Survivors can suffer brain damage.
- Low/middle-income countries bear a disproportionate burden, **especially Sub-Saharan Africa and Asia**.
- Death and disability from intrapartum asphyxia are **preventable**.
- **Neonatal resuscitation** programs dramatically **reduce rates of asphyxia-related mortality and morbidity**.
Evidence for Neonatal Resuscitation

Effect of a Statewide Neonatal Resuscitation Training Program on Apgar Scores Among High-Risk Neonates in Illinois
Daiksha Patel, Zdzislaw H. Piotrowski, Merwyn R. Nelson, Robert Sabich

The impact of Neonatal Resuscitation Program courses on mortality and morbidity of newborn infants with perinatal asphyxia.

Cox et al. [1] analyzed the outcomes of neonatal resuscitation in low-resource settings: what, who, and how to overcome challenges to scale up?

By doing the first 3 steps well, we can prevent 99% of asphyxia-related death and disability.

How to translate complex programs such as Neonatal Resuscitation Program, typically taught and implemented in high-tech settings, using very expensive simulation training equipment, into curricula that would be feasible, acceptable, affordable, safe, and effective in low-resource settings?

- Key partners included – USAID; Save the Children; National Institute of Child Health and Human Development (NICHD); Laerdal Medical AS, in close consultation with WHO.
- Four dedicated neonatologists (Susan Niermeyer; Nalini Singhal; George Little; William Keenan) lead development of a curriculum, called Helping Babies Breathe.
- Content aligned with International Liaison Committee on Resuscitation (ILCOR) guidelines.
- Underwent DELPHI review among key stakeholders.
- 2008 – AAP released RFA seeking University partners for global sites to perform educational evaluation.
Helping Babies Breathe Global Educational Evaluation: 2009

- Feasible and acceptable.
- Low-cost simulation equipment & paired learning effective within LMIC context.
- HBB improved feelings of confidence & self-efficacy among health workers.
- Disconnect between knowledge and skills (bag-and-mask ventilation).
Helping Babies Breathe Global Launch & Pilot Test: 2010 - 2011

- Five countries: Bangladesh, India, Kenya, Pakistan, Tanzania.
- Training of Trainer (TOT) implementation cascade: Master Trainers; Facilitators; Providers.
- Kenya: 1st recorded incident of HBB-trained provider to save baby.
- HBB training resulted in significant decreases in rates of fresh stillbirth (27%; India) & early neonatal mortality (47%; Tanzania).
- Global Launch of HBB June 2010
  - 100+ persons trained in Washington DC
  - US Congressional briefing
  - August 2010: Congress of International Pediatrics Association
  - Formation of the HBB Global Development Alliance (private-public partnership)

Mary Wekesa, RN, used lessons learned from Helping Babies Breathe to save Baby Job October 30, 2009 at Bokoli sub-district hospital, Kenya
**Helping Babies Breathe** has catalyzed translation in all domains

**American Academy of Pediatrics: Practices**

**Laerdal Global Health: Products**

**USAID: Partnerships & Programs**
Translation to Global Practices
Lead HBB GDA partner: American Academy of Pediatrics

“The Golden Minute”
Simulation Training
Action Planning
Prepare for every birth
Knowledge
Skills
Competencies
Impact

Delivering practical, research-driven solutions to global development challenges
Research for Development Conference (R4D), May 2019, Uganda
Translation to Global Products
Lead HBB GDA partner: Laerdal Global Health

Educational Materials
Low-cost simulation equipment
Neonatal resuscitation commodities
Translation to Global Partnerships & Programs

Lead HBB GDA Partner: USAID
Translation to Global Policies
Survive & Thrive GDA partner synergy

Helping Babies breathe has rolled out in 80+ countries

Integration into international & national policy frameworks
Kenya at the forefront of global HBB efforts
2009 to Present

2009
AAP Global Educational Evaluation

2010
Save the Children Global Field Test

2012
NICHD, NORAD, LGH Global Network Implementation Trial

2013
HBB integrated into national in-service Pediatric protocols

2014 - 2019
- Master Trainer Corps implements HBB throughout East Africa
- HBB is required core component of all pre-service nursing and midwifery curricula
Indiana-Moi University Partnership: Enabling environment & ecosystem for success
Global Health is Local Health

Mary Wekesa, RN, used lessons learned from Helping Babies Breathe to save Baby Job October 30, 2009 at Bokoli sub-district hospital, Kenya

Age 1 year

Job, Age 7, with his family
Thank you!

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Summary Slides
Summary (1 of 3)

Development Context and Challenge

• High global rates of neonatal mortality from preventable causes.
• Neonatal resuscitation evidence-based, life-saving intervention that reduces asphyxia-related mortality and morbidity.
• Two-fold challenge: How to effectively adapt for low-resource settings; how to rapidly disseminate & implement in LMICs.

Research applied to the Challenge

• Original evidence-base generated in high-income countries.
• Curriculum deliberately aligned with global guidelines.
• Purposeful integration of research from the beginning – and funding provided (Educational evaluation; Field test).

Partners and Their Roles

• Clear roles, responsibilities, commitment (funding; in-kind).

June 2009: Training of the first 4 HBB Master Trainers in the country of Kenya. HBB Global Educational Evaluation
Summary (2 of 3)

Helping Babies Breathe Translation Products

- **Practices**: The Golden Minute; active learning; Be prepared.
- **Products**: Affordable; award-winning innovation
- **Partnerships & Policies**: United Nations Committee for Life-Saving Commodities; MDGs; SDGs; WHO Every Woman Every Child; Every Newborn Action Plan; professional associations; Ministries of Health.

Translation Vehicles

- Thousands of trainings via TOT cascade
- Publications: peer-review; white papers; reports
- Implementation manuals
- Webinar
Summary (3 of 3)

Dissemination of Results

• Partner websites (cross-posting)
• Launch events & stakeholder meetings
• International & national conferences
• International, regional, national technical working groups
• Communities of practice
• Media & PR: ABC News Million Moms Challenge