June 2011

Pilot for testing Delivery Mechanisms for Newborn Vitamin A Supplementation (NBVAS) in Bangladesh

June 2010- September 2011
Sites of Randomized Trials in S Asia

JiVITA in north west Bangladesh

• 15,937 newborns received 50,000 IU vitamin A or placebo within 24 hrs of birth and followed through 6 months of age
  • reduced infant mortality by 15%
Objective

- To compare the feasibility of NBVAS delivery via 2 CHANNELS, integrated within existing community-based maternal and newborn services.

1. “Revitalization of Community Health Care Initiative in Bangladesh” (RCHCI,B) Project
2. Directorate General of Family Planning (DGFP)
## Model 1: Mother Family Member Dosing Model

<table>
<thead>
<tr>
<th>Contact Points</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pregnancy</strong></td>
<td></td>
</tr>
<tr>
<td>- Pregnancy Identification/Registration</td>
<td>Antenatal contact with pregnant women</td>
</tr>
<tr>
<td>- Home-visit</td>
<td>Pregnant woman given NBVAS &amp; instructed on why, what, when, how, &amp; who will give NBVAS (integrated into usual ANC services/counseling)</td>
</tr>
<tr>
<td>- Satellite-clinic ANC visit</td>
<td></td>
</tr>
<tr>
<td>- FWC-based ANC</td>
<td></td>
</tr>
<tr>
<td><strong>Birth</strong></td>
<td>Mother or family member gives NBVAS to newborn within 48 hours of birth</td>
</tr>
<tr>
<td><strong>Postpartum (0-2 days after birth)</strong></td>
<td>FWA or HA confirms newborn dosing</td>
</tr>
<tr>
<td>- Postnatal home visit by FWA or HA</td>
<td></td>
</tr>
</tbody>
</table>
## Model 2: Health Worker Dosing Model

<table>
<thead>
<tr>
<th>Pregnancy</th>
<th><strong>Contact Points</strong></th>
<th><strong>Actions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pregnancy Identification/Registration</td>
<td>Antenatal contact with pregnant women</td>
</tr>
<tr>
<td></td>
<td>Home visit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Satellite-clinic ANC visit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FWC-based ANC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Birth</th>
<th><strong>Contact Points</strong></th>
<th><strong>Actions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby is born, please come!</td>
<td>Family member contacts health worker by mobile phone or drops card at clinic</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Postpartum (0-2 days after birth)</th>
<th><strong>Contact Points</strong></th>
<th><strong>Actions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Postnatal home visit by FWA or HA</td>
<td>Health worker directly doses newborn</td>
<td></td>
</tr>
</tbody>
</table>
Master trainers

Directors from MOHFW
Civil surgeon
Directors from Family Planning
UHFPO Sub district managers
UFPO
RMO
MOMCH
## Field implementation

<table>
<thead>
<tr>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-district advocacy and planning meeting.</td>
</tr>
<tr>
<td>Preparation of Training manual and Communication materials</td>
</tr>
<tr>
<td>Health workers training with good post scores</td>
</tr>
<tr>
<td>Administration of low dose vitamin A (50,000 IU) specially prepared for the new born within 48 hours.</td>
</tr>
</tbody>
</table>
**NBVAS M&E Design**

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**3. aBaseline:**
Recently Delivered Women (RDWs) & Community Health Workers (KAP)

**---------Performance Monitoring-----------**

1. **Routine**  Data collection within health system *(thru MoHFW)*
   
   +

2. **Monthly Survey report of MI Extender** among RDWs and FWAs/HAs

**E3. Endline:**
Recently Delivered Women and CHW KAP
Results from the monitoring data of the NBVAS Pilot Program
Coverage of NBVAS based on expected live births by program area, Jan- April, 2011
Coverage of NBVAsS based on expected live births

- Jaldhaka: 71.4
- Modhupur: 51.6
- Nesarabad: 73.7
- CHW Total: 60.8
- Pirojpur Sadar: 63.8
- Sakhipur: 56.5
- Dimla: 51.4
- Mother/Family Total: 53.0

Jan | Feb | March | April
---|---|---|---
9.8 | 12.6 | 14.8 | 12.0
34.9 | 45.0 | 44.3 | 44.5
5.0 | 32.1 | 49.2 | 54.5
3.0 | 28.9 | 40.7 | 57.0
4.1 | 4.7 | 51.3 | 53.0
Timing of NBVAS dosing by model

Source: Extender Surveys
Proportion of mothers reporting problems in dosing NBVAC

Source: Extender Surveys
85% were fully satisfied and 12% moderately more than 90% of Health Workers reported correct knowledge of NBVAS program

<table>
<thead>
<tr>
<th></th>
<th>Timing of NBVAS</th>
<th>Content of Retinol</th>
<th>NBVAS not a stand alone program</th>
<th>NBVAS same as preschool Vit A</th>
<th>No of capsules to be provided</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimla</td>
<td>100.0</td>
<td>98.3</td>
<td>91.7</td>
<td>100.0</td>
<td>96.7</td>
<td>60</td>
</tr>
<tr>
<td>Jaldhaka</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>61</td>
</tr>
<tr>
<td>Madhupur</td>
<td>100.0</td>
<td>98.5</td>
<td>93.9</td>
<td>100.0</td>
<td>87.9</td>
<td>66</td>
</tr>
<tr>
<td>Pirozpur sadar</td>
<td>76.1</td>
<td>69.0</td>
<td>98.6</td>
<td>97.2</td>
<td>95.8</td>
<td>71</td>
</tr>
<tr>
<td>Sakipur</td>
<td>96.5</td>
<td>96.5</td>
<td>100.0</td>
<td>100.0</td>
<td>94.7</td>
<td>57</td>
</tr>
<tr>
<td>Nesarabad</td>
<td>95.1</td>
<td>93.4</td>
<td>83.6</td>
<td>96.7</td>
<td>96.7</td>
<td>61</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>94.1</strong></td>
<td><strong>92.0</strong></td>
<td><strong>94.7</strong></td>
<td><strong>98.9</strong></td>
<td><strong>95.2</strong></td>
<td><strong>376</strong></td>
</tr>
</tbody>
</table>

Source: Extender Surveys
Percent of health workers who faced trouble in replenishing supplies

Source: Extender Surveys
Problems faced by 30% health workers in reaching household within 2 days

- Need more people: 15%
- Lack of timely birth notification: 5%
- Other work commitments: 8%
- Transport problem: 72%

Source: Extender Surveys
# Number of Health Workers Reporting Adverse Event after NBVAS dosing

<table>
<thead>
<tr>
<th>Upazila</th>
<th>No. of health workers reporting adverse event</th>
<th>Total Number of Health Workers Interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakhipur</td>
<td>0</td>
<td>57</td>
</tr>
<tr>
<td>Dimla</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>Pirojpur Sadar</td>
<td>1</td>
<td>71</td>
</tr>
<tr>
<td>Modhupur</td>
<td>2</td>
<td>66</td>
</tr>
<tr>
<td>Jaldhaka</td>
<td>2</td>
<td>61</td>
</tr>
<tr>
<td>Nesarabad</td>
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</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7</strong></td>
<td><strong>376</strong></td>
</tr>
</tbody>
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*Source: Extender Surveys*
Major Findings

• No difficulty in dosing and recording NBVAS within 48 hours of birth as more than 40% were dosed.
• Use of Mobile/cell phones effective in increasing coverage
• Effective Training and advocacy program.
• All protocols followed during dosing including breast feeding and cutting capsules. However, hand washing seems to be an issue.
• Very few adverse events noted. Not clearly attributable to NBVAS.
• Passive impact of this program on ANC and PNC coverage
Maternal and Child Undernutrition 3

What works? Interventions for maternal and child undernutrition and survival

Zulfiqar A Bhutta, Tahreen Ahmad, Robert E Black, Simon Cousins, Kathryn Dewey, Elsa Giugliani, Baboo A Haider, Betty Kirkwood, Saul S Morris, HPS Sachdev, Meena Shekar, for the Maternal and Child Undernutrition Study Group

We reviewed interventions that affect maternal and child undernutrition and nutrition-related outcomes. These interventions included promotion of breastfeeding; strategies to promote complementary feeding; provision of food supplements; micronutrient interventions; general supportive strategies to improve family nutrition status (for example, community nutrition; and reduction of disease burden (promotion of handwashing and strategies to control the burden of malaria in pregnancy). We showed that although strategies for breastfeeding promotion have a large effect on survival, their effect on stunting is small. In populations with sufficient food, education about complementary feeding increased height-for-age Z score by 0.25 (95% CI 0.01–0.49), whereas provision of food supplements (with or without complementary feeding) increased height-for-age Z score by 0.41 (0.05–0.76). Make-up and severe acute malnutrition according to WHO guidelines reduced the case-fatality rate by 55% (risk ratio 0.45, 0.22–0.90), and recent studies suggest that newer commodities, such as ready-to-use therapeutic foods, can be used to manage severe acute malnutrition in community settings. Effective micronutrient interventions for pregnant women included supplementation with iron folate (which increased haemoglobin at term by 12 g/L, 2.93–21.00, p < 0.001), which reduced the risk of low birthweight at term by 36% (relative risk 0.64, 0.47–0.84). Recommended interventions for children included strategies for supplementation of vitamin A (in the neonatal period the use of vitamin A preventive zinc supplements, iron supplements for children in areas where malaria is not endemic, and universal promotion of iodised salt. We used a cohort model to assess the potential effect of these interventions on mothers and children in the 36 countries that have 90% of children with stunted linear growth. The model projects that such interventions that were designed to improve nutrition and prevent related disease could reduce mortality by 36%; mortality between birth and 36 months by about 25%; and disability-adjusted life-years associated with stunting, severe wasting, intrauterine growth restriction, and micronutrient deficiencies by about 25%. To eliminate stunting in the longer term, these interventions should be supplemented by improvements in the underlying determinants of undernutrition, such as poverty, poor education, disease burden, and lack of women’s empowerment.

Introduction

Of an estimated 178 million children aged younger than 5 years who are stunted (ie, have a height-for-age Z score of less than –2), most live in sub-Saharan Africa and south-central Asia. 160 million (90%) stunted children live in just 36 countries and make up 46% of the 348 million children in those countries. About 55 million children are wasted (ie, have a height-for-age Z score of less than –2), of whom 19 million have severe wasting (weight-for-height Z score of less than –3) or severe acute malnutrition (weight-for-height Z score of –3 or lower or associated oedema).

Although the prevalence of maternal undernutrition—assessed by low body-mass index—varies, fetal undernutrition or intrauterine growth restriction is common with the highest prevalence in south-central Asia.1 The association between undernutrition and child mortality is strong, but evidence for the contribution of intrauterine growth restriction to mortality of neonates and children younger than 5 years has been less robust.2

Key messages

- Effective interventions are available to reduce stunting, micronutrient deficiencies, and child deaths. If implemented at sufficient scale, they would reduce DALYs (all child deaths) by about a quarter in the short term
- Of available interventions, counselling about breastfeeding and fortification or supplementation with vitamin A and zinc have the greatest potential to reduce the burden of child morbidity and mortality
- Improvement of complementary feeding through strategies such as counselling about nutrition for food secure populations and nutrition counselling, food supplements, conditional cash transfers, or a combination of these, in food-insecure populations could substantially reduce stunting and related burden of disease
- Interventions for maternal nutrition (supplements of iron folate, multiple micronutrients, calcium, and balanced energy and protein) can improve outcomes for maternal health and births, but few have been assessed at sufficient scale
- Although available interventions can make a clear difference in the short term, elimination of stunting will also require long-term investments to improve education, economic status, and empowerment of women

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Click here to view the full-sized paper with maternal and child undernutrition

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Zulfiqar A Bhutta
Professor of Maternal and Child Health, Aga Khan University, Karachi, Pakistan
zulfiqar.bhutta@aku.edu

Robert E Black
Center for Health and Population
Institute for Health Metrics and Evaluation
University of Washington
Seattle, Washington 98195-7100, USA
Robert.black@hsph.harvard.edu

Kathryn Dewey
School of Hygiene and Tropical Medicine, London, UK
Kathryn.Dewey@btinternet.com

Baboo A Haider
International Centre for Diarrhoeal Disease Research, Bangladesh
baboo@icddrb-dhaka.org

Betty Kirkwood
Department of Epidemiology and Public Health, University of Oxford, Oxford, UK
kirkwood@epi.ox.ac.uk

Saul S Morris
International Centre for Diarrhoeal Disease Research, Bangladesh
saul@icddrb-dhaka.org

HPS Sachdev
National Institute of Nutrition, Hyderabad, India
sp@niimohind.org

Meena Shekar
Institute of Child Health, Kolkata, India
mshekar@icmr.res.in

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Challenges for Newborn vitamin A Delivery in Bangladesh

• > 8,000 births/subdistrict/year\textsuperscript{1}
• > 90% of births occur in the home\textsuperscript{2}
• 12% of births attended by health professional\textsuperscript{2}
• 48% of women have ≥1 antenatal care visit\textsuperscript{2}
• Deaths of > 200,000 infants/ year

\textsuperscript{1}UNICEF, State of the Worlds Children, 2008
\textsuperscript{2}Bangladesh Maternal Health Services and Maternal Mortality Survey, 2001
IN CONCLUSION USING THE DELIVERY STRATEGIES TESTED IN BANGLADESH, NBVAS APPEARS TO BE A FEASIBLE INTERVENTION

More than 15% of 200,000 deaths infants/ year prevented

“Introducing birth dose of vitamin A into the essential newborn care package”