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Educational Evaluation of *Helping Babies Breathe* (HBB) in Kenya: Quantitative Analysis

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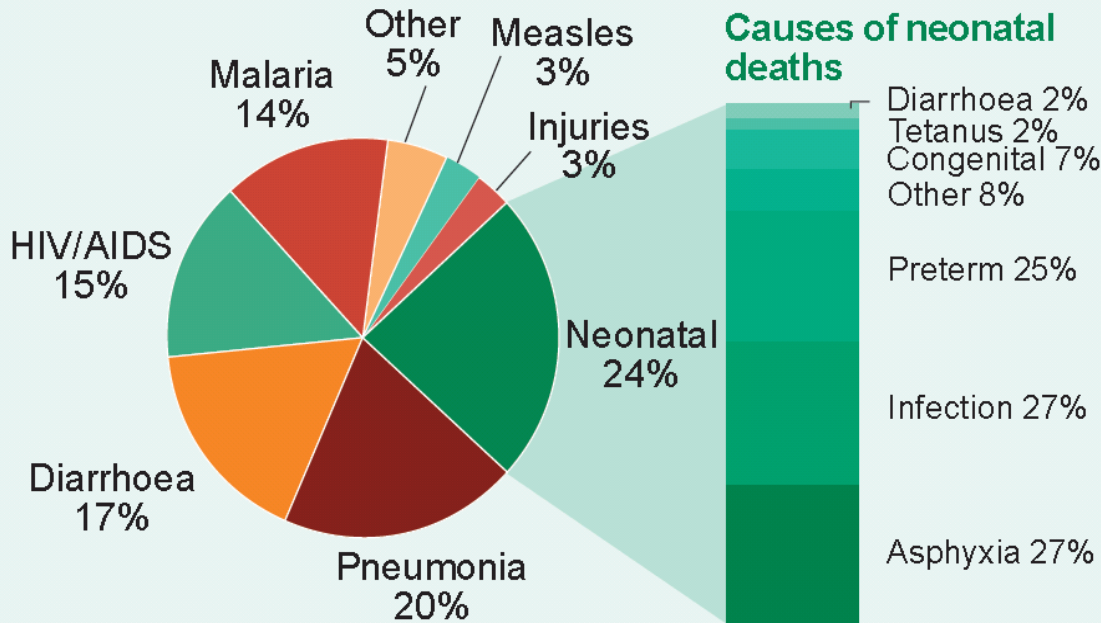




Background

Causes of under-five deaths

Globally more than one third of child deaths are attributable to undernutrition



Source: WHO, 2006

Source: Lawn JE, Cousens SN for CHERG (Nov 2006)

✓ About 23-30% of neonatal mortality is due to birth asphyxia.

✓ Reducing neonatal death will help achieve Millennium Development Goal #4: *Reduce under 5 mortality by 2/3 by 2015.*





The *Helping Babies Breathe* Program:

- Skills-based neonatal resuscitation course from the American Academy of Pediatrics;
- Trains birth attendants in resource-limited settings;
- Uses the International Liaison Committee on Resuscitation¹ evidence base for resuscitation science.

¹<http://pediatrics.aappublications.org/cgi/reprint/117/5/e955> (ILCOR guidelines)





Key elements of the HBB curriculum

- **Prepare for birth:** hygienic environment, prepared to resuscitate and emergency birth plan.
- **Dry thoroughly** and **stimulate** breathing.
- For all infants, within the **first minute after birth**, skilled attendants should:
 - **STIMULATE** breathing
 - **ASSESS** breathing
 - **INITIATE** bag-and-mask ventilation for infants with poor breathing





Methods

Design: A pilot validation study evaluated HBB using both qualitative (Abstract # 754737) and quantitative methods.

Setting: Kenya and Pakistan (Kenya reported here.)

Population: 68 birth attendants from western Kenya represented pediatricians, OB/GYNs, nurses, midwives, community birth attendants.





Methods (continued)

Procedures: A train-the-trainer model included **Master Trainers** (N=4), **Facilitators** (N=16), and **Learners** (N=48). Acceptability and efficacy of the program was assessed via:

- **Structured questionnaires**
- **Focus group discussions**
- **Pre/post test knowledge assessment**
 - Multiple Choice Questionnaire
- **Pre/post test skills performance**
 - Bag-and-mask ventilation
 - OSCE A (*scenario of uncomplicated breathing difficulty*)
 - OSCE B (*scenario requiring prolonged ventilation*)



Knowledge Assessment Results

Multiple Choice Questionnaire

--16 questions, some with 2 possible correct answers

--Pass score = 19/24 correct responses

--Administered pre/post HBB training

	Pre [mean (range)]	Post [mean (range)]	t-test
Facilitators (n = 20)	20.55 (17-24) Pass: 75% (15/20)	22.30 (10-24) Pass: 95% (19/20)	p = .009
Learners (n = 48)	14.08 (7-20) Pass: 2% (1/48)	19.58 (13-23) Pass: 54% (26/48)	p < .001



Performance Assessment

Bag-and-mask ventilation skills test (pass score = 12/12)			
	Pre [mean (range)]	Post [mean (range)]	t-test
Facilitators (n = 20)	2.06 (0-10) Pass: 0% (0/20)	10.50 (7-12) Pass: 31% (5/20)	p < .00001
Learners (n = 48)	.17 (0-4) Pass: 0% (0/48)	9.44 (5-12) Pass: 15% (7/48)	p < .00001
<i>Items on BMV test missed most frequently = “ventilate at 40 breathes per minute” and “watch for chest rise.”</i>			





Performance Assessment (cont.)

OSCE skills tests: OSCEs only administered post-HBB training

OSCE A, 11 items; pass score = 3 specific items

OSCE B, 22 items; pass score = 9 specific items

	OSCE A [mean (range)]	OSCE B [mean (range)]
Facilitators (n = 20)	8.9 (5-11) Pass: 50% (10/20)	19.35 (15-21) Pass: 70% (14/20)
Learners (n = 48)	9.13 (5-11) Pass: 60% (29/48)	15.81 (10-21) Pass: 20.8% (10/48)

Notes:

--Most common items missed in OSCE A for both Facilitators + Learners = "Evaluate breathing" (n=25 not done) and "POSITION AND CLEAR AIRWAY" (n= 21 not done)."

--Mixed causes for failure of OSCE B by Facilitators; Most common causes of failure by Learners = missed items "SELECTS APPROPRIATE SIZE MASK" (n=10 not done) and "VENTILATES AT 40 BREATHES/MINUTE " (n=38 not done).



Conclusions

The *Helping Babies Breathe* program:

- Significantly increases knowledge about how to recognize and manage birth asphyxia.
- Significantly improves bag-and-mask ventilation skills.
- Improves the ability of birth attendants in the resource-limited setting to manage both simple (OSCE A) and complicated (OSCE B) cases of breathing difficulty in neonates.

