

## Family practices for survival, growth and development of Children in India

5.9 million Children died globally in the year 2015 before they could celebrate their fifth birth day (16,000 every day). More than 95% of these deaths occur in developing countries. In 2015, the under 5 mortality rate in low income countries was 76 deaths /1000 live births, 11 times higher than the average rate in high income countries (7 deaths/1000 live births). There has been decline in under five mortality. This has been possible due to supportive policy, increased budget for health sector, reduction in inequity, improved health care, and improved health system. Though the under 5 mortality rate has decreased by 53% globally from an estimated rate of 91 deaths/1000 live births in 1990 to 43 deaths/1000 live births in 2015, the MDG 4 target was not reached. With the end of MDG era, the international community developed and agreed on a new framework i.e. Sustainable Development Goals (SDGs) to be reached by 2030. Since the pace of decline of neonatal mortality is very slow, the focus of this new framework is targeted to end the preventable deaths of newborns so as to reduce the under 5 mortality by all countries to at least as low as 25 deaths/1000 live births. Currently 79 countries have an under 5 mortality rate above 25, and 47 of them will not meet the SDG target of 25 deaths/1000 live births by 2030 if they continue their current trend in reducing under 5 mortality. There is a lot of scope for reduction in under-fives mortality by addressing malnutrition, ARI, diarrhoea, measles and HIV/AIDS. In addition to it, malnutrition underlies 54% of all child deaths. Many of the above problems can be addressed through implementation of the IMCI strategy that was jointly developed by WHO and UNICEF. This strategy has three components which includes (a) improvements in case management skills of the health workers in childhood illnesses, (b) strengthening the health system for the effective management of childhood illnesses and (c) improvements in family and community practices. W.H.O. and UNICEF have identified 12 evidence based key practices in providing good home care to the child relating to the treatment or prevention of common childhood illnesses. These best practices will ensure reduction in morbidity and mortality and also promote healthy growth and development of the children.

These practices, which are recommended by WHO based on evidence justify their promotion and feasibility of scaling them up. These practices and the reasons for recommending them are summarized:

- 1. Complete full course of immunization to the children before their first birth day:-** All children should receive the full course of good quality immunization as per the national immunization schedule in a timely, safe and effective manner. DPT 3 is used as a proxy indicator to measure immunization coverage. In the decade between 1980 and 1990 global coverage had increased from 23% to 80% and in 2015 the median coverage was 87% (range 24-99%). There is regional variation and there are variations within the countries in the utilization of services. Reaching the last 20% has proved very difficult and expensive. These 20% of unimmunized children belong to families with large size, belong to low socio-economic status, low maternal education, lack of family awareness, bad experience with service, etc. Other inhibiting factors may include distance, long waiting time, high cost, faith, opinion of local influential leaders, etc. Measles coverage has improved from 74% (1998 level) to 85% in 2015 (range 22 -99). Most likely this has contributed to reduce measles deaths. Interventions to increase immunization coverage include improvement in the uptake, timing or completion of immunization through improved delivery system and utilization. Mission Indra Dhanush in India was implemented throughout Haryana to bolster immunization coverage in hard to reach populations. Improving immunization coverage has contributed to a reduction in the global burden of disease due to vaccine-preventable diseases from 23% in 1974 to 10% in 2000, and immunizations prevent an estimated three million child deaths a year. Gains in deaths averted have increased since the year 2000. The

achievements include eradication of polio, elimination of neonatal tetanus and a decline in measles. Rota virus vaccine is being added to the portfolio and pneumococcal vaccines are likely to be added. A combination of several strategies may be required for achieving high coverage. Appropriateness of strategy will depend on the context and nature of the coverage problem. National Immunization days have been found effective for the eradication of polio and effective strategies have been applied for the control of measles in many countries. However, innovative strategies should be worked out keeping the local situation in mind. Reaching the unreached and equity are a challenge to be addressed.

**2. Exclusive breast feeding for a period of six months:** - Breast milk is the best and complete diet for infants up to six months of age. It is easily digested and uncontaminated. Since it contains antibacterial and antiviral agents, it protects against diseases by developing the immune system (Hanson 2000). *Exclusive breast feeding is defined as no other food or drink, not even water except breast milk but allows infants to receive drops and syrups (vitamins, minerals and medicines-WHO 2001a).* On the basis of evidence, WHO recommends exclusive breast feeding for a period of six months. Evidence suggests that exclusive breast feeding for a period of six months provides protection against gastrointestinal tract infections (clinical and sub clinical) and such infants do not show growth deficit. Therefore, mothers must decide to breast feed, learn its techniques (correct position and attachment), and overcome difficulties that they may face. Mothers should also be ready to counter the cultural norms that impede successful breast feeding. Despite the efforts made, exclusive breast feeding for a period of six months is very low. The median coverage of early initiation of breast feeding is 50% (range 17- 95%) and exclusive breast feeding less than 6 months of age is only 39% (range 3 – 85%, Countdown to 2015). A meta analysis found that breastfed infants under two months of age are six times less likely to die of an infectious disease than non breastfed infants (WHO, 2004). Evidence also suggests that breast feeding could reduce diarrhoea mortality by 24-27% and morbidity by 8-20% in infants 0-5 months (Feachem and Koblinsky, 1984) and could prevent 3% of pneumonia deaths (Victoria et.al.1999). It protects against obesity. It has also long term impact on cognitive development (Anderson, Johnston and Remley,1999). Interventions to promote breast feeding are focused around changing hospital practices (0-43% difference in exclusive breast feeding), and education/counselling (4-64% difference in exclusive breast feeding-Green,1999). In terms of counselling, a meta analysis found that women who received lay support were less likely to stop exclusive breast feeding than those who received no support, but there was no significant difference between those who received professional support and those who received no support. Peer counselling appears to have greater impact on exclusive breast feeding than support from professionals (Sikorsky et al.2002). Exclusive breast feeding has also been shown to improve weight for length and weight for age. Baby Friendly Hospitals and community based intervention strategies should provide support to the mother that is accessible, timely and specific.

**3. Nutrition and energy rich complementary feeding at six month of age and continuation of breast feeding up to two years or more:** - Childhood malnutrition is still a common problem in the developing countries and is a direct or indirect cause of more than 50% of childhood mortality. Breast milk continues to be a source of key nutrients including Vitamin A (Mahalanabis, 1991), Calcium and Protein even during the second year of life and provides protection against infectious diseases (Brown, Allen and Dewey, 1998). But after six months age, it alone does not meet the nutrient requirements of the child. Therefore, nutritious and energy rich complementary feeding should be given. There is a strong association between complementary feeding and mortality reduction in children 6-11months age. Observational studies indicate that improving feeding practices could save upto 800,000 lives per year (WHO, 1998). Five efficacy trials to improve intake of complementary feeding found improvements in growth in terms of weight for age and height for age. These growth improvements translate in to a reduction in the prevalence of malnutrition up to 20% at one year of age and a reduction in deaths associated with malnutrition between 2%-13% (Caulfield, Huffman and

Piwoz,1999) . Nutritional supplement has also a significant impact on long term developmental outcomes in malnourished children in developing countries. However, an analysis of data from 52 countdown countries shows that the median coverage of introduction of solid, semisolid or soft foods is 67% (range 21 – 95%). Programs demonstrate that it is possible to prepare nutritious and energy rich complementary food in diverse cultural settings, poor mothers are willing to prepare new foods for their children, and their children are willing to eat them. But they face time and resource constraints (WHO,2004).

- 4. Ensure that children get adequate amount of micronutrients particularly Vitamin A, Iron and Zinc:** - Vitamin A, iron and zinc are essential for the healthy growth and development of the child. This can be achieved either in their diet or through supplementation. Iodine, the fourth essential micronutrient deficiency is a leading cause of mental retardation is being tackled through the policy of universal iodization of salt. Vitamin A deficiency affects over 100 million pre school age children (UNICEF, 1998). It is crucial for effective immune system functioning. Severe vitamin A deficiency causes eye damage which is manifested as night blindness and xerophthalmia. If this is not treated, can lead to permanent blindness. Repletion of vitamin A status is strongly associated with improved immune function and reduced risk of infection and death. Evidence shows that vitamin A supplementation has reduced mortality by 23% among children aged six months to five years. It also reduces severe morbidity (Beaton et al,1993).. The median average for Vitamin A supplementation is 88% (range 0-99%) in 2015. Tackling of Vitamin A Deficiency requires supplementation and/or fortification. Interventions to improve vitamin A intake in the diet alone will not be sufficient.

Iron deficiency is the most prevalent of the micronutrient deficiencies. About one half of all preschool children have iron deficiency anaemia (IDA).IDA is associated with reduced work capacity in children and reduced work productivity in adults (Grantham- McGregor and Ani,1999) and also result in growth impairment , lethargy, and anorexia (Michaelsen et al.,2000). Severe IDA can be associated with increased mortality. Benefits of improving iron intake include improved attention span and appetite. But impact of iron supplementation on growth is variable. Evidence of iron supplementation on child development is inconsistent. Reducing the prevalence of IDA is likely to be achieved only through supplementation or fortification. Iron ‘sprinkles’ are as efficacious as iron drops, for the treatment of anaemia in young children. Vehicles that have been used for general fortification with iron in the developing world include wheat flour, sugar and salt.

Zinc deficiency is estimated at 31% globally, and is widespread in countries. Repletion of zinc stores improves immune function, reduces diarrhoea and can result in improved growth and psychomotor function (WHO,2004). Randomized controlled trials have shown that zinc supplementation of young children in developing countries can substantially reduce their rates of diarrhoea and pneumonia (Bhutta et al., 1999). Studies also suggest that zinc supplementation reduces the incidence of malaria and improves growth. It may be difficult to meet the zinc requirements from food during the period of complementary feeding. Supplementation and/or fortification may be especially useful during this period.

Community demand for and acceptance of supplements or fortified products cannot be taken for granted. Supplementation and fortification programmes need to be accompanied by promotion and communication activities to promote behaviour change.

- 5. Safe disposal of faeces including that of children and hand washing:** - 90% of child diarrhoea is the result of poor sanitation and inadequate personal hygiene. Current hand washing behaviours are poor, with as few as 2% of mothers washing their hands after defecation in some settings. Hand washing interventions reduced diarrhoeal incidence by a median of 33% (range11–89%- WHO,2004). The impact was higher in studies that targeted hand washing alone rather than as part of a package of

behaviours. Large-scale hand washing promotion programmes have been effective in initiating behaviour change. However, concerns still exist about feasibility because of the complexity of the behaviour and the resources required. Six rigorous observational studies demonstrated a median reduction of 55% (range 20–82%) in all-cause child mortality associated with improved access to sanitation facilities. Little is known about the impact of disposing of faeces in the absence of latrines (WHO,2004). The median coverage of improved sanitation facilities (total) amongst the countdown countries in 2015 is only 42% (range 7 – 100%-Countdown to 2015).

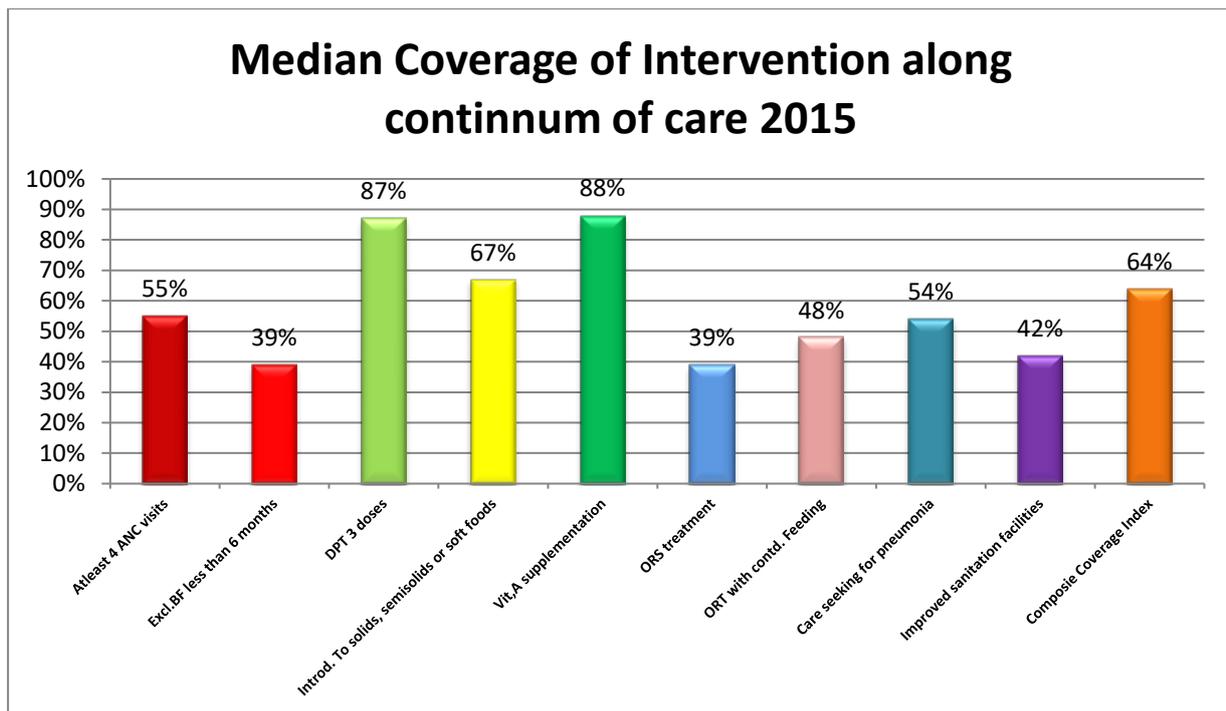
- 6. Ensure that the child sleeps under insecticide treated bed net to prevent malaria in malaria endemic areas:-** Malaria accounts for 9% of all childhood mortality and is an important and growing health and development problem. Insecticide treated bed nets (ITNs) prevent malaria because they kill any mosquitoes that land on them and create a barrier between people and mosquitoes during the night. Several countries in sub-Saharan Africa report household ownership of bed nets of less than 10%. Bed nets are associated with a 17% reduction in child mortality) and in areas of stable malaria ITNs reduce the incidence of mild malaria by up to 48%. In 2015 the median coverage of children sleeping under insecticide treated bed net (ITN) amongst 42 countdown countries is only 38% (range 10-74%). Social marketing can increase ITN use by as much as 50% and child survival by as much as 25% (WHO,2004). However social marketing on scale is a challenge.
- 7. Continue feeding and offer more fluid including breast milk during illness:** - Children require increased food and fluids during illness to prevent malnutrition and dehydration. Randomized control trials have found that feeding nutritionally complete diets to children with diarrhoea increases net energy and nutrient absorption without affecting stool output or the efficacy of ORS (Alam et al.,1992). Feeding locally available foods does not increase duration of diarrhoea. During illness, breast feeding is more acceptable than complimentary foods. The median coverage of oral rehydration with continued feeding was only 48% (range 12-67%) amongst 54 countdown countries (Countdown to 2015). No studies were located exploring the impact of interventions to improve feeding and giving fluids during illness on mortality or morbidity. Counselling interventions can improve behaviour but there is little evidence about how best to scale up the interventions.
- 8. Appropriate home treatment for infection:** - Not all infections are to be treated by health care professionals. Uncomplicated diarrhoea, malaria and mild local infections can be managed at home. Appropriate home treatment includes recognition, prompt and correct use of treatments, avoiding ineffective and harmful treatments and continuing feeding during illness. If s/he does not show signs of improvement, take him/her to an appropriate facility well in time. ORT can prevent dehydration from watery diarrhoea in all except in most severe cases. In a study in Brazil, ORT is estimated to have contributed to 79% of decrease in diarrhoeal deaths (Victora et al, 2000). Many of the countries manufacture, procure and supply ORS under the national control of diarrhoeal diseases program. Interventions to improve home treatment of malaria-related fevers by training mothers and increasing access to treatment have had variable impacts on mortality and morbidity, but have the potential to have a large impact, with one well-conducted study reporting a 41% mortality reduction (Kidane and Morrow, 2000). Cost of ORS, antimalarials and antipyretics and access to viable delivery systems remain major constraints for many developing countries. To ensure success, interventions need to include social marketing approaches and act at several levels, of health care delivery. Simple and appropriate dosing advice that enables correct use at the community level is especially important. Appropriate care seeking involves – recognition of the need for outside treatment, no delay in care, and care is sought from an appropriate health facility or provider. Untreated infections are a major cause of childhood mortality and morbidity in developing countries. Studies examining factors contributing to child deaths have found poor care-seeking implicated in 6–70% of deaths; a high number of deaths has also been attributed to delays in care-seeking. It is disheartening to note that the median coverage for first line antimalarial treatment and ORS treatment amongst the countdown

countries was 34% (range 3 -92%) and 39% range (11 – 94%) respectively in 2015. Care seeking for symptoms of pneumonia was 54% (range 26 – 94%-Countdown to 2015 Final Report). Mother-support groups and village volunteers are potential intervention channels but effectiveness is not widely explored. Interventions are likely to be more successful if they:— focus on strengthening the capacity of caregivers to recognize symptoms that they can see but do not consider as abnormal or dangerous, incorporate local health beliefs, traditional practices and illness classification systems. The impact of interventions to improve care-seeking relies on a high quality of care, and interventions must consider the type of providers utilized. Appropriate care-seeking is of particular importance in areas where access to health services is limited, because it is in these areas that caregivers would benefit most from being able to discern which episodes really need to be taken to the health centre.

- 9. Timely recognition of danger signs and appropriate response:** - Appropriate response to illnesses includes:- (a) recognition of illness, (b) classification of illness on the basis of its severity and (c) decision for timely treatment at home or at an appropriate facility or by a qualified health care provider. A large number of children who die without ever reaching a health facility show the low prevalence of appropriate care seeking. Results from nine studies show that a median of 23% (range 7 – 72%) fatally ill children were never taken to a health facility. Poor care seeking were implicated in 6-70% of deaths. Formative research done in Mexico and Ghana identified Mothers Support Groups and village volunteers as potential intervention channels. It is important to recognize signs of illnesses and incorporate local health beliefs, traditional health care practices and illness classification system.
- 10. Compliance to health workers advice about treatment, follow up and referral:-** Many childhood illnesses can be effectively managed at home on the basis of evidence based guidelines for treatment, follow up and referral (e.g. IMCI). Treatment can be effective only when care givers adhere to the advice of the care provider. Adherence includes: - (a) taking prescribed medicines in right quantity, (b) taking prescribed medicine in right time and (c) returning for follow up / referral visits as advised. Adherence depends on knowledge, attitudes, family support and therapy characteristics. In developing countries it ranges from 40–93% (Reyes et al, 1997). Non adherence may lead to incomplete treatment, therapy failure, drug resistance and the later misuse of leftover medicines. Community interventions to improve adherence should include materials and messages that consider local perceptions and beliefs, involve simple messages, and provide medicines in formulations that are acceptable and easy to use (WHO, 2004).
- 11. Promote mental and social development by addressing child’s needs for care, through play and communication and providing a stimulating environment:** - There is hardly any data available regarding actual prevalence of developmental delays in children in developing countries. However, in more than half of Countdown countries, stunting (a sign of inadequate diet and repeated illness) affects at least 30% of children under age 5, and wasting (a marker of acute malnutrition) affects at least 5%. Almost half of all child deaths are attributable to under nutrition (Countdown to 2015 Final Report). This points towards an uncongenial environment. Low birth weight infants, orphans, neglected children and children belonging to low socio economic strata are also at the risk of developmental delays. Moreover, the impact of experience during infancy and childhood on cognitive ability is more influential than the influence of heredity. Parents in developing countries lack adequate knowledge and skill relating to early care for child development and at the same time they receive little formal assistance with child rearing. There is extensive scientific basis for the benefits of home and centre based stimulation on early childhood development. Interventions that combine home and centre stimulation or stimulation and nutritional supplementation have a greater impact than either one alone (WHO,2004). Interventions that utilize more than one delivery channel appear to have the greatest impact. Exposure to intensive interventions for a period of two to five years is felt to be needed for long lasting impact. Interventions are found to be more successful if they target those

who are the most in need like low birth weight infants, sick children, orphans, neglected children and children belonging to low socioeconomic strata.

**12. Ensure that the pregnant women get adequate and appropriate quality antenatal care:** - It includes:- (a) at least four antenatal contacts with an appropriate health care provider, (b) recommended doses of tetanus toxoid vaccination and (c) iron and folic acid tablets. In addition to it, mother needs family and community support for seeking care at the time of delivery, during post natal and lactation period. A good quality antenatal care aims at detecting and managing existing conditions, detecting and managing complications and preventing problems which will reduce maternal and infant mortality and morbidity. Observational studies tend to show that women who receive antenatal care have lower maternal and perinatal mortality and have better pregnancy outcomes (Mavalankar, Trivedi and Gray, 1991; Galvan et al. 2001). Amongst the Countdown countries the median coverage for antenatal care (at least one visit) and antenatal care (at least four visits) was 90% (range 40-100%) and 55% (range 15-95%) respectively in 2015. Similarly, the skilled attendant at delivery was 65% (range 16-100%). Interventions to improve the coverage of antenatal care should focus on improving the delivery system which includes accessibility, cost, and waiting time and second, improving utilization through community mobilization and mass communication campaign. However, no intervention studies were found which could show comparative results of the group receiving ANC and the group receiving no ANC. The role of ANC package in reducing maternal and infant mortality and morbidity is limited.



(Data source: - Countdown Report, 2015. The composite coverage index (CCI) is weighted average of eight interventions along the continuum of care that have been available in most countries for at least a decade. The interventions include demand for family planning satisfied, at least one ante natal care visit, skilled attendant at delivery, three immunization indicators (DPT, tuberculosis and first dose of measles), oral rehydration therapy for diarrhoea and care seeking for pneumonia. It is calculated as:-

$$CCI = 1/4(FPS + \frac{SBA + ANCS}{2} + \frac{2DPT3 + MSL + BCG}{4} + \frac{ORT + CPNM}{2})$$

## Key points

- Maternal and child survival have shown remarkable improvement during the MDG era. Both have reduced nearly by half from the 1990 level. However, MDG targets 4 and 5 remain mostly unmet.
- Coverage of key interventions across the continuum of care remains unacceptably low. There is a wide variation amongst the countdown countries. Services that require contact with a functional system have lagged the most. Family practices need focus.
- Regarding the 12 key practices which this article focuses only vaccination (DPT 3 87%, 1<sup>st</sup> dose of measles 85%) and supplementation of Vitamin a (88%) have achieved substantial improvements. However, most of the interventions ( exclusive breast feeding, introduction to solids, semisolids or soft foods, treatment with ORS, feeding during illness, care seeking for symptoms of pneumonia, improved sanitation) still fail to reach nearly half of the women and children who need them the most.
- Though coverage equity has shown improvement, it still remains a hard challenge in almost all the countdown countries. Overall coverage improves only when the countries focus on reducing inequity.
- Appropriate area and country specific interventions, effective monitoring and support system both from government and non governmental agencies, financial support is required to complete the incomplete work of MDG era during the SDG era.

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