IMPROVED CHILD SURVIVAL THROUGH PRIMARY HEALTH CARE

Siddarth Ramji
Professor & Head, Department of Neonatology, Maulana Azad Medical College, New Delhi

Introduction

Child survival programmes and interventions have been implemented for several decades in the country, yet India is faced with the stupendous task of reducing its large child mortality by 2015 to meet the Millennium Development Goal’s target in less than a decade. Introspection into this vexing problem makes us ask two basic questions. First, do we know whom to target? and if yes, do we know what interventions to use?

Whom to target

Risk of child death is highest during the first seven days of life (25/1000 live births). This decreases drastically to 1.66 between 7-28 days and thereafter, progressively declines to 0.14 from 12-59 months\(^1\). Clearly, the evidence indicates that interventions to avert neonatal deaths especially, during the early neonatal period would yield the maximum dividends. It is not in any way suggested that there should be any slackening of other child survival interventions beyond the neonatal period. Clearly, both efforts must continue but it only suggests that more efforts and resources need to focus on the neonatal period.

What interventions to use

In order to select the most cost effective interventions that would maximize our efforts at the primary level, we need to review the evidence currently available. The recent series on child survival published in the Lancet\(^2\) when extrapolated to India suggested that universal coverage with breastfeeding could probably result in about 15% reduction in under-five child mortality. The next best interventions are probably complementary feeding, clean delivery, clean water and sanitation amongst others.

| Table 1: Contribution of treatment interventions to reduction in under 5 mortality |
|---------------------------------|-----------------|-----------------|
| Treatment intervention           | Deaths averted (in'000) | Percent (of total deaths) |
| Oral rehydration therapy         | 394             | 16              |
| Antibiotics for sepsis           | 158             | 7               |
| Antibiotics for pneumonia        | 153             | 6               |
| Zinc                             | 113             | 5               |
| Newborn resuscitation            | 97              | 4               |
| Antibiotics for dysentery        | 81              | 3               |
| Vitamin A                        | 3               | 0               |
| Antimalarials                    | 2               | 0               |

Source: Reference 1

Table 1 shows the universal coverage with treatment interventions that could contribute to reduction in under-five mortality. Probably the most effective would be use of oral rehydration solution (ORS). However, for reducing
neonatal deaths, treatment of sepsis with antibiotics would be expected to provide benefit to the most.

Combining all the evidence available, it is suggested that nutritional interventions (breast feeding, complementary feeding, vitamin A and zinc) could result in up to 25% of the under-five deaths. Effective case management with oral rehydration therapy (ORT), antibiotics (for pneumonia and sepsis) and use of anti-malarials could result in up to 30% of the child deaths. Many of these interventions such as breast and complementary feeding and ORT can be provided through home based care and result in up to 30% under-five mortality. Health facility based interventions such as use of antibiotics for infections; resuscitation of asphyxiated newborns, etc could also result in a similar reduction in under-five mortality. Clearly, there needs to be a mix of interventions for both ambulatory and hospitalised sick children.

**Community’s health seeking behavior**

We must be aware of the community’s health seeking behavior when planning the mix of child survival interventions. Studies suggest that almost three-fourths of the ambulatory care is sought by the communities from the private health care providers, while there is an almost equal number utilizing the public and private sector inpatient facilities. Therefore, it is critical that private health care providers are trained and committed to ensure that the package of primary childcare interventions is delivered to the patients.

**Skills of primary care providers**

The public health care system has providers who are inadequately trained at present to deliver the package of child survival interventions. Several traditional birth attendants have been trained in the country, but there is no formal evaluation of their skills or utilization. But informal assessment suggests that they have poor skill retention for safe delivery and recognition of obstetric complications. The auxiliary nurse midwife (ANM) has inadequate newborn care skills and poor diagnostic, assessment and counseling skills with regards to childcare. There are several inadequacies in health care services currently being provided by medical officers in primary health care (PHC) institutions.

**Newborn care interventions**

The challenge before the nation is to reduce mortality in the first month of life especially those who deliver at home and in whom the utilization of health facilities for illness is inadequate. The experience from Gadhchiroli area of Maharashtra\(^3\) by Bang et al using a home-based newborn care package has been encouraging. The package was delivered by village health workers to a population of 1000. The package included:
management of birth asphyxia, low birth weight, temperature maintenance, promotion of breast feeding, prevention of superficial infection, management of sepsis with injection gentamicin and oral cotrimoxazole, and health education. The intervention resulted in a 50% reduction in neonatal mortality over 5 years. A similar intervention is being attempted on a larger scale by the Indian Council of Medical Research with intervention arms using a village health worker in one and the anganwadi worker in the other. The initial experience has been encouraging.

Integrated management of neonatal and childhood illness (IMNCI)

Integrated management of childhood illness

Figure 1: IMCI is a key strategy for improving child health

IMNCI is a key strategy under the RCH-II program for reduction in child mortality (Figure 1). It is seen as complementary to the home based newborn care for children 2-59 months. The initial experience in its implementation has brought forth some of the constraints while attempting to upscale it in the country.

Some of these are:

- high attrition of trainers within district/state (approx. 20% of original trainers available),
- problem of availability of clinical facilitators for 8-10 days,
- non-availability of facilities in a district with at least 12 sick newborns on a given day (may have to look for private facility partnership),
- residential training – availability of facility/cost implication,
- competing interests,
- supervisor’s skills for assessment and support,
- poor drug logistics,
- poor documentation,
- poor data collation and analysis,
- poor use of data for programming,
- lack of referral facilities, linkage and compensating private sector,
- lack of requisite support from MOs & district officers.

Delivery of child health services

A key element for the successful implementation of child survival interventions is family empowerment, which will enable them to take early and correct decisions for improvement of their children’s health. Another key
factor that is likely to influence child (especially neonatal) survival is the presence of a skilled birth attendant for all deliveries. There is also a need to improve the neonatal and childcare skills of the primary health care providers such as the ANM and the anganwadi worker. It is estimated that if there is universal outreach, 90% community/family care and 50% facility based care for sick neonate, a 36% reduction in neonatal mortality can be anticipated. A similar estimate can be made for under-5 mortality.

**Way forward**

The way forward possibly is family centered health care with appropriate backup of health facilities to care for sick children. The NGO and private sector could help in community mobilization and training of health care providers with the assistance of professional medical bodies. These would help in achieving the goals of family empowerment and improving the skills of service providers. Finance has been a hurdle in care seeking and this need to be addressed through community health insurance and financing of key programs by the government and donor agencies.

**Reference**

1. Registrar general of India; SRS Reports 2002.


Improved Child survival through Primary health care
Do we know ........

• *Whom to target?*

• *What interventions to use?*
The riskiest weeks of life

Weekly risk of death per 1000 live births (global average)

- Early neonatal (Day 0-6): 25
- Late Neonatal (Day 7-28): 1.66
- Post-neonatal (1 - 11 months): 0.54
- Age 12-59 months: 0.14

Under-5 deaths preventable through universal coverage with individual interventions (2000)

**India**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding</td>
<td>16%</td>
</tr>
<tr>
<td>Complementary feeding</td>
<td>8%</td>
</tr>
<tr>
<td>Clean delivery</td>
<td>6%</td>
</tr>
<tr>
<td>Hib vaccine</td>
<td>6%</td>
</tr>
<tr>
<td>Clean water, sanitation, hygiene</td>
<td>6%</td>
</tr>
<tr>
<td>Zinc</td>
<td>4%</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>4%</td>
</tr>
<tr>
<td>Antenatal steroids</td>
<td>4%</td>
</tr>
<tr>
<td>Newborn temperature management</td>
<td>4%</td>
</tr>
<tr>
<td>Tetanus toxoid</td>
<td>4%</td>
</tr>
<tr>
<td>Antibiotics for PRM</td>
<td>2%</td>
</tr>
<tr>
<td>Measles vaccine</td>
<td>2%</td>
</tr>
<tr>
<td>Nivirapine and replacement feeding</td>
<td>2%</td>
</tr>
<tr>
<td>Insecticide-treated materials</td>
<td>2%</td>
</tr>
<tr>
<td>Antimalarial IPT in pregnancy</td>
<td>2%</td>
</tr>
</tbody>
</table>
### Under-5 deaths preventable through universal coverage with individual interventions (2000)

#### India

<table>
<thead>
<tr>
<th>Treatment intervention</th>
<th>Deaths averted (in '000s)</th>
<th>Percent (of total deaths)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral rehydration therapy</td>
<td>394</td>
<td>16%</td>
</tr>
<tr>
<td>Antibiotics for sepsis</td>
<td>158</td>
<td>7%</td>
</tr>
<tr>
<td>Antibiotics for pneumonia</td>
<td>153</td>
<td>6%</td>
</tr>
<tr>
<td>Zinc</td>
<td>113</td>
<td>5%</td>
</tr>
<tr>
<td>Newborn resuscitation</td>
<td>97</td>
<td>4%</td>
</tr>
<tr>
<td>Antibiotics for dysentery</td>
<td>81</td>
<td>3%</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td>Antimalarials</td>
<td>2</td>
<td>0%</td>
</tr>
</tbody>
</table>
Under-5 deaths preventable with specific groups of interventions (2000)

India

<table>
<thead>
<tr>
<th>Group</th>
<th>Interventions in group</th>
<th>Deaths averted (in '000s)</th>
<th>Percent (of total deaths)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health type grouping</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td>Breastfeeding, complementary feeding, vitamin A and zinc</td>
<td>599</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td><strong>Case management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORT, antibiotics (diarrhea, pneumonia, neonatal sepsis) and antimalarials</td>
<td>730</td>
<td>30%</td>
</tr>
</tbody>
</table>
# Under-5 deaths preventable with specific groups of interventions (2000)

## India

<table>
<thead>
<tr>
<th>Location grouping</th>
<th>Interventions in group</th>
<th>Deaths averted (in '000s)</th>
<th>Percent (of total deaths)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health facility centric</td>
<td>Antenatal steroids, temperature management, antibiotics-PRM, antibiotics-pneu, antibiotics-sepsis, resuscitation, antibiotics-dys, zinc-T and vitA-T</td>
<td>713</td>
<td>30%</td>
</tr>
<tr>
<td>Health facility outreach</td>
<td>Zinc, Hib vaccine, vitA, tetanus toxoid, nivirapine, clean delivery, measles, IPT and antimalarials</td>
<td>345</td>
<td>14%</td>
</tr>
<tr>
<td>Home care</td>
<td>Breastfeeding, complementary feeding, ITM and ORT</td>
<td>757</td>
<td>32%</td>
</tr>
</tbody>
</table>
Community Health seeking Behavior

Community
  Household
    Birth attendant
    AWW
  Unqualified RMPs

Subcentre
  1 ANM
  PHC
  CHC

District/subdistrict hospital

Private sector
  Solo
  Small/medium hospitals

80% OPs
20% OPs
45% IPs
55% IPs
Skills: Primary Health care providers

TBA
• No formal evaluation available
• Poor skill retention for safe delivery and recognition of obstetric complications

ANM/LHV/AWW
• Inadequate newborn care skills
• Poor diagnostic & assessment skills
• Poor counseling skills

MO
• Poor skills for resuscitation and newborn care
• Poor counseling skills
VHW: Gadchiroli experience

Interventions

- Trained VHW 1/1000 population
- Birth asphyxia
- LBW
- Temp. maintenance
- Promotion of BF
- Prevention of superficial infection
- Management of sepsis (inj gentamicin and oral cotrimoxazole)
- Health education

Bang et al, J Perinatol, 2005
HOME BASED MANAGEMENT OF YOUNG INFANTS (0-60 days)

A MULTICENTRIC TASK FORCE STUDY

- Ministry of Health & Family Welfare
- Indian Council of Medical Research
Intervention Package

- Antenatal contacts
- Care at birth,
- Care of
  - Normal babies & LBW babies
  - Identification of sick babies and treatment
- Health education

Strategy: Presence at birth, Home visit, Health education

Involvement of Health System

Intervention model (3 arms)

SR(CHW)   AWW   Comparison
Integrated Management of Neonatal and Childhood Illness (IMNCI)
IMCI as a key strategy for improving child health

- Management of sick children
- Nutrition
- Immunization
- Other disease prevention & promotion of growth and development

Integrated Management of Childhood Illness
Three components of the IMCI strategy

• Improving the case management skills of health workers

• Improving the health system for effective management of childhood illness

• Improving family and community practices
Detection and management of diseases (2-59m)

Total Children assessed - 4402

- Gen Danger signs  225  (5.1%)
- Pneumonia        1052 (23.9%)
  Treated at home  816   (77%)
  Referred         236   (23%)
- Diarrhea.......... 1144 (26%)
  Treated at home   1097 (95.9%)
  Referred          47    (4.1%)
- Fever.............. 2328 (52.9%)
  Treated at home  1231 (92.5%)
  Referred          174  (7.5%)
- Malnutrition..... 1892 (43%)
  Treated at home  1852 (97.9%)
  Referred          40  (2.1%)
- Feeding problem...977  (22.2%)
  Treated at home  966  (98.8%)
Time to saturate a district (training)
Implementation – Training constraints

• High attrition of trainers within district/state (approx. 20% of original trainers available)

• Problem of availability of clinical facilitators for 8-10 days

• Non-availability of facilities in a district with at least 12 sick newborns on a given day (*May have to look for private facility partnership*)

• Residential training – availability of facility/cost implication

• Competing interests
Implementation constraints

- Supervisor’s Skills for assessment and support
- Drug logistics
- Documentation
- Data collation and analysis
- Use of data for programming
- Referral facilities, linkage and compensating private sector
- Requisite support from MOs & district officers
WHAT IMNCI DOES NOT ADDRESS

Maternal care Package → Care at birth ↔ Newborn & Child care package
Delivery of Child health services

- Family empowerment
- Ensure presence of skilled birth attendant at all deliveries

**ANM/LHV**
- improve skills of neonatal and child care
- reallocate work – primarily as MCH worker

**AWW**
- train in newborn care
- home visits and counseling

**MO**
- Improve skills for newborn and child care
## Effect of programmatic intervention

<table>
<thead>
<tr>
<th>Intervention package coverage</th>
<th>% neonatal deaths averted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family-community care (90%)</td>
<td>24 (15-32)</td>
</tr>
<tr>
<td>Universal outreach, family-community care (90%)</td>
<td>28 (18-37)</td>
</tr>
<tr>
<td>Facility based clinical care (90%)</td>
<td>37 (23-50)</td>
</tr>
<tr>
<td>Universal outreach, family-community care (90%), facility based care (50%)</td>
<td>36 (24-47)</td>
</tr>
<tr>
<td>Universal outreach, family-community care (90%), facility based care (90%)</td>
<td>48 (31-61)</td>
</tr>
</tbody>
</table>

Lancet NS series, 2005
Way Forward

- Professional bodies
  - Technical help
  - Training
- Health facility
- Family
- Health financing
  (Govt, Donors)
- NGO
  - Private sector
  - Community mobilization
  - Training
  - Community insurance