Global Burden of Neonatal Mortality:

- Define the problem
- Explore the impact of poverty on neonatal health
- Identify effective and sustainable solutions
- Introduce Helping Babies Survive

Millennium Development Goal 4:
Reduce childhood deaths (<5y) by 2/3 by 2015

Global mortality per 1000 births

Rising Burden of Newborn in Child Mortality

An estimated 3 million neonatal deaths annually

Burden of Neonatal Mortality:
Where?

Lawn JE Lancet 2014
www.thelancet.com/series/eveverynewborn

Lagging Reduction in Newborn Survival

Average annual rate reduction 1990-2012

- Maternal mortality ratio:
  - Children (1m - 5y): 2.6%
  - Neonatal mortality (<28d): 2.1%
  - Stillbirths (last 3 months of pregnancy): 1.0%

At least 40% slower for newborn survival and slower still for stillbirths


**Early neonatal deaths (< 7 days age)**

www.worldmapper.org 2002

**Global Burden of Asphyxia: ~2 Million Deaths**

- Stillbirths (>1000g) 3.2 million per year
- Neonatal Deaths 3.8 million per year

1 million “stillbirths” due to asphyxia
830,000 neonatal deaths due to asphyxia

www.worldmapper.org 2002

Lawn JE et al. IJGO 2009; 107:S5

**Burden of Neonatal Mortality: When?**


**Access to care: Physician workforce**

www.worldmapper.org 2002

**Burden of Neonatal Mortality: Why?**


www.worldmapper.org 2002

**Access to care: % births attended by skilled health personnel**

SOWC 2013, UNICEF global databases 2012, from Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS), and other nationally representative sources.
Myths and misperceptions

**Myth:** The problem is poverty; neonatal mortality will not decline until poverty is reduced.

**Fact:** Although there is a strong correlation between poverty and high neonatal mortality, some LMIC achieve good outcomes.

Bending the curve

77 countries reduced NMR by >25% including 13 low income countries:
- Bangladesh, Bolivia, Eritrea, Guatemala, Indonesia, Nepal, Madagascar, Malawi, Morocco, Senegal, Rwanda, Tanzania, Vietnam

<table>
<thead>
<tr>
<th>NMR: Average annual change 2000-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rwanda</td>
</tr>
<tr>
<td>Bangladesh</td>
</tr>
<tr>
<td>Nepal</td>
</tr>
<tr>
<td>Malawi</td>
</tr>
</tbody>
</table>

Source: Newborn survival decade of change and projections, Health Policy and Planning, 37 (Suppl. 3) papers 3 to 7

Myths and misperceptions

**Myth:** “There are few effective, low-cost interventions”

**Fact:** There are many effective, low cost interventions that reduce neonatal mortality.
Priority interventions for maternal and neonatal care

Umbilical Cord Care: Chlorhexidine and NMR

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>log(OR) Ratio</th>
<th>SE</th>
<th>Risk Ratio</th>
<th>95% CI</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. (No. Random)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital trial 2012</td>
<td>-0.1274</td>
<td>0.061</td>
<td>0.88</td>
<td>(0.79, 0.98)</td>
<td>0.00</td>
<td>(0.79, 1.00)</td>
</tr>
<tr>
<td>Pakistan trial 2012</td>
<td>-0.4751</td>
<td>0.150</td>
<td>2.29</td>
<td>(0.82, 6.45)</td>
<td>0.02</td>
<td>(0.82, 6.45)</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td></td>
<td>100%</td>
<td>0.37</td>
<td>(0.03, 1.20)</td>
<td></td>
</tr>
</tbody>
</table>


Early and exclusive breastfeeding

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate breastfeeding</td>
<td>2.25</td>
<td>(1.82, 2.16)</td>
</tr>
<tr>
<td>Adequate breastfeeding</td>
<td>2.00</td>
<td>(1.40, 2.81)</td>
</tr>
</tbody>
</table>


Low cost, portable, skills based education in resuscitation and essential newborn care:

Neonatal Resuscitation

* Indicates elements that were either not reviewed in this report or for which evidence is lacking

Resuscitation Algorithm

HBB: Teaching Principles
- Paired learning
- Demonstration of techniques
- Train the trainer model

Helping Babies Breathe materials
- Action Plan
- Facilitator Flip Chart
- Learner Workbook
- Neonatal Simulator
- Bag and Mask
- Suction Device

HBB: Efficacy
Tanzania (Msemo, et al)
- 47% reduction in early mortality (<24h)
- 24% reduction in still birth rates
- Changes in resuscitation practices:
  - Increased stimulation (47 to 88%)
  - Increased suctioning (15 to 22%)
  - Decrease face mask ventilation (8.2-5.2%)

India (Goudar, et al)
- 48% reduction in fresh still birth
- No change in NMR

HBB: Changing the global landscape for resuscitation
- Introduced in 77 countries
- Trained and equipped 300,000 providers
- Raise commitment to tackling asphyxia and NM
- Sparked simple, effective innovated technologies
- Influenced evidence based recommendations on newborn resuscitation
- Increased the global demand, supply and use of resuscitation equipment
Helping Babies Breathe

Catalyzing HBS

Essential Care for Every Baby (ECEB) materials

ECEB: Content

ECEB: Parent Guide

ECEB: Review and Quality Improvement
**ECEB: Beta Testing**

Kenya ( Eldoret, 2013)

India ( New Delhi, Kolkata, Hyderabad, 2013)

**ECSB Preterm simulator**

Realistic size and proportions for preterm baby (1.6 kg)
Supports training in
- breastfeeding positioning and attachment
- nasogastric tube placement
- spoon, cup, and nasogastric tube feeding
- continuous skin-to-skin care

**HBS: Lessons learned**

- Simplicity and clarity open the door for change
- Mentoring and empowerment of health workers solidifies change
  - Practice in pairs, in situ practice, LDHF refreshers
- Catalytic role of HBS spreads change
  - Focusing attention on babies (and their mothers)
  - Demystifying an intervention (resuscitation)
  - Demystifying a process (quality improvement)
- Monitoring, data collection and utilization of data document and support continued change

**Essential Care for Small Babies (ECSB)**

Burma
When will *every* baby have the same chance at survival?

A world in which there are no preventable deaths of newborns or stillbirths, where every pregnancy is wanted, every birth celebrated, and women, babies and children survive, thrive and reach their full potential.

*Every Newborn Action Plan*
THANKS!

Resources

- www.helpingbabiesbreath.org
- www.laerdal.info
- www.everynewborn.org