

Book
03

PUBLIC HEALTH RESOURCE NETWORK



PHRN

Accelerating Child Survival



Book 3

Public Health Resource Network

Accelerating Child Survival



PHRN

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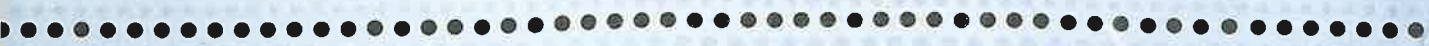
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Preface

Public Health Resource Network

The National Rural Health Mission's vision of a national programme planned at the district level, and if possible at the village level, needs an exponential increase in capacities across the board. The NRHM has initiated many steps in this direction. However, given the vastness and diversity of the country and the rigidities of the planning and implementing structures, one needs to supplement the official national mission led process with many varied, creative and massive endeavors from state governments, health resource centers, different professional sections and different sections of civil society.

This initiative, called the Public Health Resource Network (PHRN) aims to provide support to public health practitioners working in the districts in all aspects of district health planning and public health management. The central element of this initiative is a capacity building effort structured as a distance learning programme. This distance learning programme is not a substitute to formal professional public health training and it does not carry with it any guarantee of increased employment or career options. It is meant to support individuals and organisations both within and outside the health department who are committed to work for a more equitable and effective public health system. This programme complements official training and education programmes through an open-ended, more informal and immediate reaching out with information, tools and a diversity of programme options and perspectives.

The course faculty and editors of the modules are drawn up exclusively from those who have been active in various states in providing support to governments and non governmental organisations in health and related sectors. This



programme itself is being organised primarily by a number of agencies already providing resource support to states on different aspects of NRHM programmes.

A Mission needs Missionaries, and it needs them where the challenges are greatest- in the remote and most underdeveloped areas of the northern and eastern states, and indeed in all the under-served areas of all the states. A Health Mission needs these missionaries to also be professionals, where being a professional is not one more form of privilege- but a competence that anyone willing to put in the time and effort – and a little expense – can acquire! Thus the contact programmes at district, regional and state level would evolve into mechanisms of sharing of resources, and building mutual solidarity amongst those who work for change, and of those who work in the health sector because they seek to work for the poor. The true test of the programme is thus not the number of certificates that we issue but the better quality of district plans, a higher motivation of district teams and eventually better health outcomes in the district. The immediate context is the National Rural Health Mission. But hopefully the voluntary network that emerges will contribute over the years to the evolution of a network of district and block level resource groups who provide technical support to all efforts at decentralised planning in governance and to all societal efforts towards an equitable and just society.

In this book, the third volume of the PHRN. series, we discuss the programmes related to acceleration of child survival. More than any other area of public health, this is one area where evidence based choice of strategy tailored to specific context could make a huge difference. We look at a diversity of seven best practices - almost all of them home grown with little or no contribution from international public health citadels, which have made a major measurable difference in outcomes. Each one of these best practices could be used by a proactive district health planner to make a dramatic difference in a five year period. We note however that no single district has tried all these best practices together. We also note that the only strategy on our "best practice" list that has been so far made mandatory for all districts in IMNCI, which incidentally is the only best practice with an international origin.

We plan to update and revise these books upon the feedback we receive from the districts. The PHRN. looks forward to your learning from these books as well as your participation in the creation of future editions of these books. As we have shown in this volume, the best practices have almost invariably emerged from within our own districts and states, and PHRN. would be a part of consciously continuing this tradition.

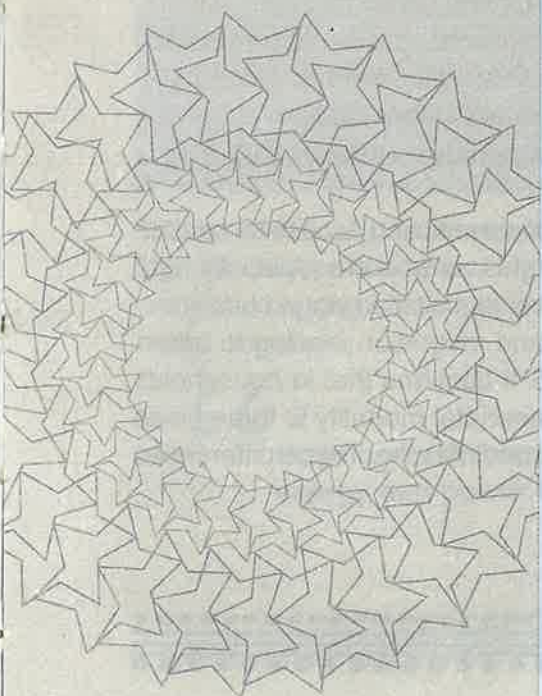
Dr. T. Sundararaman
PHRN Programme Coordinator



Lesson ONE

The Socio-Medical Determinants of Child Health

In this lesson we shall discuss:

- What the common medical causes of child mortality are
 - What the social determinants of child mortality are and how they relate to medical causes
- 
- 

INTRODUCTION

The state of health, nutrition and mortality amongst children are extremely sensitive indicators, not just for the situation of children in any given society, but also for its state of development on the whole. This is a reflection and validation of the complex social economic and cultural factors that have impact upon them. In particular, the 'Under-Five Mortality Rate (U5MR)' is considered to have a close correlation with these socio-economic factors. Of the U5MR of 85, deaths within the first year (Infant Mortality Rate or IMR) comprise about 60. Of these 60, about 40 happen within the first month of life (Neonatal Mortality Rate or NMR). Child Mortality refers to deaths of children between the ages of 1 year and 5 years, i.e. excluding Infant Mortality. Factors relating to Neonatal Mortality are somewhat specific and have been dealt with in a separate section (Lesson No. 4). Statistics and data play an important role in analyzing the status of the morbidity and mortality of children as also in planning and evaluating programmes for intervention. These too have been discussed at length in a different section (Lesson No. 2).

The two most important overarching determinants of child mortality, predictably, are poverty and gender with all their consequences on nutrition, access to health care, environment and education. Other social determinants like caste, religion, and culture also play a significant role.

POVERTY

India is seeing an era of unprecedented economic growth as measured by standard economic indices. Yet, improvements in all child mortality indices are showing clear stagnation. In decade of 1971-81, IMR had declined by 29 points and in 1981-91 the IMR fall was by 30 per 1000. But in the years of the so-called structural adjustment and reforms, from 1991 to 2001, the rate of decline plummeted to only 14 per 1000, or less than half of the previous decade's decline. In this current period of slow decline, infant mortality rate has dropped by only 3 per 1,000 (see section on data) in the last 4 years. Thus, infant and child mortality, malnutrition rates etc. illuminate the situation of poverty and inequity, in a way that rising sex figures cannot compensate for. This 'poverty' can be further deconstructed to relate directly to food security, access to health care facilities, education of parents and access to 'correct' information (as against media messages that are guided by markets), rights as workers (specially right to maternity leave and compensation, control over working hours and leave, exploitative wage conditions, lack of child care services on worksites), displacement, dispossession and migration leading to urban habitats that are short on space, materials, safety and sanitation. NFHS II confirms that in households with low standard of living, the neonatal mortality is two times, the post-neonatal mortality is three times and 1-4 year child mortality is five times that of households with high standard of living. These differences are more obvious in urban than in rural areas.

Two-thirds of all child deaths occur in 13 countries. Of these, only two; Bangladesh and Indonesia, are on track for the MDG target. Another four; China, India, Niger and Pakistan; will achieve the goal between 2015 and 2040.

Human Development Report 2005



Also, measurements of poverty have become another area requiring constant struggle to ensure that the poor are counted. Increasingly, the designation of BPL (Below Poverty Line) is becoming the pre requisite to extract entitlements from the State such as that of free health care services, food subsidies such as the PDS and access to various welfare schemes even for children. This leaves out the majority of poor children and does not even target those in extreme poverty effectively.

GENDER

Where the issue of gender and the status of women is concerned, women are the bearers and main care-givers of all children male or female. Thus it is self evident that the health that they maintain, the power they wield, the decisions they are able to take, their self esteem and values, the support they receive as child care-givers, while balancing onerous roles as workers and home makers, all impact *all* children. Still, the impact on the girl child is even greater because patriarchy is transmitted from woman to woman and social conditioning created at the earliest of ages. Whether it be the deafening silence that surrounds the birth of the girl child, the shorter duration of breast feeding, the delays in getting to health care services, the discrimination in feeding, the early induction into housework and care of younger siblings or the curtailment of education, the girl child is disempowered in these early years and prepared to be a 'woman' in a 'man's' world.

Being the main care-giver for children, the woman's own health and well being pertains directly to the health of the newborn as well as her ability to give care in the vital initial years of life when the child is most vulnerable and sets the foundations for her entire future in terms of growth and development. The 'care-giver' role is so steeped in invisibility, so poorly understood and so much taken for granted, that interventions to provide support are largely missing even as huge bodies of work now exist to show the relationships of women's work, time, energy and power to the health of children. It is this factor that gives rise to the so called **South Asian Enigma**, where poorer populations of non-South Asian countries show a better status of child nutrition than South Asian countries with relation to what can be expected in correlation to their respective GDPs. This difference is attributed to relatively greater situation of gender inequity in the South Asian context. Interestingly India still has less child deaths, and this has been attributed to its relatively better state of health care services.

More specifically, the health of the woman before and during pregnancy relates directly to the birth weight of the children she bears. The prevalence of low birth weight in India is close to 30%, and this in turn has a direct bearing on neonatal morbidity and mortality as well as adult chronic diseases like heart disease and diabetes.



Huge bodies of work now exist to show the relationships of women's work, time, energy and power to the health of children.



It is well established that exclusive breast feeding for a period of 6 months contributes significantly to the normal growth and development of the newborn and also prevents malnutrition and killer diseases like diarrhea and pneumonia. However, this requires continuous proximity between mother and child for that period and much expenditure of time and effort on the part of the mother. In the absence of support within the home or by systems such as maternity entitlements and crèches on worksites, this becomes untenable. Though the woman does not have to be the main care-giver for the next and critical phase of 6 months to 3 years, she usually is. Again, economic and other compulsions take precedence of the time and energy she is able to commit to child care. Health care seeking behaviour is also conditioned by economics and her decision making power. Of course, culture and tradition have a close connection with child care practices which cannot be denied, but our collective experience suggests that the practical difficulties and struggles of daily life are over riding and that there is a significant underestimation of how much time, trouble and expense needs to go into caring for children and the maintenance of their health. [As an example, a newborn would feed for a cumulative four hours in a day. This is over and above the time taken to bathe, clean and other wise interact with the baby. A one year old should be fed about five times a day with appropriate food and given about two milk feeds as well. This time expenditure must be seen in juxtaposition to what we know about the daily schedules of poor women who spend up to 18 hours a day in housework and wage work.] Women have been seen going back to work between a few days to few weeks after delivery, since no paid leave is forthcoming in casual work. Babies are often left in the care of older siblings often with an unsterile bottle full of diluted milk for the day .

All the factors related to gender are further exacerbated in the situation of early marriage and motherhood resulting in much higher infant mortalities in children born to mothers younger than 20 years. Short birth intervals and higher birth orders (excluding first- born children) also contribute significantly to higher child mortalities.

In this connection another policy impediment (like the definition of poverty as BPL) to improvements in child mortality is the Two Child Norm. As part of coercive population policies, this is also a major limiting factor in the access of entitlements as reflected in the fact that maternity entitlements and many subsidised services are only available for the first two children, as though subsequent pregnancies and children do not contribute to MMR and Under-5 Child Mortality Rate. Even the Janani Suraksha Yojana was initially limited by the 2 child norm which was later removed due to public pressure.

WOMEN'S EDUCATION

Women's literacy levels are known to be one of the most determinants with a positive correlation with child survival and often quoted as one of the factors in the relative success of states like Kerala in this regard.

The NFHS II confirms that all components of child mortality are observed to decline with increasing maternal education. All child mortality rates are higher amongst illiterate mothers compared to mothers



who had completed high school education. The infant mortality rate for children of illiterate mothers is one and a half times the rate for children of mothers who are literate, and is two and a half times the rate for children whose mothers have at least completed high school.

NUTRITION AND MALNUTRITION

The roots of child mortality lie in determinants described above. However, it cannot be overemphasised that a major underlying factor of disease and death amongst children is the situation of chronic hunger and malnutrition. In fact, poverty and gender work mostly through the creation of malnutrition as far as impact on child mortality is concerned.

As described, about one third of our children are born already compromised with low birth weight. This, combined with poor breast feeding practices and complementary feeding practices due to lack of support and information, results in one in two children being malnourished and stunted. The resulting vulnerability to disease further reinforces malnutrition which in turn creates further vulnerability to disease setting up a vicious cycle leading ultimately to death in many cases.

Predictive studies show that more than 50% of deaths amongst children have malnutrition as an underlying factor. More specifically, studies predict that not breastfeeding can increase the risk of death up to 6 times from diarrhea and up to 2.4 times from pneumonia in babies under 6 months and 2 times in babies aged 6 – 23 months!¹

In the year 2003, *The Lancet* published a child survival series, which showed proven and practical interventions for preventing or treating main cause of death among children younger than five. According to this analysis, breastfeeding was identified as the single most effective preventive intervention, which could prevent 13 per cent to 16 per cent of all childhood deaths. Adequate complementary feeding between 6 months to 24 months could prevent an additional six per cent of deaths. If we adjust for the fact that most children who die, do so in the first month, the percentage of 6 to 24 months old children whose deaths could have been prevented through adequate complementary feeding is even higher.

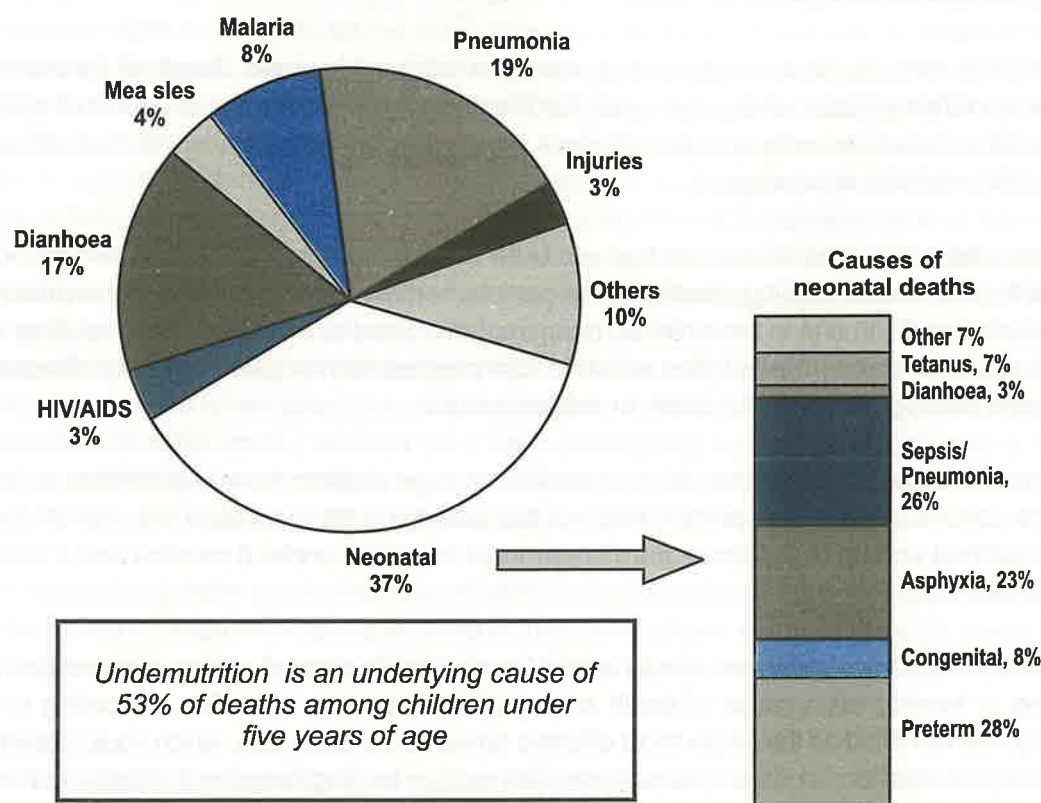
In a study of over 10,000 babies from rural Ghana, it was shown that promotion of early initiation of breastfeeding has the potential to make a major contribution to the achievement of the child survival millennium development goal; *16% of neonatal deaths could be saved if all infants were breastfed from day 1 and 22% if breastfeeding started within the first hour.*

“

There is a significant underestimation of how much time, trouble and expense needs to go into caring for children and the maintenance of their health.

”

Major causes of death among children under 5 years of age and neonates in the world, 2000-2003



Source: World Health Organisation

DISEASES LEADING TO DEATHS IN CHILDREN

More than 50% of these deaths are attributed to diarrhea, acute respiratory illness, malaria, or measles, conditions that are either preventable or treatable with low-cost interventions.

1. **Diarrhea:** Diarrhea accounts for about one fifth of child deaths in India. Its socio – medical determinants include malnutrition (poor breast feeding and weaning practices with little support), lack of safe water, lack of sanitation, lack of information about correct home management of diarrhea with oral rehydration and continued feeding, lack of access to health care services



including pediatricians and antibiotics for dysentery. 90% of diarrheal deaths are said to be preventable.

2. **Pneumonia:** another fifth of Under-5 child mortality is contributed by pneumonia. Its socio-medical determinants include malnutrition (poor breast feeding and weaning practices with little support), lack of information amongst care-givers to be able to recognise the illness and seek care, lack of immunisation and lack of access to health care services for correct management with antibiotics. About 65% of deaths from pneumonia are considered preventable.
3. **Measles:** Measles contributes a mortality of 1% with similar determinants. However, the main point about measles deaths is that they are almost 100% preventable by immunisation. Thus, the measles case rate is a clear indictment of lack of access to and outreach by health care services in any system. The other issue of significance is that malnutrition contributes significantly to deaths due to measles and in turn, measles is a significant cause of malnutrition. The risk of death from measles is estimated to be 300 times higher in a grade III malnourished child as compared to a normal child.
4. **Malaria:** The contribution of this disease varies according to the degree of prevalence of this disease, especially of the falciparum variety in a given region. But going by the global figure of 8%, one can surmise that in many local areas it would be much higher. Small children are more susceptible to the infection and the infection has more severe outcomes in them. Even where there is no direct mortality infection worsens their malnutrition levels, often leads to a syndrome of enlarged spleen and anemia (chronic malaria) which debilitates and pre-disposes them to other infections.
5. **HIV/AIDS and children:** According to UNAIDS, 120,000 Indian children were living with the virus in 2004. The National AIDS Control Organisation (NACO) estimated that around 60,000 new infections occurred last year. The most common cause of infection among children is the Mother-To-Child Transmission (MTCT) and, with 1.36 million women infected, the infection among children can go higher, unless effective programmes are put in place. Other than MTCT, sexual contact, including sexual abuse; blood transfusion; and un-sterilised syringes, including injectable drug use are also sources of infection among children. Although children are considered a priority category for distribution of free ARV, till recently there was no pediatric ARV formulation for young children under the Government rollout plan, making their access to ARV difficult. Rough estimates suggest India has around 1-1.2 million AIDS orphans who are also at risk for higher mortality. The exact number of children who die from HIV/AIDS or related causes is not known and most would be dying after years. So though it contributes to mortality in the older child its contribution to deaths in the first year is more limited. Nevertheless it is a major issue of national importance.
6. **Tuberculosis and Children:** Tuberculosis continues to be an important communicable disease that causes mortality amongst Indian children though the absolute numbers are not very high. Some of the main issues in the poor management of children with tuberculosis are that they are not part of the current paradigm of treatment; the criteria of diagnosis is not standardised within the DOTS programme and that there are no pediatric formulations available for anti tubercular

(ATT) drugs within the public health care systems. However every time there is a child which is not putting on weight despite improving feeding practices, childhood tuberculosis is one of the first considerations that a medical doctor or trained nurse must rule out. If there is an adult with known tuberculosis in the household the diagnosis becomes much more likely.

STATE OF HEALTH CARE SERVICES

It becomes self evident from the discussion above that health care services can potentially play a major role in being able to prevent children from dying. From adequate antenatal care, to facilities for safe delivery, immunisation, regular growth monitoring, effective health education of care-givers, management of common childhood diseases, facilities for care of Grade III and Grade IV malnutrition and intensive care for the sick child, the health care delivery system needs to address promotion of child health and management of sick children. It is important to recognise that the care being provided at every level needs to be of adequate quality and also have effective link up with referral services for it to be meaningful.

OTHER SERVICES

As mentioned above, systems for food security such as the PDS, integrated systems of care such as the ICDS, systems for access to safe water and sanitation, all have a major role in being able to prevent child mortality.

CASTE, CULTURE, RELIGION

Culture plays a significant role in all aspects of child care and is often overlooked when interventions are being designed to the detriment of their effectiveness. Its impact is most obvious in health and nutrition related practices around childbirth, infant and young child feeding, and use of indigenous forms of medicine,

Caste is one of the determinants of poverty and lack of 'power' and children below 3 years of age in scheduled tribes and scheduled castes are twice as likely to be malnourished than children in other groups.

Tribes partake of all the problems mentioned above as well as geographical isolation with its consequences of further lack of access to services

Communal strife has affected the lives of thousands of Indian children leaving many killed, orphaned, disabled and severely traumatised. The Gujarat riots of 2002, for example, left hundreds of children orphaned and thousands of children destabilised.

Regional insurgency also creates an atmosphere of violence and insecurity in which children survive (or



don't!). The situation in Jammu and Kashmir and the North East in particular bear testimony to this in the numbers of children killed or orphaned during skirmishes where the violence may often be inflicted by agencies of the State. The conflict situation in Dantewada (an area of very high malnutrition), which is pushing tens of thousands of families into protection/refugee camps and disrupting the social fabric not to speak of all service delivery, is another ongoing example of how conflicts take a heavy toll on child lives. Disasters, like the tsunami in the south eastern coastline on India in 2004 or the super-cyclone that hit Orissa, also take huge toll of children's lives.

There is also another category of children in difficult circumstances (such as children of migrant families, children of women in prison, etc) and of children without adult protection (such as street children or children in post disaster situations). These children require special measures to ensure protection and promotion of their rights.

Thus, it is clear that while the immediate cause of mortality in childhood is usually disease, the underlying factors point to serious issues of socio economic circumstances and inequalities. It is also clear that many of these factors are amenable to interventions that are known to be effective and neither too expensive nor too difficult to deploy. In such circumstances, it is unforgivable that the current state of childhood mortality be allowed to linger and treated as 'business as usual'. This area of concern should, instead, be declared a 'state of emergency' and tackled with focus and urgency.

Review Questions

1. Which are the most important determinants of child illness and death operating in your district and how?
2. What are the ways in which the status of women affects the health of children?
3. Which are the main illnesses causing deaths amongst children in your district?

Application Question

1. It should be clear from this lesson that prevention of illness and promotion of good health goes far beyond the medical management of disease. At district level, what departments, schemes and services need to 'converge' to be able to tackle the root causes of ill health?

Project Assignment

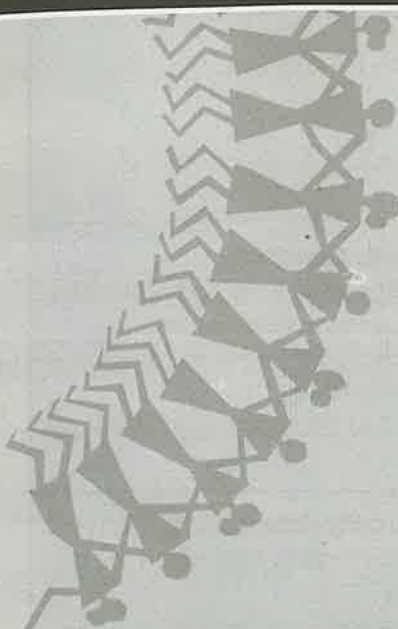
1. Interview a family (with sensitivity!) in which a child has died in the past. Try to identify all the socio economic factors that contributed to his death. Could his death have been prevented in the given circumstances? Can you think of some innovative approaches to prevent deaths such as these in the future? (feel free to create your own schemes!)

1. WHO Collaborative Study Team, Lancet 2000 and Arifeen et al., Pediatrics 2001



Lesson TWO

Child Health and Child Survival - Statistical Understandings



In this lesson we shall discuss:

- Definitions of key child health indicators
 - Current Status of Infant Mortality
 - Changes in IMR over time and the reasons behind these
 - Relationship between different components of Under-5 mortality and their change over time
 - IMR as an index of health inequity
- 

Definitions:	Rates:
Live Birth: is the complete expulsion or extraction from its mother of a product of conception irrespective of the duration of her pregnancy, which after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached, each product of such a birth is considered a live born.	
Infant Mortality: Death during the period from birth to the end of the first year.	Infant Mortality Rate(IMR): <u>Deaths under one year of age</u> * 1000 Live births in the same duration of time
Child Mortality: The death of a child anytime after the completion of 12 months (i.e first birthday) to the fifth birthday. (i.e completion of 60 months or five years of age)	Child Mortality Rate: <u>Deaths from 1 to 5th year of age</u> * 1000 Live births
Under-5 mortality: The death of any child anytime below the age of 5- that is before it reaches its fifth birthday (60 months).	Under-5 Mortality Rate (U5MR) This is the sum of infant mortality rate plus the child mortality rate.
Neonatal Mortality: These are deaths among live-births during the first 28 completed days of life.	Neonatal Mortality rate NMR or NNMR = <u>Neonatal deaths</u> * 1000 Live births
Early Neonatal Mortality: These are deaths among live-births during the first seven days of life. (after the seventh day but before 28 completed days is called late neonatal mortality.	Early Neonatal Mortality Rate(ENMR) = <u>Early neonatal deaths</u> * 1000 Live births
Perinatal Mortality: The perinatal period commences at 22 completed weeks (154 days) of gestation (the time when the birth weight is normally 500gm.) and ends at seven completed days after birth. (The duration of gestation is measured from the first day of the last menstrual period.) any fetal loss or neonatal death in this period constitutes prenatal mortality.	Perinatal Mortality Ratio (PNMR) = <u>Fetal deaths & early neonatal deaths</u> * 1000 Live births Perinatal Mortality Rate (PNMR) = <u>Fetal deaths & early neonatal deaths</u> * 1000 Total births
Fetal Death: Deadborn fetus :Still Birth: is the death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breathe or show any evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.	Still birth Rate (SBR) The number of foetal deaths divided by the sum of live births and foetal deaths occurring in the same population during the same time period.



WHAT IS THE CURRENT PROFILE IN INFANT MORTALITY RATE?

The latest and the most reliable of various data sources for the study of IMR is the SRS data. According to the SRS report of the year 2006, which gives the report of the situation in the year 2004, the IMR in the nation and in the states was as follows:

Table 2.1 : IMR status in India in 2004

States/Union Territories	Total	Rural	Urban
INDIA	58	64	40
Andhra Pradesh	59	65	39
Assam	66	69	38
Bihar	61	63	47
Chhattisgarh	60	61	52
Delhi	32	48	30
Gujarat	53	62	38
Haryana	61	66	47
Jammu & Kashmir	49	51	37
Jharkhand	49	51	34
Karnataka	49	54	38
Kerala	12	13	09
Madhya Pradesh	79	84	56
Maharashtra	36	42	27
Orissa	77	80	58
Punjab	45	50	36
Rajasthan	67	74	42
Tamil Nadu	41	45	35
Uttar Pradesh	72	75	53
West Bengal	40	42	32
Small states			
Arunachal Pradesh	38	39	17
Goa	17	17	16
Himachal Pradesh	51	53	23
Manipur	14	13	19
Meghalaya	54	55	43
Mizoram	19	23	13
Nagaland	17	17	16

Sikkim	32	33	20
Tripura	32	33	29
Uttaranchal	42	57	22
Union Territories			
Andaman and Nicobar Islands	19	22	11
Chandigarh	21	25	20
Dadar and Nagarhaveli	48	50	21
Daman Diu	37	39	35
Lakshadweep	30	24	37
Pondicherry	24	33	19

ABOUT THE SAMPLE REGISTRATION SYSTEM (SRS):

The Sample Registration System (SRS) is a large-scale demographic survey for providing reliable annual estimates of birth rate, death rate and other fertility & mortality indicators at the national and sub-national levels. Initiated on a pilot basis by the Office of the Registrar General, India in a few selected states in 1964-65, it became fully operational during 1969-70 with about 3700 sample units. The field investigation consists of continuous enumeration of births and deaths in selected sample units by resident part time enumerators, generally anganwadi workers & teachers, and an independent survey every six months by the computer-supervisors. The data obtained by these two independent functionaries are matched. The unmatched and partially matched events are re-verified in the field and thereafter an unduplicated count of births and deaths is obtained. The sample unit in rural areas is a village or a segment of it, if the village population is 2000 or more. In urban areas, the sampling unit is a census enumeration block with population ranging from 750 to 1000. The SRS sample is replaced every ten years based on the latest census frame. It had been a practice to stagger the replacement process over 2-3 years. However, the latest replacement has been carried out in one go.

Effective from January 2004, this sample is based on the 2001 Census frame. At present, SRS is operational in 7,597 sample units (4,433 rural and 3,164 urban) spread across all States and Union territories and covers about 1.3 million households and 6.73 million population. Some fluctuations in the vital rates for 2004 over previous year for certain states and union territories may largely be due to complete replacement of the sample in one go.

INTERPRETING THE IMR DATA

The all India IMR is thus 58 with the rural IMR at 64 and the urban IMR at 40.

Only nine states of the 29 states and 6 union territories have an IMR worse than the national average and most of these deaths are in the large populous Hindi speaking states of the north, once nicknamed the



BIMARU states. Of course other than the Bimaru states two other states especially Orissa and Assam do poorly. The nine poor performers are, in declining order, Madhya Pradesh (79), followed by Orissa (77), Uttar Pradesh (72), Rajasthan (67), Assam (66), Bihar (61), Haryana (61), Chhattisgarh (60) and Andhra Pradesh (59).

In rural IMR, only seven of the states are worse than the national average of 64, and these are the same as the states above except for Chhattisgarh and Bihar which are marginally better than the national average.

Being below the average is not in itself any satisfaction – for if we take Kerala, the best performing state as a benchmark of what is possible with the current levels of GDP and economic growth, then we can see that we have a long way to go. The IMR in Kerala is 12 with a rural IMR of 13 and urban IMR of 9 – which is comparable with the best figures internationally.

If we look at how many states are below the 10th Five-Year Plan target of an IMR of 40, then all 19 larger states except Delhi are at, or higher than that goal, and of the 19 smaller states and union territories, 4 are higher than that goal.

Changes in IMR over time

The other interesting dimension of IMR is to see change in IMR over time (Table 2. 2). Now we note that the pattern of IMR change has been that there was a rapid change from 129 to reach the 80s with about a decadal 30 point decline in IMR in the 1970s and in the 1980s, though the rate of change sharply declined thereafter and it was only 14 points in the 1990s.

Table 2.2 Changes in IMR over 5 year periods

Year	INFANT MORTALITY RATE			Decadal Change (total)
	Total	Rural	Urban	
1972	139	150	85	
1976	129	139	80	
1981	110	119	63	- 29
1986	96	105	62	
1991	80	87	53	-30
1996	72	77	46	
2001	66	72	42	-14
2004	58	64	40	

Source: SRS data

WHY THIS DECELERATION IN THE RATE OF DECLINE IN IMR IN 1990s AS COMPARED TO EARLIER DECADES ?

Three explanations have been put forth for these declines and fluctuations in rate of fall.

- a) **The “Low -Hanging Fruits” Explanation:** According to this explanation the initial decreases are like low hanging fruits – easier to pluck. Child mortality and post neonatal infant mortality may fall passively following increase in women’s education, or increased access to care or better awareness, better breast feeding, knowledge, better use of ORS in diarrhea etc. Changes in health seeking behaviour itself may contribute to even a fall in neonatal mortality. But after a point more difficult interventions like institutional care for the sick neonate are needed to secure further falls, and these prove to be like fruits higher up in the tree – more difficult to pluck – needing not only more effort but a different strategy as well. In Tamil Nadu the improvement up to an IMR of 50 was rapid, but then there has been stagnation for over a decade at IMR in the 40s. In Andhra Pradesh the IMR fell dramatically, by as much as 49 points in one 5-year period and then has remained stagnant at an IMR in the 60s-range for all of 15 years. This trend can be seen in many states. Child survival strategy tends to focus mainly on immunisation which can give no further reduction in IMR in a state like Tamil Nadu or Andhra or for that matter in any state where deaths due to vaccine preventable deaths are not high. The rise in institutional delivery should have been accompanied by better neonatal care – where over two thirds of child deaths occur – but on the ground this has not happened. Thus Tamil Nadu showed a very poor decline in neonatal mortality despite having almost 90% institutional delivery. Even in problems like malnutrition, and prompt care for diarrhea and acute respiratory infection there are gains made by changes in health seeking behaviour that come along with education and better access to curative care in public or private sector. But these are not going to lower the infant mortality rates in those sections – the poorest 20% of the population – which have fallen out of all health care. The net result – the crisis of declining rate of fall in IMR. We note that this explanation has its limits, for this flattening out has occurred in most states at very different levels of IMR. In Tamil Nadu it is in the 40s range, in Andhra Pradesh it is in the 60s range and in a state like Madhya Pradesh it is in the 70s range etc.
- b) **The Social Determinants Explanation:** The nineties was the period of structural adjustment and reforms. Even the World Bank in its 1991 report anticipated and called for a health care system that acts as a safety net which is needed to hold up the health statistics especially the IMR line, as the poor would pay a disproportionate price for the skewed growth expected. It is likely that this did indeed happen, as illustrated by indicators showing increasing inequity and persistent malnutrition. These negative development trends partly offset the gains made due to increased educational levels and better health care access. In states where health care access did not improve, the flattening of the slope was even more evident. Thus if we examine table 2.3



below we find that in the 5 year period of 1992 to 1997, in most states there is an abrupt flattening of the IMR decline curve – indeed in all states except Karnataka and Tamil Nadu. In contrast, the period of 1987 to 1992 has seen tremendous improvements in IMR perhaps reflecting the expansion of health programmes in the earlier five years and perhaps due to favorable social determinants.

- c) **Worsening Public Health System explanation:** There are reasons to believe that in many parts of India there was an actual decrease in access to public health system and a greater exclusion of the poor from any health care. Thus between NFHS- I (1993), NHFS- II (1999) and RCH key indicators study of 2003, there have been significant declines in immunisation achievements in many of the larger states. In 220 districts studied by IIPS between 1998 and 2003, full immunisation declined in 48.2% of the districts, remained stagnant in 43.2% of the districts and improved in only 8.6% of the districts. Since immunisation has been the most prominent part of the child survival strategies the declining outcome of immunisation is likely to be reflecting the overall access to child health care. Could it be that in the last 15 years, access to child health care services has decreased in many states?

Probably all three explanations are at work – but the contribution of each varies in each state. Each state would have to examine its pattern and then correlating with other figures, work out what are the current constraints to further lowering of infant mortality rate.

The learning that emerges is that a rapid rate of reduction from an IMR of about 90 to an IMR of about 50 is easier achieved than the reduction from 50 to 25. Also that the rate of decline can be affected by factors related to social determinants and the delivery of public health. It can even worsen in absolute terms as is now being seen in the urban areas of many states.

If we see the change in IMR per year in each state (in Table 2.3), we note two important findings:

- There has been a dramatic decline in rate of fall in most states between the five year period 1977 to 1982 and the years 1987 to 1992, and
- Secondly most states tend to have one, sometimes two rapid periods of decline, which then levels off.



A rapid rate of reduction from an IMR of about 90 to an IMR of about 50 is easier achieved than the reduction from 50 to 25.



Table 2.3 Average annual rates of change in infant mortality in five year periods

State/ India	1977-82	1982-87	1987-92	1992-97	1997-02
Andhra Pradesh	-9.8	1.3	-3.8	-1.2	0.0
Assam	-3.1	1.0	-6.4	0.3	-1.5
Bihar	N.A.	-0.7	-7.6	0.4	-3.3
Gujarat	-3.9	-1.9	-9.2	-0.1	-0.6
Haryana	-3.2	-1.8	-4.8	0.3	-1.8
Himachal	-6.6	3.6	-5.9	-1.3	-3.0
Karnataka	-4.9	2.4	-0.6	-6.0	1.2
Kerala	-7.4	-3.2	-12.7	-0.3	-5.7
Madhya Pradesh	-5.2	-2.1	-2.0	-2.6	-2.3
Maharashtra	-1.8	-2.2	-3.1	-3.0	-1.3
Orissa	-7.5	-1.2	-1.6	-3.7	-1.4
Punjab	-5.6	-3.4	-3.2	-1.1	-0.2
Rajasthan	-5.6	0.9	-5.5	0.9	-2.1
Tamil Nadu	-4.3	-2.3	-6.3	-0.5	-3.3
Uttar Pradesh	-2.2	-3.3	-6.6	-2.1	-0.7
West Bengal	N.A.	-3.8	-1.7	-3.9	-1.5
India.	-4.3	-1.9	-4.5	-1.2	-2.3

Source: Background Papers, Pg 156-7; National Commission on Macroeconomics and Health, MOHFW, Sept.2005.

CHILD MORTALITY, INFANT MORTALITY AND NEONATAL MORTALITY

Broadly we expect the decline in infant mortality to be reflective of the decline in child mortality and therefore of under-5 mortality as well as parallel reductions of neonatal mortality.

The experience is that the rate of child mortality declines much faster than the infant mortality rate. In turn the infant mortality rate declines faster than the neonatal and still birth death rates- but not much faster- the proportion of neonatal deaths contributing to infant deaths being almost constant. However neonatal mortality decline is the least slope on the graph.



Table 2.4: Child survival rates different component rates over the decades

	SBR	ENMR	NMR	PNMR	IMR	CMR	U5MR
1971	18	37	75	54	129	117	231
1981	11	44	70	41	110	87	188
1991	11	36	51	29	80	49	125
2001	9	27	40	26	66	28	93

Source: Sample Registration System

Note: SBR: Still birth rate; ENMR: early neonatal mortality rate (within 7days), NMR: Neonatal mortality rate; PNMR: Post neonatal mortality rate(28 days to 1 year).IMR: Infant mortality rate, CMR: Child mortality rate; U5MR: Under-5 mortality rate; $IMR = NMR + PNMR$; $U5MR = IMR + CMR$ (approx.)

Thus we can see that whereas NMR declines only by 35 points, IMR declined by 63 points and child mortality by 89 points.

We can examine this further in the table below:

Table: 2.5: Decadal Change in composition of mortality rates

	Early Neonatal Mortality as % of NMR	NMR as % of IMR	IMR as % of under-5 MR
1971	48.6	58.3	55.9
1981	63.6	63.3	58.9
1991	69.8	63.9	64.1
2001	67.5	60.6	71.3

Source: Calculated from SRS: Burden of Disease in India, National Commission on Macroeconomics and Health

Neonatal mortality as a percentage of infant mortality changes little but due to significant declines in 1 to 5 mortality, IMR as a percentage of under-5 child mortality changes significantly. Within this figure of neonatal mortality the proportion of early neonatal mortality which relates maximally to nature of assistance at child birth, has risen consistently over the years. This is consistent with the failure of any improvement – and indeed some increase by NHFS figures – in maternal mortality rates.

The decline in still birth rate in the table is interesting. A fair part of what gets recorded as still birth is actually neonatal mortality due to birth asphyxia. This decline may relate therefore not to reduction of still birth as such but either it being registered better as birth asphyxia or due to some degree of improvement in institutional care.

SOCIAL DETERMINANTS OF CHILD SURVIVAL

Since child deaths in contrast to maternal deaths are so frequent, it is easier to study mortality differentials in relation to social determinants. This is one of the most accurate forms of measuring health equity we have today.

Examining the table below we find the sharp divide between urban and rural infant mortality. When we adjust the rates for the size of the reference population we find that there is very little difference between urban and rural areas in child mortality rate and post neonatal mortality rate (only 3 points each), and almost twice as much differential in the neonatal mortality rates (7 points). This could be probably due to the easier access to institutional care in the urban area. However, even though post-neonatal mortality rate differentials are low – since in absolute numbers the rural population is so much higher, it is essential to address this section also.

Table 2.6: Adjusted neonatal, post neonatal, infant and child mortality rates for the ten year period preceeding reference date

	%of births during preceeding 35 months	Unadjusted Rates					Adjusted Rates				
		NMR	PNMR	IMR	CMR	U5MR	NMR	PNMR	IMR	CMR	U5MR
Rural	77.7	52	28	81	31	107	41	21	62	20	80
Urban	22.3	33	15	49	16	63	34	18	42	17	68
Mothers educational level											
0 class	54.4	57	32	89	36	120	49	28	76	29	102
1-7 class	22.2	42	20	62	17	77	38	19	56	18	73
8+ class	23.4	27	11	37	6	43	28	15	43	9	51
Ratio of 8 th class to 0 class (x:100)		47	34	42	17	36	57/100	54/100	57	31	50
Caste											
SC/ST	30.2	54	31	85	23	104	43	21	62	19	81
OBC/ Others	69.8	46	24	69	37	103	39	10	49	21	69

Source: Burden of Disease in India, National Commission on Macroeconomics and Health, pg 161.



The effect of educational levels on the mortality of the infant and young child is also worth studying. If we see the ratio between the rates in mothers educated up to the 8th class or beyond and compare it to the rates in those completely non-literate – after adjustment - we get a sense of what is the impact of education as a social determinant. Further by looking at the impact of education on different components of child survival we are able to see which components is affected more by changes in awareness and health seeking behaviour and which is less resistant to it.

We can now state the following:

- a. Child survival is much better in the mothers who are educated up to 8th class as compared to non-literate mothers and as compared to mothers with partial schooling.
- b. That the impact of education on child survival is maximal in the 1-5 year old child as compared to the changes in infants and neonates. This implies that much of neonatal death improvements are dependent on access to a package of medical interventions which have remained low for all sections- by educational class. Whereas in higher age groups much of the mortality could be reduced by health education and changes in health practices or by the levels of quality care that are currently accessible for the sick child.
- c. There is however very little difference between neonate and the post neonatal infant of the impact of education on child survival.

The impact of caste is assessed only on SC and ST taken together as compared to the rest. Predictably the situation is worse in SC/ST sections as regards the infant and the neonate, and the impact of caste is least in child mortality rates in which age group the situation is almost the same. Data available on caste wise differentials in infant mortality rate are inadequate for a deeper analysis.

Gender disparities in IMR present a much more mixed picture. In many states, male IMR is higher than female IMR (Punjab, Haryana, Gujarat, Maharashtra, Jammu and Kashmir, Jharkhand and to a lesser extent Bihar and Orissa). The reverse is the case in other states. For the country as a whole, the rates in the latest SRS figures are precisely equal between the genders and nearly the same even when disaggregated for rural and urban areas.

Table 2.7 Infant Mortality Rate by Sex, 2004

India/State/Union Territories	Total	Total	
		Male	Female
India	58	58	58
Rural	64	64	63
Urban	40	39	40
Bigger States			
1. Andhra Pradesh	59	59	58
2. Assam	66	76	55
3. Bihar	61	60	63
4. Chhattisgarh	60	78	42
5. Delhi	32	32	32
6. Gujarat	53	50	57
7. Harayana	61	55	68
8. Jammu & Kashmir	49	41	59
9. Jharkhand	49	42	57
10. Karnataka	49	49	49
11. Kerala	12	14	11
12. Madhya Pradesh	79	82	75
13. Maharashtra	36	31	42
14. Orissa	77	76	79
15. Punjab	45	37	55
16. Rajasthan	67	66	69
17. Tamil Nadu	41	43	38
18. Uttar Pradesh	72	71	72
19. West Bengal	40	45	34
Smaller States			
1. Arunachal Pradesh	38	34	42
2. Goa	17	17	17
3. Himachal Pradesh	51	56	45
4. Manipur	14	16	12
5. Meghalaya	54	52	55
6. Mizoram	19	21	16
7. Nagaland	17	18	16
8. Sikkam	32	37	27
9. Tripura	32	36	27
10. Uttaranchal	42	37	49



Union Territories			
1. Andaman & Nicobar Island	19	17	21
2. Chandigarh	21	24	17
3. Dadra & Nagar Haveli	48	56	39
4. Daman & Diu	37	44	28
5. Lakshadweep	30	30	30
6. Pondicherry	24	30	17

Source: SRS Report 2006

THE COVERAGE EVALUATION SURVEY 2005 (CES-2005)

CES 2005 is a GOI-UNICEF survey that was done to review of the coverage of routine immunisation and maternal care services in the year 2005. the draft report is currently available and provides valuable recent data on these services.

Statistics related to immunization have been covered in lesson 7.

CONCLUSION

The lesson we take from the statistical understandings of this chapter is to look at the strategies for improved child survival for the child between 1 and 4 years' age, differently from the infant, and again to distinguish strategies of improving child survival in the post neonatal infant as distinct from the neonate.

Review Questions:

1. What is IMR? What are the current levels of IMR in your state?
2. What are the different rates used to assess different components of child survival?
3. What has been the pattern of change of IMR over time?
4. What is the impact of social determinants on different components of child survival?

Application questions:

- a. Can you find out the corresponding figures for the district?
- b. What are current reported deaths in these age groups – based on reports generated within the health department?
- c. What are the expected deaths if one applies the state averages or whatever external assessment data is available for the district?

- d. What could be the reasons explaining the gender differentials in IMR in each of the above states. What is the reason in your state?

Exercise:

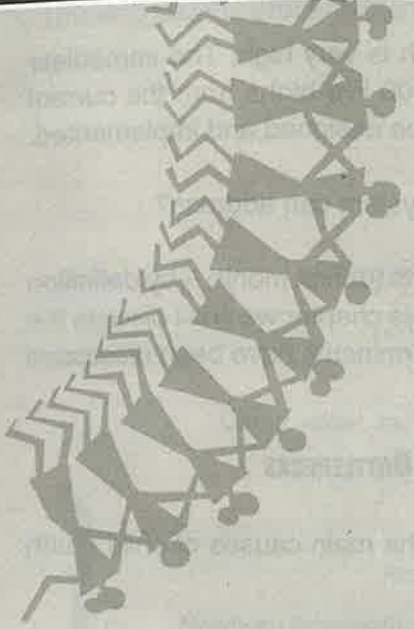
1. Can you look at hospital data from the district hospital or teaching college hospital on deaths and births and try to see whether there is a pattern?
2. How many male and female births and how much mortality and complications are there?

Look at annexure 1 for the verbal autopsy form for neonatal deaths.

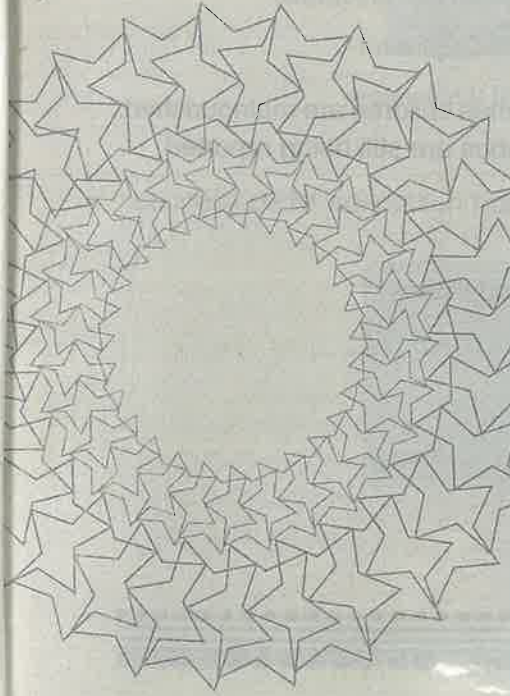


Lesson THREE

Bottlenecks and Best Practices for Accelerating Child Survival Strategies



In this lesson we shall discuss:

- Main strategies being used for improving child survival currently
 - Main gaps and bottlenecks in implementing these strategies
 - Initiatives and best practices to addressing bottlenecks: Mitadin and Jamkhed
 - Contemporary debates: Is there an approach possible through CHWs or RMPs?
- 

PART A: STRATEGIES AND BOTTLENECKS

INTRODUCTION

India contributes 2.5 million of global 10.8 million “under-5 deaths” which is very high. The immediate goal of National Rural Health Mission is to bring down IMR up to 30/1000 live births from the current 60/1000. To bring down the IMR revised state specific strategies should be designed and implemented.

What are the immediate medical causes of child deaths that the health system can address?

We can broadly divide this into: cause of child deaths in the first two months (or first month – by definition the neonate), and the children after the first month up to the fifth year. In this chapter we shall discuss the causes of child death in the post neonatal period. The socio medical determinants have been discussed in detail in lesson 1.

STRATEGIES FOR CHILD SURVIVAL (POST NEONATAL PERIOD): DEBATES AND BOTTLENECKS

In India, the Under-5 Mortality Rate is at 85/1000 live births per year. The main causes of child death after the first two months and up to the fifth year of life are:

1. pneumonia
2. diarrhea
3. measles
4. malaria
5. malnutrition

Deaths also occur related to other infections like tuberculosis - especially when children are malnourished. Accidents are another cause of death. Some deaths due to neonatal tetanus are still being reported.

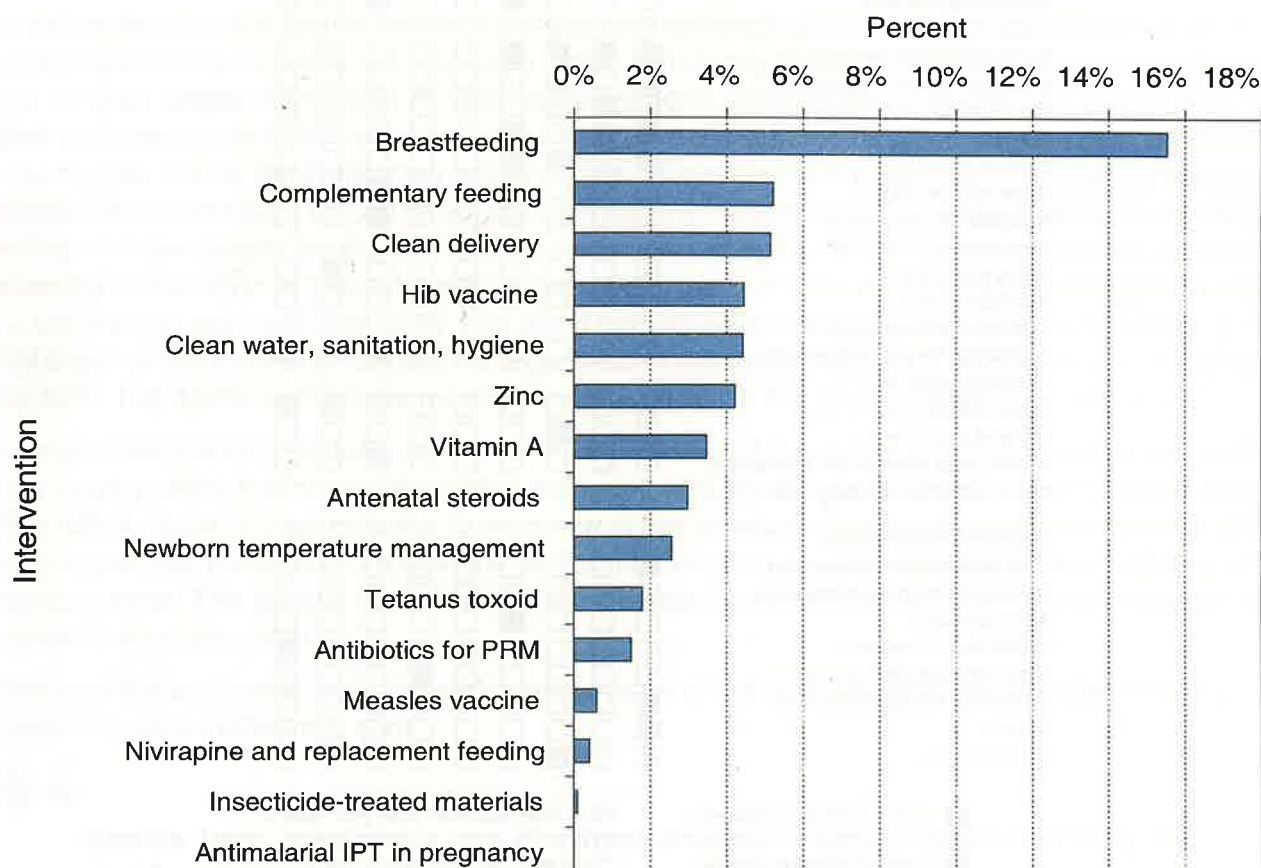
The general strategy for preventing these child deaths may be listed as:

- I. Prompt and appropriate care for common childhood illness
- II. Immunisation
- III. Action on Child Malnutrition
- IV. Specific prevention of common childhood illness



The Lancet series on child survival also reinforces these strategies for prevention of child deaths as illustrated below.

Under-5 deaths preventable through universal coverage with individual interventions



courtesy BPNI adaptation from Jones et al. LANCET 2003;362:65-71

	Cause of under-5 death								
	Diarrhoea	Pneumonia	Measles	Malaria	HIV/AIDS	Birth asphyxia	Preterm delivery	Neonatal tetanus	Neonatal sepsis
Preventive interventions									
*Breastfeeding 8,38-40	1	1						1	
Insecticide-treated materials 26-28,32,33				1			1		
Complementary feeding 9	1	1	1	1					
Water, sanitation, hygiene ¹⁰	1								
Hib vaccine ²²		1							
Zinc ^{11,12}	1	1		2					
Vitamin A 13-15	1		2	2					
Antenatal steroids 36						1			
Newborn temperature Management 12,41,47,48						2			
Tetanus toxoid 42-44							1		
Neutrapine and replacement feeding 30,31					1				
Antibiotics for premature rupture of membranes 46						2		2	
Clean delivery 12,37							1	1	
Measles vaccine 25			1						
Antimalarial intermittent preventive treatment in pregnancy 34,35						1			
Treatment interventions									
Oral rehydration therapy 16,17	1								
Antibiotics for pneumonia 23,24		1							
Antimalarials 29				1					
Antibiotics for sepsis 41								1	
Newborn resuscitation 41,45					2				
Antibiotics for dysentery 18,19	1								
Zinc ^{20,21}	1								
Vitamin A 13,14			1						

1 Level 1 (sufficient) evidence

2 Level 2 (Limited) evidence

Hib = Haemophilus influenzae type b

* Exclusive breastfeeding in the first 6 months of life and continued breastfeeding from 6 to 11 months

Source: Jones, Gareth et al. (2003): 'How Many Child Deaths Can We Prevent This Year', The Lancet, 362:65-71

I. PROMPT AND APPROPRIATE CARE FOR COMMON CHILDHOOD ILLNESS

Most deaths in childhood are caused by acute respiratory infections, malaria and dehydration due to diarrhea. These require the following interventions:

- the information and skill for the family to be able to identify common illnesses



- b. a change in health seeking behaviour so that appropriate care is sought for by the family in timely manner, (see lesson 6; behaviour change communication for child survival)
- c. appropriate community level care
- d. ability to access the facility when needed promptly
- e. appropriate care at the facility

It is well understood that deaths from both the diseases causing highest mortality in childhood—pneumonia and diarrhea can be markedly reduced using simple community based interventions. In particular, families need to have simple information to diagnose pneumonia (fast breathing or difficulty in breathing with fever) and community health workers can be empowered to treat at least some cases of it. Dehydration is the biggest risk to life in diarrhea and a simple intervention like training and supporting families to provide home based fluids for oral rehydration can prevent many deaths. For all these illnesses, colostrums feeding, exclusive breast feeding for 6 months and timely and adequate complimentary feeding are another necessary intervention to prevent deaths. Once again, much of this can be achieved through the efforts of a well trained and motivated CHW who offers nutritional counseling before, at and after delivery. The ANM does not see this as her role and the anganwadi worker is not required to be present at or immediately after birth. The ASHA is the major mechanism through which this gap is sought to be addressed.

The main bottlenecks, therefore, pertain to the deficiencies of the community health worker programme in our country which has mostly relied upon the Anganwadi Worker so far. Now that we have the addition of the ASHA, there is huge potential to intervene in this situation. A successful intervention on a state - wide programme, the Mitnin Programme, is described in the second part of this lesson to illustrate this potential further. The pioneer in such village level community level interventions and its impact on child survival is also discussed.

Other than this bottleneck there are also constraints on all the other aspects like emergency transport or access to quality institutional care.

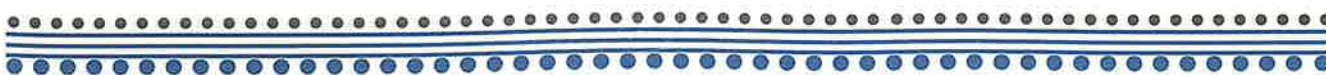


Deaths from pneumonia and diarrheal diseases cause highest mortality in childhood. They can be markedly reduced using simple community based interventions.



II. UNIVERSAL IMMUNISATION

All through the late 1980s and 1990s, so much importance was given to immunisation that many state and district level health programme planners almost assume immunisation to be the sum total of child survival strategies. In the late 1980s, a strategy suggesting a package of interventions called GOBI (Growth monitoring, Oral rehydration, Breast feeding and Immunisation) was rolled out. Of the four GOBI elements, the expanded programme on immunisation (EPI) was taken up with the greatest enthusiasm in India, as the prevailing view was that achieving universal immunisation would be the best and fastest way of reducing child deaths.



Even currently, the United Nations Millennium Development Goal Four 'Reducing Child Mortality' aims to decrease under-5 mortality by two thirds by 2015. Immunisation is considered a key health intervention to achieve this, along with IMNCI. The MDG indicator for child health has proportion of under-1 year old children immunised for measles as its key indicator (the only indicator other than infant mortality and under-5 mortality).

Medically, we know that the role vaccines may play in child mortality and morbidity is as follows:

- a) **BCG vaccine:** It is meant for protection from tuberculosis but has little effect in preventing tuberculosis. However since it has perhaps some effect in reduction of severe extra-pulmonary forms in children, the government is persisting with this.
- b) **Diphtheria:** There were about 30,000 deaths reported in 1975 which reduced to 2917 cases by 1999. This is probably due to the immunisation programme, though there are few deaths reported even where the immunisation levels are very low. Still, since it is a deadly disease, which has an effective vaccine available, and since the system is in place, the government has to persist with this. But increasing immunisation coverage of this is not likely to bring down child mortality rates below current levels.
- c) **Pertussis or whooping cough:** Similar to diphtheria except that the disease had an incidence of about 3.5 lakh cases in 1975 which was reduced to 26,683 cases in 1999. It is therefore still a threat. It may be underlying a lot of childhood pneumonia. The vaccine efficacy is not as good – but still adequate on the whole and the policy is to persist with it.
- d) **Tetanus:** Most tetanus deaths in children are neonatal tetanus and it is not the DPT that prevents it but the immunisation of pregnant women. This has definitely helped to bring down neonatal tetanus by two thirds over the 1980s and 1990s and there is every reason to persist with it. In 1988 there were 1.18 lakh cases reported which has declined to 2242 cases in 1999. As a constituent of DPT it prevents tetanus for at least five years in children, which is very desirable. However from the public health view point, deaths due to tetanus after the neonatal period are so low that there would be no increase in child survival merely by expanding access to DPT.
- e) **Polio:** Polio immunisation, especially the pulse polio campaigns have been able to reduce the incidence of polio to negligible levels. This year about 67 cases have been reported- so it is certainly not eradicated- and the government would like to persist with it to chase the elusive goal of total elimination of the disease. However in terms of child mortality or even child morbidity figures are so low that it would have no further impact.
- e) **Measles:** Here there is high persistent measles prevalence which contributes significantly to mortality. Its reported incidence in 1999 was 36,575 cases but actual figures may be much higher. It is also a major contributory cause of deaths due to pneumonia. A child with grade III malnutrition



is almost 300 times more likely to die of measles than a normally nourished child. Given the high prevalence of malnutrition therefore the urgency to immunise against measles is even higher. However of all the disease against which immunisation is currently aimed, coverage is lowest for measles.

- f) **Hepatitis:** In many states immunisation against hepatitis is being introduced. This is immunisation against hepatitis B which is transmitted from the mother at birth (vertical transmission), sexually and through infected blood products. It is not clear why many children who do not have it at birth get the infection-perhaps it also spreads through close contact through cuts, wounds etc. The commonly occurring jaundice in children is due to hepatitis A and this vaccine has no effect on the A virus. No child deaths due to hepatitis B are reported and no decrease in mortality or morbidity will come from this immunisation. If the vaccine is not given at birth (which is difficult to do in the absence of institutional deliveries), it would have no impact on vertical transmission, which is the commonest cause of infection in children. It may however reduce cancers in later life.

Vaccines for other potentially fatal diseases like typhoid are also available but need to be given repeatedly throughout life. Also, it is argued that for many of these infectious diseases, the provision of safe water is the better strategy rather than preventing each infection separately.

In summary, immunisation is part of the way we have lowered child mortality in the past and reduced the incidence of some major diseases and we must persist with it. However the only vaccine for preventable diseases that would significantly contribute to further IMR reduction is measles. This would be about 1% of all child deaths.

Actual implementation bottlenecks for achieving this are discussed in detail in lesson 8.

III. ACTION ON MALNUTRITION¹

This requires:

- a) Increasing access to food for the malnourished child
- b) Preventing children from slipping into malnutrition by supporting the family to care for children and optimise child care and feeding practices within its economic circumstances
- c) Ensuring that children with malnutrition are identified early and supported so that weight returns to normal and
- d) Ensuring that all children who are severely malnourished, acutely malnourished or sick children with malnourishment receive medical care.

The measures regarding increasing access to food are discussed in module 8 on the key determinants of health.

Preventing malnutrition, identifying malnutrition early and managing it is an activity primarily entrusted to the ICDS programme. Since most children are of normal weight in the age group of about 4 months to 6 months and then start lagging, only a very focused intervention at this age, indeed through all of the first year, can keep malnutrition from developing. This is the same period when they start getting repeated diarrhea and respiratory infections. Potentially, if there is adequate synergy between the health staff, which comes into repeated contact due to the immunisation programme, community health workers, community based workers and the ICDS programmes, this decline can be prevented. This has been demonstrated as possible to achieve both in India and abroad. However, just as there are constraints in health department run programmes, there are also serious bottle-necks or constraints in the delivery of ICDS programmes. There is also a major failure to develop synergy between these and other allied departments and programmes such as the Public Distribution System and water and sanitation. As a result child malnutrition remains high. If we remember that the majority of children who die of measles, diarrhea or pneumonia also have malnutrition as an underlying factor, then the importance of this intervention can be understood. It has been estimated that the mortality that can be attributed to malnutrition is as if 25% of all child deaths are due to malnutrition alone. Combating malnutrition can decrease child mortality by over 50% as has been discussed earlier in Lesson 1.

To prevent malnutrition, ensure:

- Early and exclusive breastfeeding for 6 months
- Complementary feeding from 6 months onwards
- Extended breastfeeding for 2 years

As for the category of sick malnourished children, there is almost no attention given. Yet most children in grade IV malnutrition would die without medical help and even those in grade III are so often caught in a vicious cycle of disease and malnutrition that is difficult to break out without medical help. Also, diseases like tuberculosis, chronic malaria, severe iron deficiency, sickle cell disease, HIV infection etc. may be an underlying cause of the malnutrition and for them to be treated only by interventions by a health worker is indefensible. Despite this, the system has no protocols and the staff has no training to investigate or manage the severely malnourished, the acutely malnourished or the sick child with underlying malnutrition. It has not yet made it into the IMNCI protocols. Having said that, this problem needs more than protocols; a special comprehensive strategy for this category needs to be evolved which necessitates close coordination between the ICDS programme and health care services. (See lesson 6 for more details)

IV. PREVENTION OF COMMON CHILDHOOD ILLNESS

Other than appropriate curative care, much can be gained if effective preventive measures for the common childhood illnesses are in place. The overall role of colostrum feeding and breast feeding in prevention of illnesses as well as decrease in deaths from the same has been mentioned earlier. Diarrhea prevention



requires safe drinking water and hygiene – especially hand washing. Prevention of malaria requires a lot of measures – but as an immediate measure for the malnourished child and the pregnant woman the use of treated bed nets in areas endemic for malaria, must be seen as mandatory. It is relatively more difficult to prevent respiratory infections though avoiding smoky environs inside the house and isolating children from adults with such infections where possible, would help. The prevention and prompt management of epidemics also contribute in a significant way because invariably in epidemics of gastroenteritis and malaria it is the children who are affected most.

The next section expands upon the bottlenecks indicated in the discussion above as well as details them further.

THE BOTTLENECKS

Over the last 3 decades the annual number of deaths among children less than 5 years of age has decreased by almost a third. However there are still an impermissible number of deaths in this age group and they need to be addressed: We need to examine what the bottle-necks have been in implementing these strategies. Some of the bottlenecks are:

1. Poor Health Workers Support to Appropriate Community Level Care
2. Lack of Functional Institutional Care and Emergency Referral Systems for the Sick Child
3. Inappropriate Health Seeking Behaviour/Practices
4. Inadequate Implementation of Systems to Lower Child Malnutrition Rates
5. Failure of the Health Care System to Address the Sick Malnourished Child
6. Poor Outreach of Measles Immunisation, Vitamin A administration and to a lesser extent, Persistence of Neonatal Tetanus.

1. POOR HEALTH WORKERS SUPPORT TO APPROPRIATE COMMUNITY LEVEL CARE

Much of India's population is dispersed into numerous small villages. Even if the health services attain the maximal distribution as per norms, it would not be adequate to provide a government health worker in every village. Yet clearly, for preventing most of these deaths, we do need that the child is examined and given appropriate care on the very first day of illness itself. After that it may be too late.

Thus a child with diarrhea who is seen on the first day and is started off on oral rehydration therapy would almost invariably recover within two or three days. Death is almost always due to the dehydration in such situations. But if oral rehydration is established later, or inadequately, or if it were dysentery, the delay in starting treatment could be life threatening. There is a similar argument to seek appropriate care for all coughs and colds- most of which are self limiting, but a few of which can be life threatening and delay would be costly. Again, many childhood fevers would be viral and self limiting but it could be malaria or pneumonia, and prompt treatment saves the child's life and prevents spread. These three situations –

diarrhea, malaria and pneumonia – would account for almost 70% of all illness in this age group and over 90% of life threatening situations.

In most hamlets today the only care immediately available is:

- a) **Traditional healers:** There has been a thrust on training them so that they manage the self limiting illness and refer the rest appropriately. There are few clear studies of where it has worked. Certainly they could contribute, provided we are able to tailor our messages to their perceptual framework so that they understand them and support them to ensure appropriate management. Again their distribution is not uniform or universal and the effectiveness of training them is even less likely to be uniform. This seems at best, a supplementary strategy.
- b) **The RMP:** Though the RMP is acronym for registered medical practitioner or rural medical practitioner, they are not registered and have no basis in law to practice. In most villages they are referred to by many names, some derogatory like *jhola chhaap* or quack, and some respectful like village doctor. In some states RMPs were generated through community health worker programmes- where the CHWs became RMPs which means their work became limited to prescribing drugs. RMPs usually are more open to training and more ready to apply training especially where it involves administration of drugs or injections. It is thus believed that because they are quick to give antibiotics and actively treat sick children brought to them and because they do refer when the case is beyond them, they play a significant role in reducing infant mortality and child mortality rates. Their ubiquitous presence in Bihar where little else of a public health system is visible at the village level, and Bihar's relatively better IMR (60) as compared to the other major Hindi states is attributed to the presence of the RMP. However the main limitation of the RMP is that their livelihoods are based on the drugs and injections that they give for self limiting conditions. Their use of costly and irrational drugs is known to be very high. Thus out of a 100 children with coughs they would get to see only one or two which may have pneumonia – but all of them would spend fair sums of money on treating their colds. This drains the rural poor of a huge amount of income and this is completely avoidable. Often RMP care can be hazardous as well, as they tend to use get quick solutions like steroids that can be quite dangerous and that in the long run lower the body's immunity. Our experience illustrates the overuse of injections in managing common illnesses in children; consider the infliction of needless and repeated pain to a child and the complications she might face as a result. This practice is so common that a strong community demand has built around it that is extremely difficult to reverse. The medical profession is bitterly opposed to moves to train and use RMPs – and a large part of this is seen as maintaining its privilege over private practice. On the other hand the objections are not only professional or commercial. Doctors even in public health sensitised to the needs of the rural poor find such levels of irrationality intolerable, and a general defense of the RMP that "anyone writing any set of pills and injections is preferable to no one giving any drugs" – as completely



trashing the fundamental basis of modern medical care. Administrators and non medical professionals of public health, in contrast, find this RMP route more acceptable and tend to dismiss all concerns about rationality as professional obstinacy. After all, they argue, so called qualified medical practitioners also are equally irrational and costly in their prescription pattern. There are few studies that clinch this – and typically the studies that exist do not look at appropriateness of care as an indicator. Anecdotally, training has the ability to increase appropriate referrals and make prescriptions more rational - without any reduction of irrationality of holistic care. So though efforts can be made to increase the effectiveness of their care, the potential of building a system around them is remote.

The Arguments made for working with RMPs	Arguments against RMPs as integral to the health care system.
RMPs are the only persons available in rural areas. They are already providing care and we should build on them.	Potentially a good CHW programme would make others available without the drawbacks that RMPs have. If there are only RMPs today it is because past strategies of CHWs were driven or diverted to becoming programmes of generating RMPs. The current ASHA programme does not represent a problem of such diversion.
RMPs provide care that save lives.	This is true within certain contexts and needs to be respected. However they do so at a huge cost - a large amount of money is being drained from poor households on unnecessary drugs and medicines. Many children suffer needless injections and their complications.
Irrational care is not only by RMPs. Qualified practitioners are also irrational.	This is true. There are some studies that show the degree of hazardous and irrational care is more with the RMP – but that is not saying much. Obviously insistence on use of standard protocols and pressures against irrational drug use are needed with doctors too.

RMPs can be trained and regulated so that their unfair and irrational practices can be controlled.	They can be trained to make their prescriptive work more effective. For example, they could be trained to give the right dose of chloroquine but not to prescribe it rationally in the near absence of clinical training. Any form of regulation seems unreal. When it has been impossible to regulate doctors in public service from illegal private practice- to regulate someone who is 'illegal' to start with is a contradiction.
RMPs should not be banned.	True. It would be difficult to implement and would withdraw a service before there are alternatives in place. If quality care becomes available and public knowledge of rational care increases then the use of the RMP is likely to diminish without draconian measures.

- c) **Community Health Workers/Volunteers:** The third and the only route available for community level care provision becomes the use of community health workers- that is, a trained woman health volunteer, selected by the community and resident within the community. There have been over 30 well documented NGO-led efforts of about 100 villages' size which have successfully demonstrated this – not to speak of world-wide experiences. The Jamkhed programme is the most well known role model of this approach and is discussed below.

Scaling up of community health worker programmes to a state level or national programmes has been a problem. Earlier attempts at this have not done well. Also CHW programmes have many types of goals and very few large scale programmes have addressed issues of child survival as the central outcome that they were designed to deliver. In both these aspects, the Mitani programme has shown the way forward. (The Mitani programme is discussed in detail below as well as in module 4.)

2. LACK OF FUNCTIONAL INSTITUTIONAL CARE AND EMERGENCY REFERRAL SYSTEMS FOR THE SICK CHILD

Community Level Care needs to be backed up by adequate quality of institutional care- or medical care. For every three children who can be managed by community care at least one would require a medical consultation or a nurse trained to that level of competence. Currently that would mean at least a primary health center, CHC or a private clinic that can provide that level of services.



Where there is no functional facility within an hour's journey, then the problem of getting treatment for the sick child becomes a big problem for a poor family. Further even where there are facilities there is either non-availability or poor availability of proper equipment, and ancillary support such as drugs, good laboratory and radiology support. Indeed every CHC which is developed as an FRU and every PHC that is upgraded to reach 24 X 7 hour functionality for basic emergency care has to attain a set of standards including the infrastructure and equipment needed for institutional care for the sick child. Lack of paediatric formulations of medicines is a special problem, specially for drugs related to TB, malaria and HIV AIDS.

The building up Emergency Referral Transport Systems is also implied in this. Today in relation to access to emergency obstetric care this need is understood and planned for, but schemes for transport of a sick child need to be planned and made available as well.

Nonetheless, one of the biggest bottlenecks is the non availability of a person with adequate skills to manage a sick child comprehensively. The whole IMNCI training package is recognition of the fact that the single most important input for better care in the facility is the skill of the health care provider.

Some times it is thought that saving the newborns and children needs sophisticated equipment and health facility. This is more so because medical doctors are trained in hospitals where such facilities are available. It is to be understood that a few preventive measures and a small set of technically simple skilled interventions can help in saving the lives of many newborns and sick children.

3. INAPPROPRIATE HEALTH SEEKING BEHAVIOUR/PRACTICES

A large number of deaths can be changed by promoting health seeking behaviour that would improve child survival. These inappropriate practices and behaviour have different determinants. To change such behaviour and practices one needs to have a BCC strategy that is well integrated with the rest of child health care strategy. (See Lesson 8 for details of BCC strategies in child health and survival)

A few examples:

- Wrong feeding practices: E.g. discarding colostrums, giving babies water even within 6 months of age, not using energy dense foods like fats in baby feeds, not increasing frequency of complementary feeding to five times a day, not giving eggs to girl children etc.
- Harmful traditional beliefs and practices: E.g.: Putting drops of oil into the nostrils to clean the respiratory passages. Quite often this practice leads to pneumonia; Parents refusing to give water/fluids to a child with diarrhea, as they fear it would lead to worsening of diarrhea.

- Inappropriate Health Seeking Behaviour: E.g.: Parents insisting that the doctor prescribe medicines and tonics and administer an injection since they think the child is very ill and mere advice or oral medicines will not do.

Parents taking the child to local healer despite three days of fever that is not coming down.

4. INADEQUATE IMPLEMENTATION OF SYSTEMS TO LOWER CHILD MALNUTRITION RATES

This failure is due to three reasons:

- The problems of the ICDS system, for which there is a need to review, reform and better implement food security and food supplementation programmes for malnourished child. This is discussed in module 8.
- The need to provide support to the family for promoting appropriate infant and young child feeding practices, prevention of common illness and access to essential services and health care through counseling sessions for all the care-givers in the family.
- Critical gap in systems for the support of infant and young child feeding such as maternity entitlements and creches for children of working mothers.

5. FAILURE OF THE HEALTH CARE SYSTEM TO ADDRESS THE SICK MALNOURISHED CHILD

This is discussed further in lesson 6

6. POOR OUTREACH OF MEASLES IMMUNISATION, VITAMIN A ADMINISTRATION AND TO A LESSER EXTENT, PERSISTENCE OF NEONATAL TETANUS

This is discussed in the lesson on immunisation (Lesson 7).

PART B: BEST PRACTICES – COMMUNITY HEALTH WORKER PROGRAMMES AND CHILD SURVIVAL

JAMKHED- A COMPREHENSIVE HEALTH CARE PROJECT

INTRODUCTION

In 1970, the Arole couple, Dr Rajnikant Arole and Dr Mebelle Arole, were invited by leaders of Jamkhed to provide health services, which over the years went on to grow into a primary health care movement spreading to 175 villages. Jamkhed is the pioneering story of the development of a sustainable community-based primary health care programme in one of the poorest parts of India. Although still poor, with meager resources, these village people have created for themselves caring and sharing communities with a much improved quality of life.



STRATEGIES ADOPTED BY JAMKHED PROJECT :

CHOOSING THE AREA AND PHASING THE PROGRAMME

A medically under served and socially deprived area was chosen to begin work. The population was reached in phased manner. A larger central village was chosen as headquarters. The programme reached surrounding villages in an 8 km. radius in the first phase and then extended it to a 15 km. radius to a population of 70,000.

INTEGRATION OF ALL SERVICES

The project surveyed communities and approached root causes of illness rather than focusing on individual sick patients. Although individual treatment was provided, the emphasis was on community diagnosis and introducing interventions to solve health problems. Curative and preventive services were totally integrated. Under-5 clinics, MCH services, nutritional programmes for mothers and children and family planning were all included along with basic curative care. All personnel were involved in these services and none would confine themselves to only curative care.

COMMUNITY PARTICIPATION

Community participation was considered most essential in order to encourage people to make maximum use of the health services and later sustain the health services. At the time when the project was started, community participation in health care was not yet a concept established in practice. Initially, auxiliaries were trained to take on most responsibilities of routine diagnosis and treatment of minor illness. Thus the doctor did not have to see every patient but was freed to take on other responsibilities. This was the beginning of the changing roles of most health personnel and the development of a health team approach.

SUB-CENTERS AND HEALTH CENTER

The programme began with recruiting a project ANM for every 5000 population (at that time, one Govt. ANM/1000 pop was the norm). She differed from government ANM in terms of knowledge, skills and attitude. She was trained in all priority areas; she was backed by the health team and under went continuous in-service training. At the central village, a 20-bed hospital for referral of more complicated health problems was developed. The hospital was considered more to support the preventive activities in the villages than to act as a tertiary care facility. But it would definitely provide basic surgical and diagnostic services for priority areas related to MCH or communicable diseases. Attempts were made to use materials and personnel /labor appropriate to the local situation. Till this point it was similar to the government structure, though the manner of selection and support of personnel provided for a higher motivation level. But it was found that despite higher motivation levels, programme outreach was a problem.

VILLAGE HEALTH WORKER - INNOVATIVE IDEA

ANMs were facing enormous difficulties in reaching all the villages due to logistical and social factors. Other factors included non availability of ANMs to work for community in villages. The project therefore decided to try an innovative concept of village health worker i.e., a person would be selected from the village, trained in basic health work, provided with medicines for basic ailments and equipped for providing health education. Thus was born the first major attempt at community health workers in the Indian context.

The project had a community development programme for over three years before it decided to initiate a CHW programme. The programme had been focussed on developing farmers clubs and many development programmes related to agriculture and livestock management. There were many other women's activities also organised. So when it came to asking a few villages to volunteer women for training as CHW this could be done easily because by then both NGO and the community were familiar with the choices available.

OUTCOME / IMPACT

1. IMR showed a very sharp decline, in just 4 years from 160+ in 1972 to about 50 in 1976, and from then on the decline has been sluggish to about 20 in 1992. (See lesson 2 for possible reasons)
2. Crude birth rate in the project villages during 1972-92 declined from 40 per 1000 to 18 per thousand in 1992.
3. Improved quality of life was said to be reflected through visible changes that had occurred in Jamkhed villages. Children were not malnourished and child survival had improved. Most deaths that occurred still were in neonatal period. Significantly, the birth weights increased by 0.75 kg. Despite the drought in 1992, children in the project area did not lose weight.
4. Attitudes towards family planning changed. Women were interested in having fewer children. In some villages in the project area over 70% of couples practice family planning. Oral contraceptives became popular in the project villages. However the preference for sterilisation after a male child affected the male-female ratio adversely, indicating a further need to change the attitudes of male preference. Acceptance of the female child would further reduce the birth rate. As women become more empowered such attitudes will also change.
5. Acceptance of preventive health programmes has increased over the years as described in the table below.



	1971	1976	1986	1993	1996	1999	2004	India
								2004
IMR	176	52	49	19	26	26	24	62
CBR	40	34	28	20	20	20	18.6	23.9
MATERNAL HEALTH								
1. antenatal care	0.5%	80%	82%	82%	96%	87%	99%	64%
2. safe delivery	<0.5%	74%	83%	83%	98%	98%	99%	43%
3. family planning	<1.0%	38%	60%	60%	60%	60%	68%	41%
CHILDREN UNDER 5								
1. immunisation (dpt, polio)	0.5%	81%	91%	91%	92%	99%	99%	70%
2. malnutrition (wt for age)	40%	30%	30%	5%	5%	5%	5%	47%
CHRONIC DISEASES								
1. leprosy (prev/1000)	4	2	1	0.1	0.1	<0.1	<0.1	0.24
2. TB (prev/1000)	18	15	11	6	6	4	2	4.1

THE KEY LEARNINGS FROM THE PROJECT

1. The perception that poor and marginalised people have 'irrational' behavioural patterns as compared to those of the elite and educated, changed. Given the necessary information and skills, people made the same 'rational' choices that the educated and the elite made.
2. It is not technology but often social action that improves health. Rural communities are capable of planning and contributing to maintaining their own health significantly. Medicine needs to be demystified and knowledge should be shared freely with people so they can attain and maintain good health.
3. It is essential to train village level workers who are culturally acceptable, available and accessible. Given quality training and support they can lead to dramatic changes even in relatively short periods of time. But this requires a motivated leadership.
4. There should be a balance between curative, promotive and preventive health care services. Primary health care needs the support of secondary and tertiary services.

Subsequent to Jamkhed, many similar projects have, worldwide and in the nation, proven the concept of the community health worker and its role in the acceleration of child survival strategies. The challenge was to scale them up and after two unsuccessful efforts in the 1980s and 1990s, the consensus in the early years of the new century was that this concept would remain an NGO programme in the peripheries of the public health system.

Then the Mitandin Programme happened.

MITANDIN PROGRAMME AND CHILD SURVIVAL

INTRODUCTION

In Chhattisgarh's tradition, a Mitandin is a girl bonded together ceremoniously in her childhood to become the life long friend of another girl. "In happiness, every one; but in sorrow, your Mitandin" goes the village saying.

Drawing on this evocative theme, the government of Chhattisgarh launched a health programme in May 2002 that helped each and every hamlet to select a woman to serve as its health volunteer. This woman volunteer was to be called a Swasthya Mitandin. There are now about 60,000 such volunteers covering all hamlets of this geographically dispersed and highly forested state, 40% of whose population is tribal.

BACKGROUND

The Jamkhed Programme had established the viability of a community health worker programme under Indian conditions- especially its efficacy in lowering under-5 and infant mortality rates. A number of other organisation – FRCH in Mandwa, Sewa Rural, IHM, Pachod, RUHSA in Vellore and SEARCH in Gadchiroli had replicated this success in their respective village clusters – the largest programme being about 100 villages. The challenge was to show that such acceleration of child survival could be achieved at the scale of an entire state or nation. Also many of these programmes had their own non-governmental referral hospital backup, thus making the programme parallel to state efforts.

Unfortunately at least two major attempts by the government to scale up the programme to national or state levels were not able to make the same impact.

Meanwhile through Arogya Iyakkam in Tamil Nadu, another NGO, the Tamil Nadu Science Forum, had shown that in areas as large as a number of blocks, working with only the government health system as a back up, considerable social mobilisation could be achieved by the notion of health activists – a term used in this context first in this programme. The health activist stood for improving service delivery from



the public health system as its central goal with health education and a much lesser level of curative care delivery as its supplementary goals. Costs were also much more sustainable.

When the government of Chhattisgarh launched the Mitadin Programme, the design team, initially drawn from a number of health NGOs, and later by a specially designed institution - the State Health Resource Center (SHRC), drew lessons from all these past experiments to build its own model. Further it had to build up structures and processes that were essential to the scaling up of the programme to such a massive scale.

THE MITANIN PROGRAMME

Mitanins were trained for 20 days each, in repetitive 3 to 5-day rounds of training and then provided with on-the-job support to be able to effectively convey key health messages to the approximately 50 families that each of them serve. Equally importantly, the Mitadinins also organise women, articulate access to basic health services as a human right and as a women's issue, facilitate access to public health facilities and themselves provide first contact curative care for common illnesses.

In their very first round of training, after their general introduction to their roles, to the determinants of health and to the services expected from the public health system, emphasis was given on the simple measures that families need to take to reduce child deaths and a package of first contact care services that the Mitadin could provide to children at risk.

Drawing from the Arogya Iyakkam approach the programme encouraged Mitadinins to use malnutrition levels as an indicator to identify children at risk, counsel families on correct feeding practices, prevent and promptly manage infections especially diarrhea, acute respiratory infections and worms, and access public health services where needed.

MONITORING, EVALUATION AND IMPACT

One of the main impact indicators was the infant mortality rate. For monitoring the programme processes and outputs on a monthly basis, the programme evolved 6 key indicators most of which have impact on child survival.

These were:

- a) Mitadin visits to the newborn on the first day – preferably the first hour – to ensure 6 changes in practice- breastfeeding within the first hour, adequate feeding of the mother, keeping the baby warm (not bathing the child etc), weighing the child, referral if the child was sick and BCG injection.
- b) Visiting the child on the first day of any fever, diarrhea or ARI, mainly to sort out and motivate those who need referral, while attending to the rest at home with drugs from her drug kit and from home based remedies.

- c) Promoting institutional delivery or skilled assistance at birth as also completion of ante-natal check ups- which would have a favourable impact on neonatal mortality.
- d) Mitanin attending the immunisation day – an index of her coordination with ANM and anganwadi worker in many of their functions, other than of course the promotion of antenatal care and immunisation.
- e) Mitanins knowing the children who are malnourished and counseling families repeatedly on this.
- f) Regular – at least once a month – meeting of women on health issues in which child health would have considerable focus.

According to the internal reports based on what Mitanins themselves report to their supporting trainers as of now (July 2006), out of 54,248 Mitanins who are trained over 15 days, 40,772 Mitanins are making newborn visits (75.15%).

This correlates well with the UNICEF-GOI organised CES study that over 88% of the children are receiving breastfeeds in the first day, and as many as 74.4% are receiving breast feeds in first hour. This is up from 38.5% figure under NFHS-II (the UNICEF study was an evaluation of service delivery of all RCH programmes). We also know that till hardly a few years back, the custom of *chhatti* prevailed and children could be kept off breast milk for over 3 days.

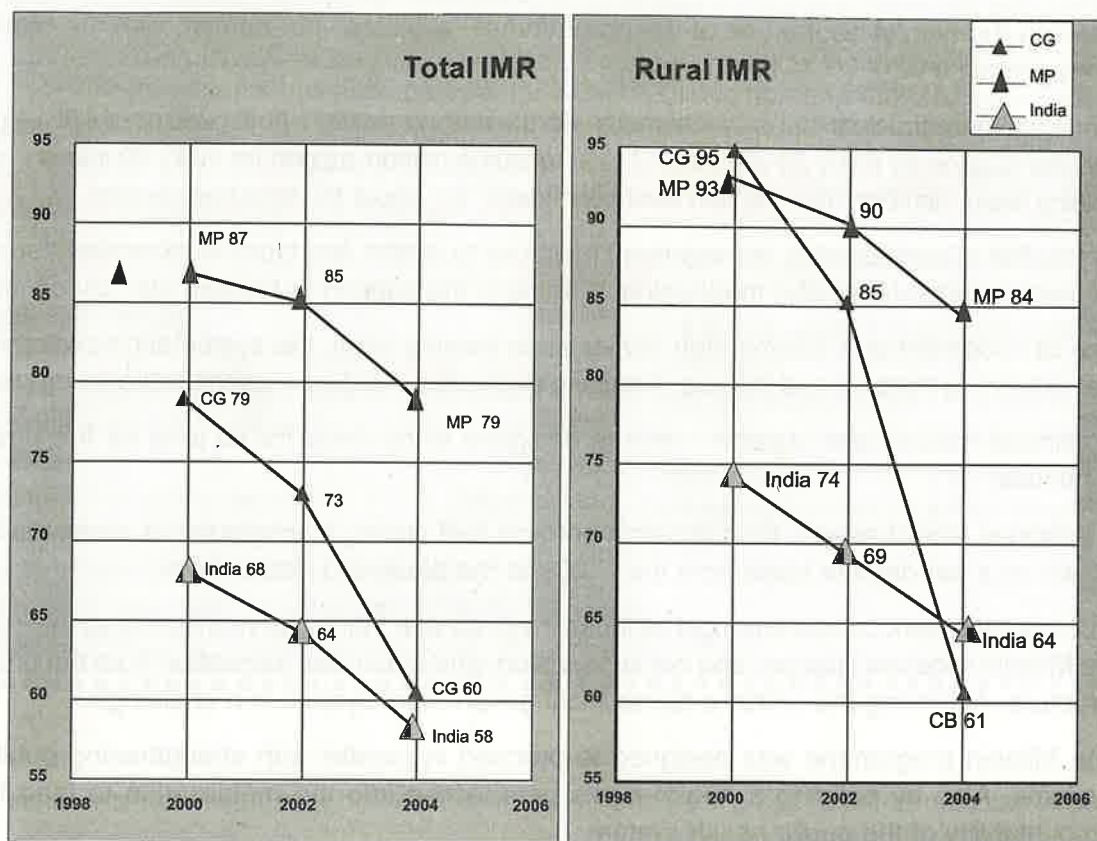
Approximately 77% of Mitanins are receiving more than 5 to 10 such children per month on 'first day of illness' visits for appropriate care for common illnesses. For attending immunisation day, the figure is 81.6% (44,263 Mitanins). Malnutrition counseling and village meetings however required a higher degree of support and only 66.3% and 66% respectively are functional on this score.

If we look at the performance block-wise, out of 146 blocks 43 had more than 75% of Mitanins active on all six indicators taken together, 41 blocks had 50-75% active, 32 blocks had 50-64% active Mitanins and less than 50% of Mitanins were functional in 30 blocks.

On impact of the programme at a state level scale only the SRS data is available and reasonably recent. We find that rural IMR has markedly declined from 88 in 2001 to 85 in 2002 to 61 in 2004 which is better than the national average. In contrast, the parent state of Madhya Pradesh, which had an IMR of 92 in 2001 has come down only to 84 in this same period. The all-India rural IMR figure declined by only 5 points during this period. Indeed to make this same 26-point decline in IMR, the nation as a whole took close to 25 years – whereas in Chhattisgarh, co-terminus with the Mitanin programme, this same decline was achieved in 2-3 years.



Comparison of IMR Trends of Chhattisgarh, MP and India: as per Sample Registration System



Cautions about interpreting the above relate to a change of sample frame in the year 2004 and a wider range of error- from 73 to 48. But despite this, even in its worst possible reading and so early on in the programme, it is still encouraging. Also, urban IMR, which in this period did not see any Mitani programme, has acted almost as a control with the IMR changing from 56 to only 52 per 1000.

One also has to sustain the gains over time and one hopes that conflicts and economic determinants do not offset these gains.

The key design features of the Mitadin Programme to which successful scaling up are attributed are the following:

1. A well defined process of selection that ensured that weaker sections of the community could get selected in a community based selection process.
2. Keeping the hamlet as the unit of the programme – a Mitadin per hamlet, with the block as the management unit.
3. A management structure that is synonymous with the training structure and made up of fulltime personnel- 1 trainer support for every 20 Mitadins, 2 to 3 resource person support for every 20 trainers and 1 state training team member, also the field level coordinator, for about 15 resource persons.
4. Devolution of considerable management functions to district and block level, while keeping some elements related to quality- the training of trainers, the support to trainers etc fully centralised.
5. The development of a fulltime high quality state training team, the systematic development and use of training material and the use of training evaluation – all to cut losses in the training cascade.
6. Continued training and support – that is designed to continue for as long as the programme continues
7. A judicious mix of people from government and civil society background at all levels. Persons drawn on a per day fee basis from the NGOs at the block and district level.
8. A democratic work culture amongst all those involved with training or monitoring so that eventually the Mitadin receives support, and not supervision, and much less inspection from the programme structure. Achieving this within a hierarchical government system is a challenge.
9. The Mitadin programme was designed to proceed in parallel with strengthening public health systems. Also by building a health rights perspective into the mobilisation to lead to better accountability of the public health system.
10. The provision of a Mitadin drug kit with periodic refills – making her an outreach of the public health system.
11. A state level resource support institution for design, training, monitoring and innovations in the programme.
12. A monitoring process which was friendly but which could drive forward the achievement of certain process outcomes that in turn were directly linked to programme outcome of accelerating child survival.
13. Social mobilisation to create an enabling environment for the Mitadin programme and to make the programme into a major form of community participation.



Review Questions

1. Which are the main strategies in use currently for preventing child deaths? Discuss their usefulness.
2. For each of these, list the specific bottlenecks.
3. Which systems need to be set up to improve the situation?
4. Why is the Jamkhed Programme historically important?
5. What are the management lessons to be learnt from the mitanin programme?

Application Questions

1. What are the district level programmes running currently as part of the strategies to combat child deaths?
2. What are the specific deficiencies in your district and how can you address these?
3. Are there any major causes of child deaths in your district that have been left out of the discussion above?

4. What is the experience with community health workers in your district so far?
5. Which of these elements currently exist in the ASHA programme in your district and which do not?

Project Assignment

1. Collect data on immunisation, incidence of childhood illnesses, causes of child deaths from various available sources (ICDS, District Hospital etc). Analyse the efficiency of systems and programmes you have mentioned above in the light of this data. Make a specific proposal for better performance.
2. What is the performance of the district on each of the strategies mentioned above? What would be the key strategies that the district should focus on for lowering child mortality in the coming two or three years?

1. Also refer to Lesson 6: Care of the Sick Malnourished Child

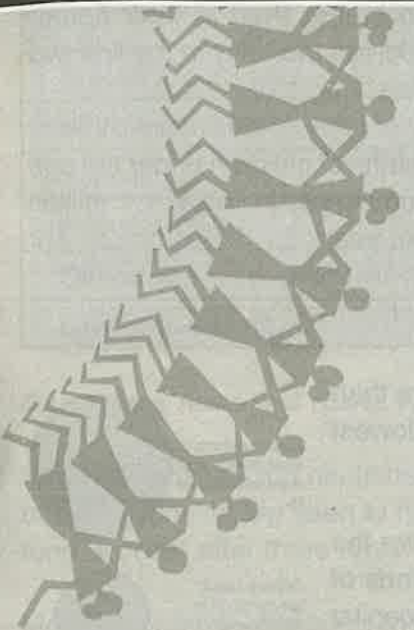
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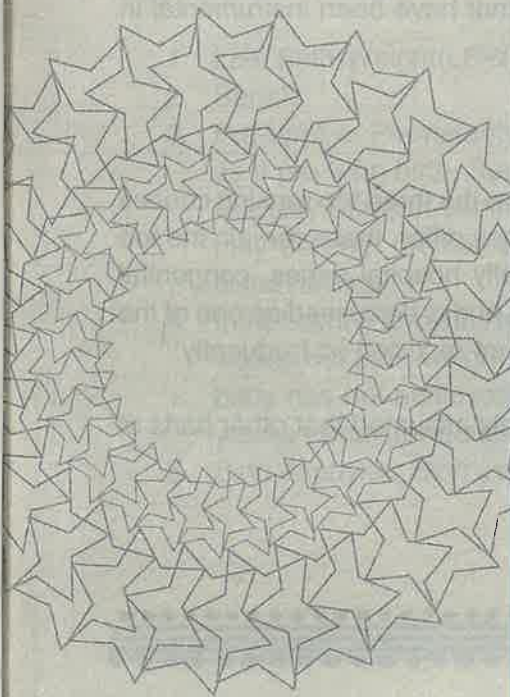


Lesson FOUR

Addressing Neonatal Mortality



In this lesson we shall discuss:

- The main causes and determinants of neonatal deaths
 - The main bottlenecks in preventing neonatal deaths
 - Strategies to tackle these bottlenecks
 - Some successful initiatives and best practices that have shown impact on reducing neonatal deaths
- 

INTRODUCTION

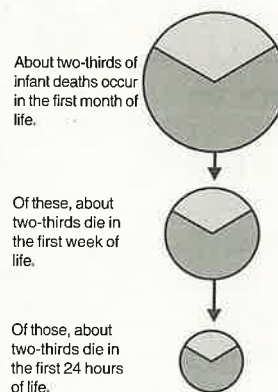
Neonatal mortality contributes to over 64% of infant deaths and most of these deaths occur during the first week of life. Mortality rate in the second month of life is also higher than at later ages. Any health program that aims at reducing Infant Mortality Rate needs to address mortality in the first two months of life, particularly in the first week of life.

Neonatal mortality accounts for 36 % of the global burden of 10.8 million deaths of children under the age of 5 years. About 98% of all neonatal deaths take place in developing countries. In India, 1.1 million newborn deaths happen every year of a total of 27 million children born per year.

THE TWO-THIRDS RULE

As was discussed in Lesson 2, the rate of decline in child mortality is more than that of infant mortality, and within infant mortality, neonatal mortality is the slowest to decline.

The main need and challenge in many contexts is therefore to bring down the neonatal mortality, which contributes to about 60% of the IMR. In the minds of many, neonatal care suggests an image of expensive highly technical hospital based neonatal care units. These are, of course, required in some situations. However, it is now understood that the reduction in neonatal mortality does not necessarily need expensive setup and equipment and that a large number of neonatal deaths can be averted through community based measures, especially if supported by facilities at district level. Some of these strategies will be discussed in the following sections with detailed examples of pioneering initiatives that have been instrumental in achieving this understanding.



WHAT ARE THE MEDICAL CAUSES OF NEONATAL DEATHS?

Global figures suggest that sepsis, birth asphyxia and pre-term childbirth are the three top ranking causes of neonatal mortality in that same order world wide. Though the percentages differ, these remain the top three culprits in most countries of the world. In some studies – especially hospital series, congenital anomalies are high. In some situations neonatal tetanus is reported at 7%, and is discussed as one of the neonatal infections - but in most community situations in India these are not reported so frequently.

The data from the Gadchiroli study (Table 4.1) is similar and it can be safely assumed that other parts of the country would also show a similar pattern.

**Table 4.1 Causes of Neonatal mortality, Global and Rural India (Gadchiroli)**

	Global Data	% of deaths (Rural India-Gadchiroli study)	Mean age at death
Preterm < 32 wks.	24%	15.0 (3.9 to 26.1)	2 days
Birth Asphyxias	29%	20.0 (7.6 to 32.4)	1.8 days
Sepsis	32%	52.5 (37.0- 69.0)	12.5 days
Hypothermia		2.5 (2.3 to 7.3)	5
Others & cause unknown	10%	10.0 (0.7 – 19.3)	8.5 days
Low Birth weight		42	

Source: Bang, Abhay et al. (2005): 'Why Do Neonates Die in Rural Gadchiroli, India?', Journal of Perinatology, 25, S29–S34.

When we analyse the relationship of time of death to cause of death, all deaths due to preterm babies or birth asphyxia are seen to happen before 3 days of age and all births due to sepsis and other causes tend to occur after three days. This has clear implication for strategy.

Most neonatal deaths occur in pre term or low birth weight babies. However, the case fatality is low if this is the only problem. There is a far higher risk of death if multiple morbidities co-exist. Thus, co-morbidity like sepsis, asphyxia, hypothermia, or feeding problems, in that order, increase case fatality significantly. Low birth weight combined with sepsis accounts for over 60% of deaths.

PRE-DISPOSING CAUSES

1. Low Birth Weight(LBW)
2. Sepsis
3. Pre-term or Prematurity: If the child is born at less than a gestational age of 37 weeks it is taken as a pre term birth. Such births are usually less than 2500 grams and therefore low birth weight. Roughly preterm babies would be one third to one fourth of all low birth weight babies. Babies may be both premature / preterm and small for dates and such babies would be at a greater disadvantage.
4. Intra-Uterine Growth Retardation (IUGR): If on the other hand the gestational age is more than 37 weeks but birth weight is less than 2500 grams, then it is labeled as IUGR. It is also IUGR if the baby has not achieved the weight that would be considered normal for her maturity in terms of weeks (small for dates).
5. Birth Asphyxia: Birth asphyxia relates to inability or difficulty of the new born in breathing normally at

birth. Deaths due to this are related largely to only one indicator— the problems encountered at child birth and the availability of skilled assistance and if needed emergency obstetric care required to manage the prolonged or obstructed labour or any of the major complications of delivery.

Low Birth Weight and Sepsis are further discussed below.

LOW BIRTH WEIGHT

30% of children in India suffer from LBW. Of the low birth weight neonates, over 80% weigh between 2000 and 2499 grams, about 15% weigh between 1500 and 1999 and only 3% weigh less than 1500 grams. As many as 42% of the new borns in the Gadchiroli study had low birth weight and this was the single major contributory cause of death. But it was noted that as this factor seldom acts alone. Causes of low birth weight could be due to either intrauterine growth retardation (IUGR) or due to pre maturity.

THE IMPACT OF LOW BIRTH WEIGHT

The likelihood of neonatal death for a LBW baby in two studies was estimated as 11 times and 13 times higher than that of a normal weight baby.¹ This occurs not only because LBW babies are at higher risk for contracting sepsis or having asphyxia or hypothermia- but they are also more likely to die of it. They may also have difficulty in suckling at the breast due to weakness or immaturity and this further compromises their ability to fend off disease and malnutrition.

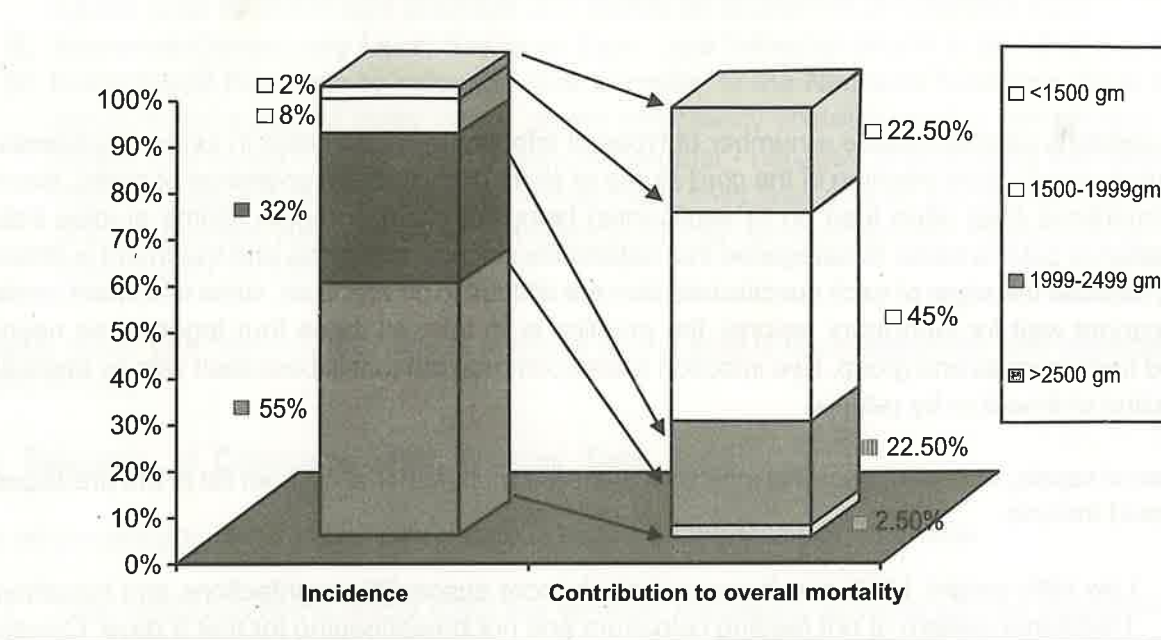
Even after the neonatal period the baby remains vulnerable to malnutrition, recurrent infections - getting them more often, each episode on an average being longer and with more likelihood of fatal outcomes, thus the overall high risk of death in infancy or early childhood.

If we look at neonatal deaths, three fourths of all neonatal deaths and half of all infant deaths occur among LBW babies. In the Gadchiroli study 95% of neonatal deaths were among LBW infants and 74% of them in infants less than 2000 grams- and of these the major part was between 1750 and 2000, which is potentially salvageable at home.

A large number of neonatal deaths can be averted through community based measures, especially if supported by facilities at district level.



Figure 3.2: Neonatal mortality by birth weight categories



Note: n=763 newborn and 40 neonatal deaths

Source: Bang et al. (1999)

WHAT DETERMINES LOW BIRTH WEIGHT ?

All the determinants relate to the health of the mother and care at pregnancy. Underweight mothers, malnourished mothers, anemic mothers and mothers with early age at delivery, will all have more IUGR children. "Too early, too frequent, too many" pregnancies were the second most important determinant of low birth weight.

A pre-pregnancy weight of less than 40-45 kg., a height of less than 145 cm., insufficient nutrient intake, low weight gain during pregnancy co-related with higher incidence of LBW. Studies have shown that giving high calorie supplemental food to mothers reduces the incidence of IUGR.

Further, if mothers are ill during their pregnancy, this contributes to IUGR. Malaria in the pregnant woman if not fatal, is one of the most significant infections leading to LBW. Conditions like toxemia (hypertension) of pregnancy, anemia of the mother are other major contributors which proper antenatal care can avoid and reverse. Good antenatal care could reduce some of this. Low birth weights are related to multiple births also and their detection during antenatal care is also important

Some other causes relate to personal practices like smoking and use of alcohol.

SEPSIS

The term sepsis is used to include a number of types of infections – pneumonia in lungs, septicemia (in blood starting usually from infection of the cord stump or skin), meningitis (in coverings of brain), diarrhea and skin infections (that often lead on to septicemia) being the most common. Some studies include neonatal tetanus but it is better to categorise that separately since its diagnosis and treatment is different. Since in a neonate the signs of each specific infection are difficult to differentiate, since treatment overlaps and one cannot wait for laboratory reports- the practice is to take all these four together as neonatal sepsis and treat them as one group. Eye infection is also common but that is best dealt with by application of tetracycline ointment or by referral.

The causes of sepsis, or severe bacterial infection, are more multi-factorial. A brief list of the predisposing factors would include:

- a. Low birth weight: LBW new-borns are much more susceptible to infections and hypothermia
- b. Traditional custom of not feeding colostrum and not breastfeeding for first 3 days: Colostrum is known to provide resistance to infection and is a critical 'first immunisation' for the neonate.
- c. High incidence of umbilical infection (20%) and skin infections. This relates to cord care at delivery and after, and the hygiene of the environment at child birth and after.
- d. High proportion of reproductive tract infections in mothers.
- e. Poor hygiene in rural and urban slum homes.

The most common organisms that lead to sepsis are *Kelbsiella*, *Staphylococcus aureaus*, *Escherichia coli* and *Pseudomonas*, and antibiotics are best chosen to cover all four. Recommendations for this are best generated by good laboratory work in every district, every year – but that is such a far cry that a standard national recommendation is what we are able to reach now.

In a hospital setting, reducing nursery occupancy, careful adherence to asepsis routines with monitoring of the same, and breastfeeding reduce incidence of neonatal sepsis.

KEY STRATEGIES TO REDUCE NEONATAL DEATHS

- I. **Better antenatal care** and consequent reduction in low birth weight babies (and neonatal tetanus).
- II. **Skilled assistance at delivery (preferably in an institutional setting)** with same assistance extending to include newborn care: Skilled assistance at child-birth can reduce the major part of delivery related complications which leads to both asphyxia and to sepsis. Equally importantly,



but not equally emphasised the skilled assistant at birth is able to also manage birth asphyxia, initiate good newborn care practices and advice on all aspects of new born care

III. Improved Community Level Newborn Care. (see below for details in part B of this lesson)

IV. Institutional Facilities to refer the sick neonate to the Neonatal Intensive Care Unit. This needs to be a part of every center where emergency obstetric care is established. Indeed it makes little sense to establish one without the other - because all childbirths with complications will be at high risk for sick neonates and as many child lives may be lost due to problems at child birth as mothers live. The same emergency referral transport system that is built up for one is adequate for the other as well.

A good model of a neonatal intensive care unit at district level is described in the 'best practices' section of this lesson.

THE CHALLENGE OF COMMUNITY LEVEL NEWBORN CARE

The whole strategy of community level care is based on the following premises:

- That most child births (about 60%) are currently happening at home and the maximum care that the family would be able to access immediately is a community health volunteer or a trained paramedical health worker or midwife.
- That a large part of neonatal morbidity can be prevented by following a better, more appropriate set of health practices and that securing these behaviour change needs through inter-personal communication by a trained communicator from the community who is in dialogue with the family, in a setting that has been rendered supportive for such an effort.
- That based on simple signs and responses to questions a reasonably accurate diagnosis can be made at home for the sick neonatal child.
- That with a number of technically simple interventions – such as can be taught to a health worker – a large part of the potential mortalities can be averted.
- That community level care will help select out in time those babies who need to be referred to an appropriate institution and be able to persuade their families and facilitate them to go for such referral.

However, this requires a health worker who has the motivation and training to undertake this task, the time and opportunity to attend deliveries and make repeated visits to the newborn house within the first month, a system that can support such women in this task and adequate referral institutions to back up this effort.

One well known example of having successfully made such a programme is the Home Based Neonatal Care (HBNC) Programme run by SEARCH, Gadchiroli which will be described in greater detail below.

Some interventions that are possible in the care of neonates at home with the assistance of trained village health workers are described below to illustrate how much can be done at this level alone and to help envisage the kind of training and support that would be required for the same.

SET OF HEALTH PRACTICES/BEHAVIOUR THAT WOULD PREVENT NEONATAL MORBIDITY AND MORTALITY :

- eating full meals during pregnancy
- medical/ANC care during pregnancy
- iron (and calcium) tablets during pregnancy
- clean delivery and the baby room
- eating full meals after delivery
- washing hands before breastfeeding
- Breastfeeding initiated in first hour
- Baby kept warm especially for the low birth weight child.(not being bathed till a few days later, kept wrapped, room temperature considerations)
- baby weighed within few hours of birth
- Promptly seeking care at referral level on being advised it
- Seeking care of community level health workers and taking their advice

SICKNESS MANAGEMENT PROTOCOLS: THE COMMUNITY LEVEL DIAGNOSIS OF NEONATAL SEPSIS

Simultaneous presence of any two or more criteria in a neonate denoted sepsis.

1. Previously normal cry becomes weak or baby stops crying
2. Previously normal baby becomes drowsy/unconscious
3. Previously normal sucking became weak or baby stops feeding
4. Baby cold to touch or fever ($>99^{\circ}\text{F}$)
5. Skin infection or umbilical infection
6. Abdominal distension or vomiting
7. Grunting or in-drawing of chest during breathing, fast breathing (more than 60 per minute)

Or

The presence of even one of the following signs is sufficient reason for suspecting sepsis:

1. A baby who is feeding poorly, or has stopped breastfeeding, after earlier feeding well (i.e. any baby whose vigor of feeding has deteriorated).



2. A baby who is drowsy/unconscious (or inactive or lethargic after being normally active earlier). This is a baby, who is difficult to awaken, or a baby whose limbs are limp or loose, or a baby who does not cry as much as before.
3. A baby who is cold to touch.
4. A baby who is breathing very fast. Newborn babies normally breathe quite fast. Fast breathing without pause, or a breathing rate greater than 60 per minute is likely to be pneumonia.
5. A baby who has chest in-drawing while breathing. This is often expressed as seeing pits in the lower chest wall, and people may have a specific local expression for describing this sign of pneumonia.

THE COMMUNITY LEVEL INTERVENTION PACKAGE IN SEPSIS.

1. Inform parents of diagnosis and give choice of hospital referral.
2. Maintain body temperature.
3. Ensure and support breastfeeding.
4. Administer antibiotics – syrup cotrimoxazole and injection gentamycin.
5. Make follow up visits.
6. If there is no improvement in 24 hours or baby does not take feeds or hypothermia persists, insist on referral.

THE COMMUNITY LEVEL MANAGEMENT OF LOW BIRTH WEIGHT NEONATES - ESPECIALLY IF WITH RECORDED HYPOTHERMIA (LOW TEMPERATURE BELOW 95°F)

1. Encouraged to keep baby in baby clothes and covered/wrapped in layers of cloth.
2. If child is hypothermic –after initial warming by heated cloth, kept covered in blanket and put in a sleeping bag. Kangaroo care method advocated.²
3. Not to bathe till the 7th day.
4. Room kept heated by fire when needed.
5. Active support to exclusive breastfeeding and to initiation of breast feeding within the hour.
6. Where there are feeding problems (a common feature in low birth weight) the VHWS need to extract the breast milk and give milk to baby with traditional milk spoon used for this. The mother needs to be helped to do this too.
7. Prevention of infections: Handwashing by mothers, avoiding contact with infected persons, cleanliness of clothes and delivery room, tetracycline ointment in eyes of every child, cord care by keeping it clean and dry, keeping skin clean and dry and treating skin infections early.
8. Management of Sepsis.
9. Vitamin K injection 1 mg to all neonates.
10. Referral if feeding or temperature cannot be maintained or sepsis occurs.

THE COMMUNITY LEVEL MANAGEMENT OF ASPHYXIA

1. Presence at time of birth is essential.
2. Being prepared to manage asphyxiated baby- especially if prolonged delivery or liquor is thick and green.
3. Record time of birth and start counting.
4. Place baby on clean cloth on soft surface and clean nose and mouth with clean gauze and clean and dry skin with soft cloth.
5. At 30 seconds examine – is the baby crying? Is its respiration normal? If both are normal and vigorous – Normal. If there is no cry or no breathing or weak breathing /gaspings, diagnose as asphyxia.
6. Clean mouth, throat and nose with mucus extractor.
7. Clamp and cut umbilical cord.
8. Putting the baby in appropriate position, ventilate lungs using a bag and mask. Observe for chest expansion.
9. Record breathing at 5 minutes. By 15 minutes if not breathing baby is declared dead/stillborn.
10. Or if spontaneous breathing note as recovered but mark it as high risk requiring follow up for next few days.

OTHER NEONATAL PROBLEMS

Jaundice: It is normal for neonates to develop some degree of jaundice in the second or third day of life. If the jaundice is very deep or persists beyond 10 days, it is a problem needing medical attention. (Note that jaundice on the first day of life should always be referred for medical investigation and management.) This problem has been noted to be declining with improves newborn care especially the provision of warmth, early start of breastfeeds and better care in delivery. In most studies in India the incidence is reported at about 1.6%.

Eye Infections: This is mainly related to reproductive tract infections in women. In many situations it is so high that one routine application of antibiotic eye ointment to the neonate is considered essential. Usually tetracycline ointment is the choice. Presenting with redness and watering of the eye – this is usually susceptible to management at the community or at least in the sub-center and PHC level provided the drugs are there.

Congenital malformations: As good care reduces the incidence of all the current day common problems – this would become a bigger issue. Currently it is reported at about 1% here as compared to 10% of deaths globally. The prevention and management of this needs separate study and is not currently part of any community level programme or even secondary level care.



A CHECK LIST OF INTERVENTIONS LIKELY TO BE FEASIBLE AND EFFECTIVE IN REDUCING NEONATAL MORTALITY AT THE COMMUNITY LEVEL?³

- A. Adequate antenatal care:
 1. Tetanus toxoid vaccine, one or two doses, depending on the previous vaccination status
 2. Adequate diet and rest
 3. Iron and folate supplements
 4. Regular check-ups and appropriate follow up (using home visits) on detection of problems
 5. Planning for birth, including for emergencies at childbirth
 6. Recognition of danger signs in the mother and referral to an appropriate institution
- B. Appropriate delivery care:
 1. Delivery according to plan- preferably institutional or else choosing next best option
 2. Attendance by a skilled birth attendant, if not by at least trained TBA
 3. Use of disposable delivery kit / 5 cleans
- C. Essential care for all newborns:
 1. Ensuring breathing with simple interventions
 2. Ensuring adequate warmth
 3. Ensuring adequate nutrition especially starting breastfeeding in first hour and exclusive breastfeeding
 4. Preventing infections: feeding colostrum, attention to hygiene and handwashing
- D. Special care for the premature/weak newborn:
 1. Recognition of a premature/weak baby who can be taken care of at home/weighing the newborn
 2. Extra warmth, more frequent feeds, feeding expressed breast milk with a cup if need be, extra care to prevent infections
 3. Kangaroo mother care wherever acceptable
- E. Recognition and referral of suspected septicemia
 1. Using easily recognisable danger signs for suspecting sepsis
 2. Immediate referral to an appropriate institution.

SUCCESSFUL INITIATIVES AND BEST 'PRACTICES'

Since we have seen the kind of neonatal care that can be made available at the level of the community, let us examine an initiative that has done this for many years for its impact, feasibility, costs and replicability to see if scaling-up interventions of this kind is a good strategy and should be made part of our district level planning.

INTERVENING IN NEONATAL AND CHILD MORTALITY AT COMMUNITY LEVEL; THE HOME BASED NEONATAL CARE PROGRAMME, SEARCH, GADCHIROLI, MAHARASHTRA

SEARCH (Society for Education, Action and Research in Community Health), an NGO, was founded in Gadchiroli, Maharashtra in 1986 and has been working there ever since along with its founders Dr Abhay Bang and Dr. Rani Bang.

SEARCH undertook a study during 1995-96 in 39 villages covering 763 neonates that illustrated the scenario of neonatal care and survival in this rural area. They found that 60% of deliveries happened at home. 50% of neonates needed medical attention but only 2.6% received any. This huge gap in services to the neonate led them to develop a community based neonatal care programme, the HBNC programme.

This aimed to develop a home-based neonatal care package that provides low-cost, primary neonatal care to neonates using the human potential available in villages and thereby to reduce neonatal mortality and improve neonatal health. Adjacent blocks of villages in Gadchiroli, where SEARCH had been working since 1988, were selected as intervention and control areas in 1993. Vital statistics were collected simultaneously using verbal autopsy (See Annexure 1 for a sample form).

The HBNC intervention package was provided in 39 intervention villages over 8 years (1995-2003). Essentially, a set of clinical criteria were developed for use in rural community to identify neonates at risk of death and neonates with sepsis (Similar criteria have been described in Box No. 2). A surveillance system was also developed to identify the high-risk neonates early. Mothers, grandmothers, families and TBAs were educated in better care of neonates so that they could recognise danger signs, including those of sepsis and seek early care. In addition, VHWs were trained as the providers of neonatal care, including home management of sepsis and asphyxia. Over 93% of neonates were covered in the intervention areas.

HUMAN RESOURCE AND TRAINING

A village /community health worker (VHW /CHW) was appointed at a 1000 population-level, and a trainer/supervisor at 20,000 population-level. The trainer/supervisor would visit each village once in 15 days.

It has been estimated that the CHW needs to spend 1 ½ hours every day on her duties towards neonatal care and the supervisor needs to spend 10 hrs / village per month. This has implications on scaling up via the government system as discussed later.

The CHW is paid at 20-30% of daily wages but her earnings are linked to her performance also through a system of disincentives and incentives.



Training of the supervisors is done using 17 modules divided into 7 workshops of 3-5 days each over one year. Training of the CHWs also required the same time. Training for giving injections and using the bag and mask was done using dolls to start with, and followed by field practice.

COSTS

It has been estimated that a kit for neonatal care (Mobile Level I Neonatal Care Unit!) is about Rs. 3000. It costs about Rs 350 to provide this service to a mother– neonate and about Rs 6750 for every death averted.

IMPACT

Infant mortalities dropped from 76 to 30 during the period of this intervention, and neonatal mortality dropped by 70% as compared to the control area from 62 to 25. Case fatalities decreased most in babies with sepsis (dropped by 63%). Interestingly, institutional deliveries also increased during this period.

REPLICATION AND SCALING UP

Two significant processes of replication have been attempted already – ANKUR Project (2001- 2005) involved 7 sites through NGOs in Maharashtra while an ICMR project initiated a multi site pilot project in 5 states through existing health and ICDS services with the addition of a community health worker, the *Shishu Rakshak*.

The ANKUR project has been analysed and results similar to those of SEARCH have been achieved. The ICMR project is still in process. However, preliminary impressions suggest that there is potential for replicability using the ASHA as the CHW for this work. The main challenges pertain to assurance of financial support from government or other agencies, good quality training and supervision and sustaining motivation.

Obviously, all sick neonates cannot be managed at community level alone and referral systems do need to be set up as well. Looking at neonatal mortality from a different level angle, a different initiative has set up a sick neonatal care unit (SNCU) at district level with good results. This is described below:

INTERVENING IN NEONATAL MORTALITY AT FACILITY LEVEL; THE PURULIA MODEL, WEST BENGAL

THE BACKGROUND

This project, known as “Operationalisation of Newborn Care under the Border Districts Cluster Strategy Programme in West Bengal” was initiated by the Society for Applied Studies, Kolkata (SASK) with UNICEF support in the Purulia district of West Bengal in October 2003.

Purulia was chosen for its poor socio economic indices and poor performance in RCH programmes; its safe delivery rates were at 35.3% and infant mortality at 55.2- both well below the state average. No

reliable data was available for its NMR which was estimated to be between 36 and 55.7. However, the NMR of the neonates admitted in the children ward of the district hospital was as high as 500 per 1000 admitted neonates. The district had no special care facilities for neonates though they comprised 25% of pediatric ward admissions. The skills of nurses and doctors to deal with neonatal care were also poor though some training had happened as a result of a previous UNICEF project.

THE PROJECT

The initial plan was to create a 40-bedded Sick Newborn Care Unit (SNCU) in the District Hospital at Purulia town and 13 Sick Newborn Stabilisation Units (SNSU), one in the sole Sub-division Hospital, one each in 5 rural hospitals and 7 at the Block Primary Health Centers (BPHC) in the district (The BPHC is synonymous to the CHC). However, due to constraints of funds, space and manpower only a 10 bedded SNCU could be started and only a few SNSUs are functional even at the present moment though 10 have been created and 6 more were nearing completion in 2005.

The major difficulties in operationalising the project related to creating the essential infrastructure and training of related personnel. All the units required major civil and electrical reconstructions and there were problems with electricity, piped water and oxygen supply as well as ambulance services.

Two additional pediatricians (one MD, one DCH with training in a Level-II Newborn care unit) who showed special interest in newborn care and 5 nurses were posted solely for the new unit initially. One additional nurse and pediatrician joined subsequently. Initially 41 nurses of the district and sub-division hospital were trained and received hands-on training at the district hospital in 3 batches. Another 50 medical officers and nurses from the rest of the selected health facilities are going through training. The curriculum and training manual were designed by the SASK team. An innovative approach using health workers for further support at the facility was also tried:

NEWBORN -AIDES (NABAJATA SAHAYIKA): AN ALTERNATIVE INNOVATIVE APPROACH

- Madhyamik-pass women from same locality
- Trained for 6 months in SNCU
- Under coverage of Staff Nurse; ratio of 1:1
- Internship for another 6 months
- Utilised as 'Newborn-Aides' with specified support function on Contract basis

Neonates belonging to BPL families are treated free and a Society is being created to support the costs of treatment for other patients. But the programme does require substantial initial investment by the Government. One time initial establishment cost including desirable equipments for 12 beds amounts to Rs. 52,03,770. Recurring cost (based on 50% recoverable of cost of disposables and drugs) per year



amounts to Rs. 4,32,000 (this only includes salaries of additional staff, assuming that doctors and some nurses would be available from the district hospital.).⁴

The project continues to be supported by SASK as well as other resource groups. The SASK team continues to visit the district hospital unit to interact with the administration and the doctor and nurse team in the unit, to provide inputs in developing protocols for patient care, keeping records, data collection and analysis and has helped building up a small library. The Neonatology Unit at Institute of Post Graduate Medical Education & Research, Kolkata provides vital 24-hour support by telephone and email.

THE IMPACT

The results have been significant in a short period of time. After 7 months of functioning (Oct 2003– March 2004) the district hospital unit could reduce the NMR of SCNU admitted neonates by 43.6% from a baseline of 480 in September 2003 to an average of 270.7 between October 2003 and March 2004. The reduction of NMR was more significant for the inborn neonates. The out born NMR showed a similar trend of decline. Many sick neonates could not be admitted to SCNU because beds were not available. However, this 10-bed unit alone could directly avert 52 neonatal deaths, which is more than 3% of neonatal deaths occurring in the whole of the district during that period despite the fact that SNSUs were not functioning. It is estimated that at least 218 neonatal deaths that is 6.7% of neonatal deaths in the district could be averted by doubling the number of beds available. This alone would reduce the NMR by 2.5.

Within 20 months (Nov. 2003-June 2005) and at a strength of 12 beds, it was estimated that 330 newborn death were averted which is equivalent to 9.54% of neonatal deaths and a reduction of NMR by 5.24 points.

Few single interventions have been known to reduce NMR to that extent. There is great scope to combine this with the home-based neonatal care approach we learnt about earlier.

THE CHALLENGES

However, the challenge is also to recognise the difference between the reduction in mortality between those neonates born in the hospital and those brought from outside who came in poorly stabilised condition and often could not be admitted due to lack of beds. Thus optimum functioning of the SNSUs along with good and prompt transportation will be important for further gains after SCNU beds have been increased to accommodate most of the 'in' born sick neonates.

WHAT COULD NOT BE ACHIEVED

- Optimum Functioning of the established Stabilisation Units
- Six Stabilisation Units not yet established

- Expected support from the Local Panchayat Samiti
- Support for Sick Newborn Transport
- Lack of District-Level Supervision

Successful replication of this programme requires political will and commitment, a committed resource group and assurance of fairly substantial funds for the necessary infrastructure and personnel. The problem would not be about availability of staff for the hospitals. Staff nurses are available for working in district hospitals and even at CHCs and can be trained. General duty medical officers can be multi-skilled to play this role – and this has already been tried successfully in West Bengal. The central problem would be to find the sanction for increased staff to play this role.

The other major challenge is to integrate this with better home based care of the SEARCH model. These are not an either-or situation. Both these models are viable and cost effective only if they come together. Even now in Gadchiroli there are about 20% of neonates who have to be referred for institutional care. For example, low-birth and pre term babies who are too weak to take feeds require hospitalisation. In Gadchiroli there is a non-governmental base hospital to do this- and this considerably enhances the credibility and self confidence and effectiveness of the community health worker. But as the programme expands outside Gadchiroli, the base hospital is not available and any district programme has to simultaneously plan for both. We also know from the Purulia model that the success rate in children born outside is limited. And there are many children who do not come at all. So combining with a home based care model makes sense. The community nurse or nurse aide thus becomes an opportunity to train more village level care-givers- and over all impact should be higher than the sum of the impact of the two programmes done separately.



Both the models, Home Based Neo Natal Care & Facility Based Specialized Care are viable and cost effective only if they come together.





Review Questions

1. What are the main causes of neonatal deaths in our country?
2. Describe the factors associated with each of these.
3. How can these be prevented?
4. What steps can a CHW take to intervene in neonatal deaths?
5. What kind of referral system and district level facility needs to be set up for neonates that are too sick to be looked after at home?

Application questions

1. The NRHM aims at increasing institutional deliveries. Do you think a home based neonatal care programme contradicts this goal? Discuss.
2. Looking at the SEARCH model, can the ASHA play the role of the CHW? How would you ensure that this is successful?

Project Assignment

1. Identify a family where a neonatal death has occurred and try to identify the cause (You may use the verbal autopsy form in Annexure 1), as well as the circumstances that contributed to this death. How could it have been prevented?
2. Describe a plan to link ASHAs to home based neonatal care in your district? What would be the requirements in terms of training, support institutions and resource requirements?
3. Try to collect data from the district hospital and other sources of causes and numbers of neonates seen and their complications. Put up a notesheet for a Purulia style intensive care unit in the district hospital.

1. National Neonatology Forum & Save the Children (2004): State of India's Newborns, New Delhi.
2. Kangaroo care is a method of keeping babies warm and nursing them which has been found particularly useful in the care of preterm and low birth babies. Essentially, it protects the baby from hypothermia by keeping her in close contact with the skin of the mother using a cloth sling or pouch to support the baby against the mother's chest or stomach. This also allows the mother to move around while having her baby close to her at all times to feed. Some women adapt to this method readily or use some form of kangaroo care as part of their culture. Some others do not adapt to it well because of soiling of clothes etc.
3. Reducing Child Mortality and Malnutrition in India : A Technical Guide, CARE India
4. For details, see A Generic Plan for Development of Near Level-II, District-Level Sick Newborn Care Units (SNCU), for West Bengal, Society for Applied Studies, Kolkata.

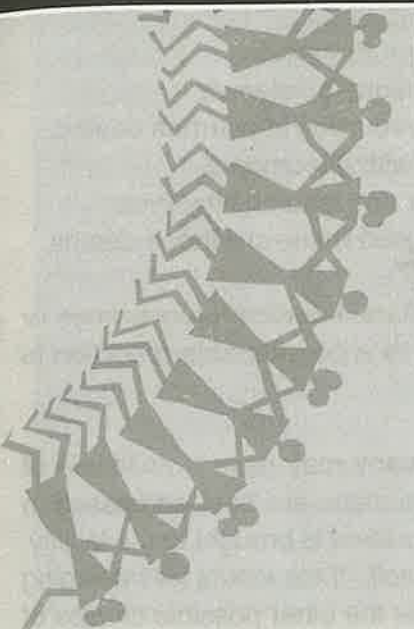
NOTES





Lesson FIVE

Integrated Management of Neonatal and Childhood Illness (IMNCI)



In this lesson we shall discuss:

- The context in which IMNCI is introduced
 - The principles on which IMNCI is based
 - The features of IMNCI
 - The limitations and constraints of IMNCI
- 

THE CONTEXT

Many well-known prevention and treatment strategies have already proven effective for saving young lives. Of these the more important ones to note have been:

- Childhood vaccinations that have successfully reduced deaths due to measles.
- Immunisation of pregnant women leading to a significant drop in neonatal tetanus.
- Promotion of oral rehydration therapy has contributed to a major reduction in diarrhea deaths.
- Use of effective antibiotics has saved lives of millions of children with pneumonia.
- Prompt treatment of malaria has allowed more children to recover and lead healthy lives.
- Even modest improvements in breastfeeding practices have reduced many childhood deaths.

We note that all these above steps have been promoted as part of different vertical programmes or campaigns at different times- and even in such forms, have contributed to a considerable reduction in Infant Mortality Rate.

However often children may have two or more diseases present and many may have a multitude of signs and symptoms which are to be treated simultaneously. Also these signs are best addressed in synergy rather than separately. For example, a child who is weak and has fever is brought to the facility. The child may have pneumonia or malaria and may be malnourished as well. If the inputs for managing one aspect, like ARI or diarrhea, are provided and not for the rest such as the other possible causes of fever or underlying malnutrition – then the credibility of the health care provider is undermined and the management is also incomplete. Moreover a facility that is able to address one cause of mortality and not the other is a significant waste of investment. Since we have already invested in putting the trained staff in place, it would be logical to equip them to deal with many other situations and services that they could provide within that same investment.

In an earlier decade, the mantra had been to “focus on few highly cost effective interventions and not try to provide everything for everyone.” This was the justification for a focus only on immunisation and then on what was called the GOBI strategy- growth monitoring, ORS, breast-feeding and immunisation. In practice the GOBI strategy got reduced to an emphasis only on immunisation, and then in the late 1990s even this got reduced to an emphasis largely only on polio.

Currently there is a growing realisation that there is a need for a more integrated effort. The entire range of illness that a sick child and sick neonate can have needs to be addressed if there are to be any further reductions of child mortality. This realisation is now part of the understanding of the World Health Organisation (WHO) and even of UNICEF which had once pioneered selective interventions. The IMNCI programme is the result of this understanding..



A BRIEF HISTORY OF PROGRAMMES RELATED TO CHILD SURVIVAL :

India was the first country to launch a family planning programme in 1951. This programme was changed to the 'family welfare programme' including maternal and child health programme with the understanding that a reduction in birth rate had a direct relationship with reduction in infant and child mortality. Since then, many programmes have been started to reduce the child mortality.

The National Health Policy 1983 envisioned significant reduction in IMR and maternal mortality rates by the year 2000. All the Child Health Programmes are directed towards achieving these goals. Universal Immunisation Programme was started in the year 1985 against 6 preventable diseases. The CSSM (Child Survival and Safe Motherhood) programme was started in 1992. Many of the key strategies of child survival as we know it now were introduced into the campaign at this stage. The RCH (Reproductive and Child Health) programme was started in 1997-98 integrating CSSM with other RCH services. A few new components, like treatment of reproductive tract infections (RTI) and sexually transmitted infections (STI) were later added to the programme. Since 2005 the programme has entered a new phase called RCH-II. This in turn has been integrated into the National Rural Health Mission as one of its most important component. The focus of RCH-II is on state level planning and programme development with a district-level integrated approach. The IMNCI programme is visualised as the key input in the child survival programme under RCH-II.

The IMNCI strategy is packaged as if it were a single technical intervention like immunisation. But unpackaged, it is about training the staff of health facilities to be able to manage sick children in a comprehensive and rational manner by training and supporting the health care providers on standard treatment protocols for common life threatening childhood illness.

Although the major reason for developing the "IMCI" strategy, as it was first known, stemmed from the needs of making curative care more effective, the strategy also addresses aspects like nutrition and immunisation. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development.

The IMCI strategy (developed in 2002) initially laid stress on the strategies which are applicable to children from 2 months up to 5 years. This strategy did yield results but most deaths were in the first one or two months of life and this strategy did not address the illnesses and common problems of the neonate or more specifically from birth to 2 months. This strategy has been expanded in India to include all neonates and renamed as 'Integrated Management of Neonatal and Childhood Illness (IMNCI)' which is to cover 125 districts from 2005 to 2009. Now it includes dimensions like counseling of parents, and low cost interventions in management of the sick neonate as well.

WHAT IS IMNCI?

IMNCI is an integrated evidence-based syndromic approach to case management. It rests on the principle that the careful and systematic assessment of common symptoms and well-selected clinical signs provides sufficient information to guide rational and effective actions. It thus becomes useful even where there are few or no diagnostic facilities and even where no doctors – instead, only a trained nurse or paramedical worker – are available.

An evidence-based syndromic approach can be used to determine the:

- Health problem(s) the child may have
- Severity of the child's condition
- Actions that can be taken to care for the child (e.g. refer the child immediately, manage with available resources, or manage at home).

The IMNCI strategy is defined as being made of three main components:

- Improvements in the case-management skills of health staff through the provision of locally-adapted guidelines on Integrated Management of Neonatal and Childhood Illness and activities to promote their use;
- Improvements in the overall health system required for effective management of neonatal and childhood illness;
- Improvements in family and community health care practices. Parents, if correctly informed and counseled, can play an important role in improving the health status of their children by following the advice given by a health care provider, by applying appropriate feeding practices and by bringing sick children to a health facility as soon as symptoms arise.

In practice, rolling out IMNCI in a district often becomes only the first of these components which of course is the core strategy, and this is what we discuss here. We however note that there is need to emphasise the other two components and these are done in other chapters in this module- especially the chapters on childhood deaths, neonatal deaths, and BCC (Lessons 3, 4 and 6).

LEVELS OF IMPLEMENTATION OF IMNCI

The same issues discussed above can be also expressed as IMNCI at different levels of implementation.

1. Health Facilities

- Better quality of care:
 - a. Better case management by staff: Efficiency, problem-solving ability,
 - b. Better availability of infrastructure, equipment, and supplies.



- Strengthening referral transport
- Better responsiveness to community needs

2. Community

Improved access to early diagnosis, appropriate protocol -based first level of curative treatment, appropriate referral and prevention measures

- By increased access to Multipurpose Health Worker
- By universal immediate access to Community Health worker.
- By better access to referral health facilities.

3. Family

- Better understanding and response to child's needs:
 - nutrition, child care ,stimulation, play
 - home care of sick newborn and sick child,
- Prevention of common illness.

PRINCIPLES ON WHICH IMNCI IS BASED

Improvement of case management is the core of the IMNCI. The IMNCI approach to improved case management is based on a few principles:

- Only a **limited number of carefully selected clinical signs** may be used, based on evidence of their sensitivity and specificity to detect a majority of commonly occurring diseases. These signs were selected **considering** the conditions and realities of first-level health facilities.
- A combination of individual signs leads to an infant's or a child's classification(s) rather than a diagnosis. Such a combination of signs is called a syndrome.

EXPLANATORY NOTE

- **Signs and symptoms** - what the patient complains of eg 'I have a cough', 'I have a fever' etc. is referred to as a symptom. And what the health care provider finds on examination: patient feels hot to touch or has a fever as seen in the thermometer - the sign.

- Normally when a doctor makes a diagnosis he uses symptoms and signs to make a mental short list of possible diseases that could have led to this. Then using diagnostic procedures he narrows the possibilities further and makes a **diagnosis** – i.e. he attributes the symptoms and signs to a single cause – an aberration of functioning at the levels of cells and tissues- that he calls the disease. Thus he may conclude that the cough and fever is due to bronchitis, or due to pneumonia or due to tuberculosis of the lung. These are “diagnoses” in that each of them is a description of a specific form of damage at the level of specific organ systems.
- In contrast in IMNCI, the emphasis is shifted from naming a diagnosis to naming a “**syndrome**” – which is a set pattern of clinical symptoms and signs- often referred to for simplicity as a set of signs. This is what is meant by **classify or categorise** the patient. The basis of categorisation is the recognition that therapeutic options are limited and overlap different diseases, and exact diagnosis is not essential in a large majority of cases. Thus the treatment for bronchitis and for pneumonia would largely be similar and they would have the same set of symptoms and signs – thus falling into the same category. But tuberculosis requires an entirely different treatment. Therefore though the child with TB also has fever and cough as in pneumonia, the health worker should be able to place this child in a different category using the IMNCI approach.

o *Classification(s) in IMNCI serves three purposes*

- (a) Indicates the type of illness in terms of treatment required
- (b) Indicates the severity of condition(s).
- (c) Indicates specific actions based on whether the infant or child
 1. should be urgently referred to a higher level of care,
 2. requires specific treatments (such as antibiotics or antimalarial treatment),
 3. may be safely managed at home.

o *The classifications are colour coded*

- (a) “pink” suggests hospital referral or admission,
- (b) “yellow” indicates initiation of specific treatment,
- (c) “green” calls for home management.

Colour coding helps easy recall and helps quick reference to written material for use during case management.

- IMNCI management procedures use a **limited number of essential drugs** and **encourage active participation of family members in the treatment** of infants and children
- An essential component of the IMNCI guidelines is the counseling of family members about home care, including counseling about feeding, fluids and when to return to a health facility.



IMPROVED CASE MANAGEMENT STRATEGY

The case management strategy depends on a child's age, various clinical signs and symptoms differ in their degrees of reliability and diagnostic value and importance. Therefore, the IMNCI guidelines recommend case management procedures based on two age categories:

1. Care of Newborns and Young Infants (infants under 2 months)

- Keeping the child warm.
- Initiation of breastfeeding immediately after birth and counseling for exclusive breastfeeding and non-use of pre lacteal feeds.
- Cord, skin and eye care.
- Recognition of illness in newborn and management and/or referral).
- Immunisation
- Home visits in the postnatal period.

Home visits are an integral part of this intervention. Home visits by health workers (ANMs, AWWs, ASHAs and link volunteers) help mothers and families to understand and provide essential newborn care at home and detect and manage newborns with special needs due to low birth weight or sickness.

In addition the opportunity of home visit is to be used for the care of mothers during the post-partum period. This will help mothers and families on how to recognise and manage minor conditions and will ensure timely referral of severe cases.

2. Care of Infants (2 months to 5 years)

- Management of diarrhea, acute respiratory infections (pneumonia) malaria, measles, acute ear infection, malnutrition and anemia.
- Recognition of illness and at risk conditions and management/referral)
- Prevention and management of Iron and Vitamin A deficiency.
- Counseling on feeding for all children below 2 years
- Counseling on feeding for malnourished children between 2 to 5 years.
- Immunisation

The general approach to any child can be summarised as follows:

For all sick children age up to 5 years who are brought to a first -level health facility

1. **ASSESS the child:**

- o CHECK for danger signs (or possible bacterial infection /Jaundice).
- o ASK about main symptoms. If a main symptom is reported, assess further.
- o CHECK nutrition and immunisation status.
- o CHECK for other problems.

2. **CLASSIFY, See whether urgent referral is required or not.**

- o If referral is required then initiate the treatment and refer.
- o If no urgent referral is required, then identify main problem and treat the child
- o *Other than treatment counsel the mother.*
- o Counsel the mother on child's feeding, including breastfeeding practices, and solve feeding problems, if present. Advise about feeding and fluids during illness and about when to return to a health facility. Counsel the mother about her own health.

3. **TREAT THE CHILD :** Follow the protocol according to the category or classification the child falls under.

IMNCI FOR THE SICK 2 MONTHS TO 5 YEARS OLD CHILD

All sick young infants up to 2 months of age to 5 Years must be assessed for the following:

- o 'General danger signs' which indicate the need for immediate referral or admission to a hospital.
- o Major symptoms: cough or difficult breathing, diarrhea, fever and ear problems.
- o All sick young infants and children 2 months up to 5 years must also be routinely assessed for nutritional and immunisation status, feeding problems, and other potential problems.

CARE AT THE COMMUNITY LEVEL

Those related to Community Health Worker Action

- o The newborn and mother are visited on the first day and advised on the set of essential newborn care practices. Ideally they are visited at least 5 more times in the first month- more if the neonate is at high risk. The aim of such visits is the prevention of hypothermia, and prevention of infections. In addition community health workers could be taught some basic knowledge of the care of the sick newborn not only to identify danger signs and refer early, but also to manage at home where referral is not possible.



- o Empowering the communities to facilitate access to community health workers and health facilities, and prevent spread of infections are important roles
- o Influencing Health Care and Health seeking behavior so that illnesses of small children are taken as situations that can be altered and people act on it promptly and appropriately, is another major community goal..

BY MULTIPURPOSE HEALTH WORKER

Female Multipurpose Health Workers or ANMs play a major role as referral supports to community health workers and for the provision of immunisation. They should be competent to detect danger signs early, manage minor illnesses and start management of diseases before referral to a health facility..

CARE AT THE FACILITY LEVEL

The CHC and the district hospital are the main sites for referral support to the peripheral health worker. They act to provide institutional care for all children who need hospitalisation or diagnostics- X rays, blood tests, sputum tests etc. They should thus be able to go beyond the protocols of IMNCI. However, IMNCI practices are a base line of good practice which many CHCs are also yet to reach in reality.

At the primary health center due to limited availability of diagnostics in practice even if the Medical officer is available-the syndromic approach or IMNCI is all that can be achieved. However given the fact that there is a medical officer in place the IMNCI can be delivered more effectively. Once this much is established one can move on to a more general and comprehensive protocol.

NEONATAL CARE IN IMNCI

The principles of neonatal care under IMNCI are similar to the principles of child care. They too can be categorised into:

1. Optimal Care at the Facility
2. Community Level Care
3. Family Level Care

The core of care at the facility (by trained personnel at the facility) and at the community (by the community level health care provider) is to:

ASSESS, CLASSIFY & TREAT THE NEWBORN:

- **Assess:** Primary caregiver asks questions, makes some verification of signs and symptoms by observing child and looking for specific signs.
- **Classify:** based on assessment child is classified (categorised) into one of the few pre-defined categories.
- **Treat:** Decide whether referral is essential or desirable and whether it is possible.

In either situation accordingly undertake the following:

- Immediate care at birth of child- For all newborns by whosoever is assisting.
- Resuscitation procedures- where asphyxia is life threatening
- Gestational age assessment- to determine pre-maturity status
- Classify by weight and gestational age- to determine low-birth weight and pre-maturity status
- Counsel mothers: preventing hypothermia and preventing neonatal sepsis and breastfeeding support. The extent of measures to do this would differ according to birth weight and pre maturity status. If the child is very low birth weight or pre-maturity precludes management by counseling alone the neonate must be referred.
- Treat the newborn: If there are any signs of illness: protocols for suspected sepsis and for other illness to be used.
- Medical record: Maintain records of what was seen and what was done.

In each of these situations the IMNCI protocols provide the steps by which treatment is initiated, child is assessed and treatment is continued or referral made.

1. Strengthening of Referral Transport

Many newborns die due to non availability of transportation or because transportation costs are ill afforded. Mechanisms of strengthening referral transport system discussed along with emergency obstetric care are even more relevant in this circumstance.

2. Strengthening Different Facilities

Facilities should be upgraded to defined levels. This can be integrated with the Comprehensive and Basic Emergency Obstetric Care services in CHC and PHC. The recommendation of IPHS standards is to make every CHC a site of a viable Basic and Comprehensive Emergency Neonatal and Obstetric Care units. The CHC should be able to deal with the sick neonatal child who require institutional care and also be able to resuscitate newborns with asphyxia. At every PHC there should be the skills to provide basic level of emergency neonatal care including basic asphyxia



management. At the community level the ANM/skilled birth attendant and the community health worker (ASHA) are the core to this change.

Female Multipurpose Health Workers or ANMs play a major role by providing skilled attendance at birth. This should include resuscitation of the asphyxiated newborn and advice on breast feeding, essential newborn care and care at birth and early detection of danger signs and management before referral.

PROMOTION OF INSTITUTIONAL DELIVERY AT THIS LEVEL ALSO IS VERY IMPORTANT.

TRAINING SCHEDULES FOR IMNCI

Broadly, two categories of training are included, one for medical officers and a second for front-line functionaries including ANMs and Anganwadi Workers (AWWs). Both of these training schedules envisage that trainees would be able to see a sufficient number of sick children in a facility chosen to support the training programme. Video would act as a back-up

For ASHA and link volunteers if any, a separate package consistent with IMNCI focusing on the home care of newborn and children is in preparation keeping in mind their educational status. Video back up in the training programme is important for trainees to see cases and be able to do problem solving exercises under guidance.

RECOMMENDED TRAINING OF COMMUNITY HEALTH CARE WORKERS

There are many protocols developed by NGOs and government for training the CHWs specifically. One of the broad approaches is to have three phases – one is a basic module on management of diarrhea, acute respiratory infection and child nutrition. This is inclusive of counseling skills on breast feeding and weaning. The second phase is on essential newborn care. And a third – to be introduced in places of very restricted or no access to referral services is a higher level of these two modules where even injectable antibiotics and resuscitation of babies with birth asphyxia are considered.

SOME LIMITATIONS OF IMNCI

1. The IMNCI guidelines address most, but not all, of the major reasons a sick infant or child is brought to a clinic.
 - An infant or child coming with chronic problems or less common illnesses may require special care, not given in IMNCI.

- Non life threatening but common illnesses like skin infections are also not part of the protocol.
 - The guidelines do not describe the management of trauma or other acute emergencies due to accidents or injuries.
 - They also do not cover care at birth which is however being added based on insights from the Gadchiroli programme (See lesson 4 for details).
 - The management of the sick malnourished child is included – but would require more strengthening based on work done in India like – the Guna or Shivpuri programmes (See lesson 6 for details).
2. **IMNCI cannot stand alone or be succesful in the absence of all other elements of health sector reform.**
 3. **The large private sector which performs a major part of the health sector strategy is outside the purview of current IMNCI strategy- and there is urgent need to rationalise health care in this sector.**
 4. **IMNCI needs to be seen as a first step to introduce rational curative care practices based on scientifically designed graded protocols to serve different levels of care. These need to be extended to all aspects of child health and then to all aspects of curative health care. As a stand alone measure, it would be difficult to sustain.**

Review Questions

1. What is the difference between making a diagnosis and categorisation of a child as per the IMNCI protocol?
Illustrate with examples.
2. What are the three basic components of this strategy?
2. What are the levels of care at which IMNCI applies?
3. What are the 3 basic aims of the IMNCI approach for the individual sick child?
4. What tools does it provide to achieve these aims?
4. What health care systems need to be in place for this strategy to be effective at different levels?
5. What are the main strengths and limitations of the IMNCI approach?

Application questions

1. If child health policies and strategies are analysed over the years, what trends and differences are noticeable?

2. What basic systems and entitlements do all of these depend on? How have these basic systems changed over the years in pace with the policies?

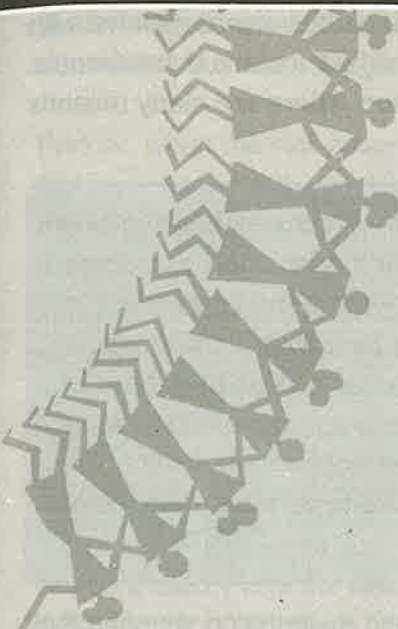
Project Assignment

1. Use the IMNCI guidelines to prescribe the management of a sick child at the district hospital, at the community level. *(Required to be done only by those with medical qualifications)*
2. Meet a community based worker who has received IMNCI training – ANM or AWW. Ask her about her experiences and do a case study of a child managed by her.
3. Interview a facility level medical officer trained in IMNCI to find out the strengths and limitations of its application in your district.



Lesson SIX

Management of the Severely Malnourished Child



In this lesson we shall discuss:

- Why the malnourished child needs to be brought into the health department's focus
 - The clinical care needed for a sick malnourished child
 - The organisation of care at the level of the health facility
 - The community level systems needed to identify, refer and later follow up the sick malnourished child
 - The need for advocacy for bringing the sick malnourished child into focus
 - Two best practices – one for prevention and one for management of the sick malnourished child
- 

INTRODUCTION

Public Health and even the general public recognises the high prevalence of malnutrition especially child malnutrition in India. We know for example that more than 50% of all child deaths are associated with malnutrition though usually there is an immediately precipitating cause like diarrhea, malaria or pneumonia. However the health sector plays a very limited role in addressing malnutrition. There are many reasons for this.

Malnutrition is seen as something resulting solely from hunger and poverty – and therefore something outside of what the department of health and family welfare can do. While this is largely true, there are still a number of areas where health department can and must intervene. The intervention in malnutrition is one of the ways by which the government can respond to poverty and malnutrition – a form of transfer of resources to the poor. Also an active programme on malnutrition by the health sector makes malnutrition and hunger more visible to economic planners and governance at all levels. As we are beginning to see as a result of some interventions, the positive results are also highly dramatic and motivate the community and health care system alike to be more responsive and perform better with respect to malnourished children.

The body systems of children with malnutrition are biologically immature and malnutrition worsens their vulnerability to infections which further worsens the situation of malnutrition. Also, within various social dynamics, their needs get a lower priority and their access to food and health care is limited. The toll of malnutrition on child health is also much higher and the levels of child malnutrition are much higher than adult malnutrition. The relationship between nutrition and health, and therefore, malnutrition and ill health, is beyond debate. However, where Government services are concerned, malnutrition is still seen as the sole responsibility of the ICDS programme and health departments do not want any participation in its management. Indeed they do not see any role for intervention other than food supplementation. 'We manage the sickness and they manage the malnutrition' is the approach of the health departments.

If we ask an ICDS worker, they would equate malnutrition with grade III and IV malnutrition (and simultaneously be under pressure to under-report severe malnutrition!). It is almost as if grade I and II are acceptable and normal. But in grade III and IV the child is often very sick and beyond what the ICDS can do. There may be underlying tuberculosis or chronic malaria or severe anemia. There are recurrent infections that lead to severe loss of appetite and weaken the child. Sometimes the malnutrition itself has made the child too weak to eat. All of this needs medical care, yet such children are almost never referred. Even where they are referred, there are protests: 'Why are they sending these cases to us?' is the type



of attitude that prevails. But when it comes to grade I and II, the active measures and the set of interventions needed to prevent slipping further into severe malnutrition get undermined by the equation of child malnutrition with severe malnutrition only. In effect, it is a “catch 22 situation” where some children are not sick enough for attention and treated as ‘business as usual’ and when they (invariably) get sick, they are considered beyond salvaging and left alone on those grounds.

Further, when the sick severely malnourished child is brought for treatment, it is only the current infection that is managed with very little attention given to the malnutrition component. At best, the attending doctor may prescribe some tonics and food supplements along with some advice of feeding the child well. But the sick malnourished child is hardly in a position to eat well. She often has severe lack of appetite, vomits easily or is too sick and weak to eat. The need for an approach to feeding of such a child is poorly recognised. The need for special nursing is poorly recognised. Also the urgency to treat malnutrition to prevent death from malnutrition per se while the medical system is attending to the infection – is poorly recognised. (See figure 1 and Annexure 2 for an approach to the management of a severely malnourished child)

Finally there is also the perception by funding agencies and their technical advisers that though malnutrition is a problem, it requires socially demanding interventions and is not an area where a quick visible change can be shown. From the viewpoint of a funding agency which has to report back to its principals about the impact funding has made, it may make good sense to avoid this issue.

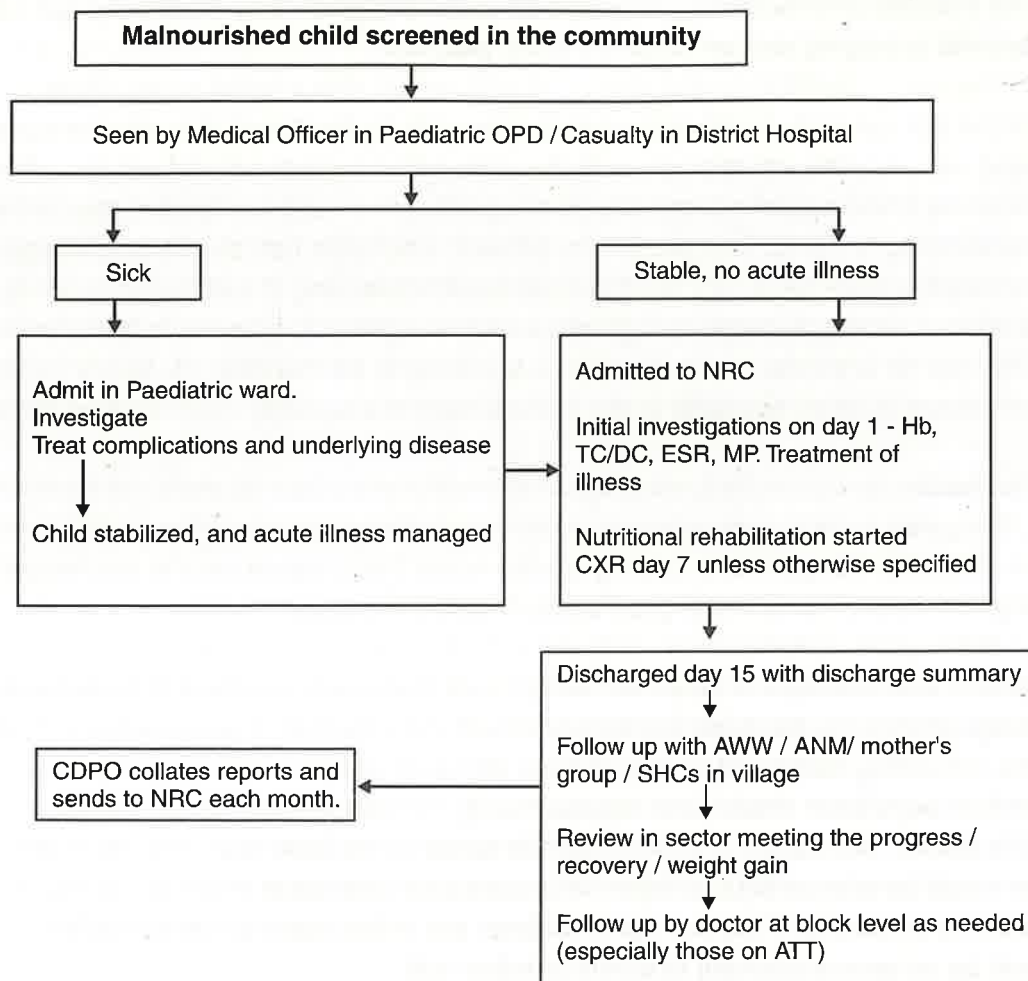
However, a district level manager is faced with a high level of absolute numbers of malnourished children and the challenge of showing decrease in child mortality. If she is to make a genuine district level integrated plan, there are compelling moral and ethical reasons why such children must be planned for. A normative district of 1 million population would have approximately 1.7 lakh children under the age of 5, of which assuming a 5% severe malnutrition of grade III and IV (which is the likely level in a moderate malnutrition district), there would be at least 8500 children who need such care, all of whom are at high risk for death during the year. As in Madhya Pradesh, some districts are in fact making some headway on this issue and this should be an encouragement to others to follow suit.



‘We manage the sickness and they (ICDS) manage the malnutrition’ is the usual approach of the health departments.



Figure 1



To create a mental picture of what care of the severely sick malnourished child is, let us see one approach for the medical management of a sick malnourished child.



THE MEDICAL MANAGEMENT OF THE SICK MALNOURISHED CHILD

The management of the sick malnourished child is a skilled and complex task that demands special alertness, knowledge and experience for a variety of reasons. 'Malnutrition' is a broad spectrum that may however, manifest in a host of ways with various combinations and permutations of signs and symptoms in any given child. Practically every system in the body is compromised in some manner by both malnutrition and the overlying infection, and is in a state of attempting to compensate in complex ways. The overall resistance of the body to disease is extremely poor and the child is fatally vulnerable to a range of common and rare infections that are not normally seen or dangerous to healthy children. Therefore, each individual needs individualised care. Nevertheless, some broad guiding principles do exist to help the management of the sick malnourished child. One such protocol is boxed below to illustrate basic principles. However, details may differ from facility to facility depending on local conditions, morbidity patterns and availability to foods (See Annexure 2).

A good history and examination, along with some basic tests, can go a long way in defining our management.

History: *Ask precisely what the child has had to eat in last few days along with a sense of the quantities taken and the time intervals. Check if there are any past or present weights available including the birth weight. Ask for immunisation status, Ask for history of past and current illness. And ask for the others in the family, age differences and any others with illness – especially fevers or symptoms that could suggest tuberculosis – like chronic cough.*

Examination: *One needs to measure weights and heights, assess developmental milestones, general physical and systemic examination with special attention to skin, hair, oedema, enlargement of liver or spleen, fever, signs of vitamin deficiencies, signs of hypothermia, hypoglycemia, cardiac failure.*

The main point in the examination is to identify the site of infection, the type of malnutrition (wasting / marasmic or with oedema / kwashiorkor) and the effects of malnutrition upon various systems. *We note that most often oedema is not present and often wasting is also not apparent. Thus, the child being low weight for age, being too weak to play, and lying quietly at one place, may be the only clues to diagnose malnutrition. Changes of hair color and skin infections are frequently also seen – but they too are not essential for the diagnosis.*

A child with severe malnutrition of grade III who is apparently 'normal' except for getting tired easily and a failure to gain weight despite counseling where lack of food in the house has been denied by the family, should also be seen as a "sick malnourished child" for the purpose of working up the patient- though she may not require admission.

In such children it is important to assess for the following:

- a. *The presence of tuberculosis*
- b. *The presence of chronic malaria – large spleen and anemia with or without recurrent fever*
- c. *Major infestations with worms*
- d. *A recent episode of a major illness especially measles or chicken pox which could have debilitated the child and made it vulnerable to diarrhea and pneumonia*
- e. *Diseases like sickle cell disease that can be quite common in parts of India.*

Investigations: *In the PHC or sub-center, all that would be possible is a full blood count to confirm anemia and indicate infections, and a peripheral smear to look for malaria and urine sugar to rule out childhood diabetes. The test for sickling is also a simple test and can be done at the PHC level.*

Tests like blood sugar, blood urea, serum electrolytes, serum protein and liver function are indicated where available but except in a district hospital they would seldom be available. Depending on the infections suspected other tests may also be needed, like an x-ray, if tuberculosis or pneumonia is suspected.

A severely ill child may need the following stages of treatment:

1. *Resuscitation – 1 day*
2. *Restoration and nutritional management – 1 week*
3. *Rehabilitation – 1 month*
4. *Prevention – lifelong!*

Of these, the first two require medical/ health care facilities whereas the latter two are community based.

1. **Resuscitation:** *a malnourished child may presented with one or more of these life threatening emergencies :*

- *hypothermia (low temperature)*
- *hypoglycemia (low glucose)*
- *septic shock (serious severe infection)*
- *cardiac (heart) failure, dehydration (loss of fluids by diarrhea or vomiting) and*
- *electrolyte (salt) imbalance and /or kidney failure*

For all of these conditions, immediate steps need to be taken, the detailed description of which is beyond the scope of this chapter.

2. **The next phase of restoration and nutritional management starts immediately.**

- *The child needs to be kept warm by adequate clothing and bedding with the mother. Warmers and heaters may also be required as special equipment.*



- Broad spectrum antibiotics must be continued through this phase. Combinations of ampicillin + gentamicin are used generally. Cloxacillin may be added if *Staphylococcus aureus* infection is suspected. If cotrimoxazole and gentamycin are the only drugs available they are also worth trying. But as a rule the ampicillin + gentamicin combination is preferred.
- Fluids and salts need to be made up by giving ORS, depending on the level of dehydration. Only if the child is vomiting or too weak to even drink, should IV fluids and electrolytes be given. Oral feeding promotes a quick return of the gut to normalcy.
- If the child is so anemic as to be in shock or heart failure (or has lost blood due to some reason), blood transfusion may be required. However, this can often be avoided even at low levels of hemoglobin since the body has adapted to the anemia. Iron supplementation is not started till the 3rd phase (about 2 weeks later) usually since its presence in the malnourished gut may promote infections and diarrhea. This is important to note- as often a doctor reacts to any malnutrition and anemia with starting off on iron simply because it is one of the few drugs available with them.
- Large dose of vitamin A (1 lakh IU for infants and 2 lakhs for older) is given and repeated if necessary on the 2nd and the 28th day.
- Measles vaccination is done.
- Feeding: the main aim is to make up the gaps in calories and protein at the maximum rate tolerated by the child. In general, 150-200 kcal, 3-4 gms protein and 100- 150 ml fluid per kg. per day needs to be given. 10-15% of the calories can be given as visible oil even in very small babies.

A breast feeding child should be allowed to breast feed. A child over 6 months needs to be fed every 2 hours in the day time to start with. If a child is too weak to even eat, nasogastric tube feeding may be required for a few days.

Milk is usually the best initial food base if it is tolerated. High energy milk (100 cal/ 100 gms) can be made by adding 1tsp sugar, ½ tsp coconut oil to ½ cup milk.

On day 1, only 50ml / kg may be given with daily increments of 10-20 ml / kg to come to 150ml / kg by day 7.

If the child gets diarrhea from milk (lactose intolerance), cereal based feeding may be started initially with milk being reintroduced in 1-2 weeks.

Many easy-to-make combinations of locally available foods can be used to prepare ready-to-eat mixes that are high in calories and protein. These can be used at the level of the community and also once the child is at home.

For example, SAT¹ mix is roasted and ground rice, wheat, black gram and sugar in a ratio of 1:1:1:2. This gives 380cal/100gms.

- Vitamin supplements should be started (vit B complex, vit C, vit D and Zinc)
- The child is dewormed.

Weight gain needs to be monitored carefully (even more so in a breast feeding malnourished child) to achieve about 70 gms / kg per week in infants, or about 150-200 gms per week in infants and very young children.

3. *Before discharge*, the child is given a measles vaccine and dewormed again and started on iron supplements at 2-6mg per kg per day for 3 months. The most important factor during the rehabilitation phase at home is that the nutrition restoration must be continued and relapse prevented. Thus, the education, counseling and motivation of the care givers at home are of the utmost importance as well all possible systems of support. The sub centre and anganwadi along with ANM and AWW must be alerted to this child's discharge and the requirements of special care in the community. If the ASHA or other available community health worker can be provided with support, to come and attend to the child for a day and interact with the nurse attending in the system, she may be able to follow up better at home. Growth monitoring should be done every fortnight to start with, and then every month. Immunisation must continue as per schedule and be brought up to date in the shortest period of time. Supplementary nutrition from the AWC at double rations is expected to make up the caloric gap of the child - vitamin and iron supplementation must be ensured.

The child should now be eating the family-pot food but with extra oil and extra meals (5 per day). The parents must be given assistance to learn a few basics of nutrition and the guiding principles of such feeding from the nurses at the rehabilitation centre / AWC so that they can give the best possible variety and sources of protein within their resources. They must also be taught home management of diarrhea. It would be good to insist that nurses be given a set of questions that they ensure that parents are able to answer before their child is ready for discharge. Weekly visits by the community health worker and by the anganwadi worker are important. This will ensure prompt referral in case of sickness to the PHC doctor, which has a high chance of recurring.

4. *Prevention of recurrence of malnutrition*: Most of the issues have been covered above. However, the family should be able to recognise how a greater interval between child births helps, and limiting the number of children would help in the better care of this child. Above all they should be able to appreciate that there is much that many families could do by themselves and together as a community to prevent the child coming to such a crisis; also that time spent in playing with the child and just responding to the child by itself contributes to its growth and development and actively helps to prevent malnutrition.



ORGANISING FACILITY LEVEL CARE

Specific organisational and management issues would need to be tackled in order to provide this kind of intervention as discussed briefly below. The aim should be for making institutional in-hospital care available for the severely sick and malnourished child in at least every CHC with an institutional referral back up in the district level. In addition every primary health center should act as a referral center for grade III and IV malnourished children, for children who fail to gain weight despite correct feeding and for concurrent infections and sickness of the malnourished child.

In the PHC this only requires:

- a) Training of the medical officer
- b) Training of the nurses
- c) Facilities to rule out underlying disease- related causes of malnutrition as mentioned in the section above
- d) Provide counseling for families of children with severe malnutrition.

In the CHC it requires:

- a) A pediatrician sensitised to this problem and provided with standard treatment protocols
- b) Or a medical officer who receives a one-month training for institutional management of sick child – where this topic is also covered
- c) At least three nurses trained in this
- d) Some voluntary counselors from an NGO / local institution/ASHA programme management group etc.
- e) If a separate ward room is made available for this – it would be ideal with about 4 beds
- f) The supplies and skills and minor equipment needed for the investigations and management outlined earlier should be in place
- g) Special quota of food – of special quality for the child and also food for one escort person to stay with child
- h) In addition to the above, ideally the family may need some travel support to come and to go back (even use of the hospital ambulance for this purpose) or livelihood loss compensation.

The fund for the extra items over and above the standard hospital budget may be given as a grant to the Hospital development committee (Rogi Kalyan Samiti or equivalent). This could include funds for incentivising ASHA for bringing in appropriate cases and for follow up care in the community.

ORGANISING COMMUNITY LEVEL CARE

Community Level Care needs to play the following roles

- a) Investing in preventing malnutrition by counseling families most at risk.
- b) Investing in preventing malnutrition by ensuring community action to secure entitlements related to food security especially with regards to vulnerable families.
- c) Coordinate with the anganwadi system to ensure that all grade I and II children are attended to adequately so that they normalise. This is done by combination of better access to quality ICDS services, and counseling their families (not just the mother) and of course ensuring that they secure their food entitlements.
- d) Identify grade III and IV children and ensure that they get a check up that broadly conforms to a standard treatment protocol for the same. It is essential to mention the standard treatment guidelines to the community as the medical system would need considerable reminders before it is able to address severe malnutrition as per professional standards. There would also need to be a strong element of advice against unnecessary drugs and food supplements that waste scarce monetary resources- and thereby even worsen malnutrition levels. These children could be gathered and sent by ambulance or other forms of transport like buses or vans on identified days.
- e) Ensure that any child who is malnourished and too weak to play for over a week or who is malnourished and sick and too weak to move, or a malnourished child who is not able to eat well is taken to a hospital that is known to provide nutrition care services for the sick malnourished child.
- f) When a child returns from the hospital, to follow up intensively for six months. An ASHA can at best follow up five to ten children and may be incentives for the same. If necessary, children may need to be followed up other community volunteers who have been suitably trained.
- g) Close coordination between the health care facility and the ICDS system so that systematic information is exchanged about availability of beds, discharge of children back to community, continuation of micronutrient supplies and specific follow up requirements such as for TB treatment.

This entire programme is built on the close coordination of the ASHA, ANM and the AWW – working as team trying to tackle malnutrition within a short space of time. The latter two are already in place, already entrusted with this task and already accustomed to not playing these roles. It would be difficult to change this unless the introduction of ASHA is seen as playing a role of change agent – the ‘activist’ in ASHA. The intention is not to merely introduce the ASHA as the woman taking over family level counseling. The intention is indeed that the ASHA is able to get the possibility of tackling malnutrition on to the centre stage – on to the agenda of decision makers – and that they change the way the ANM and AWW are currently addressing it.



THE ROLE OF ADVOCACY

The attention given to grade III and IV, other than being an ethical imperative, is a move to draw attention to the dimensions of this problem and bring the issue of managing children with severe malnutrition into the realm of the do-able and what might be considered good “funding opportunities”. The argument is sometimes raised that the problem of malnutrition is being medicalised by opening up clinical treatment for it, and that malnutrition requires social solutions not medical ones. What this argument does is that (a) it absolves the health department of its role, (b) it helps bury the problem of malnutrition from the public consciousness, which the visibility of a malnutrition clinic receiving a large number of patients would make starkly apparent, and (c) it prevents reaching out to save the lives of the sick child and help the poor cope with their poverty.

Undoubtedly, there are a number of complex socio-economic dimensions to malnutrition, (see Lesson 1) which cannot be tackled either by ‘feeding programmes’ or ‘medical management’. However that should not negate the role of an intervention that responds to a situation of immediate urgency and threat to children’s lives, nor it does not seem likely that by intervening so, the issue of hunger and basic food insecurity would be forgotten.

Thus, to start up “Nutrition Rehabilitation Centers” or rather “Sick Malnourished Child Clinics” (as we would like to call them) requires conviction and sustained advocacy. An earlier attempt in the late 1970s, partly in parallel to the famed Raj Narain initiatives, ended up in failure. At the technical level, the families of such impoverished children could not stay in hospitals for any length of time – mainly due to loss of livelihoods. Another problem was that malnutrition returned soon after they went back to home food. However there are other opinions that the results were good and as is with many good ideas they were not tried for long enough, or tried completely, and not given the benefit of experience and fresh insights.

In the 1980s and more so in the 1990s the focus shifted a lot to micronutrient replacements, and donor support also favoured the micronutrient approach despite little evidence that in India there has been much difference made by them as stand alone interventions.

That is why we look more closely for good ongoing Indian experiments that could act as best practices or nearest to a best practice in the management of malnutrition by the health sector. Clearly action is needed on this front. A District Health Action Plan that ignores the health department’s contribution to addressing malnutrition is simply not complete. A recent, innovative initiative that attempts to do this, the ‘Bal Shakti Yojana’ started in Madhya Pradesh, is described in detail below. In a later module we would also address how convergence between different sectors would help achieve this goal better.

SUCCESSFUL INITIATIVES AND BEST PRACTICES IN TACKLING MALNUTRITION

COMMUNITY INITIATIVES TO IMPROVE HEALTH AND NUTRITION: THE AROGYA IYAKKAM, TAMIL NADU

This programme is now being implemented in 700 villages in 23 blocks in Tamil Nadu by the Tamil Nadu Science Forum. In each block there is a core team of 4-6 fulltime coordinators who work in 30-60 villages with a team of village health activists and village health committees. The Arogya Iyakkam programme has 5 main aims:

1. Improving utilisation of primary health care services
2. Making a measurable improvement in child health and nutrition status
3. Organising and empowering women around their health needs
4. Promoting health education and awareness in villages
5. Building Panchayat capabilities for effective local health intervention.

The Approach

The programme started by organising village health committees, which selected a local health activist. These voluntary health activists were trained in camps and more intensively on the field in talking to mothers about nutrition and diseases, and to pregnant women on nutrition, delivery, breast-feeding, etc. The village committees met, read and discussed health books – and helped the health activist in promoting nutrition and health education. The programme was instrumental in initiating, as of today, 1406 self-reliant women's savings groups in all the blocks and in addressing women and child health needs through these groups.

The programme is based on a principle of respect for the mother and caregivers, an understanding of their context and experience, and negotiation and individualisation of health and nutrition advice. This requires more skill and confidence than just preaching to a passive audience. Training the activist in this takes time – indeed she has to learn not only to advice, but also to counter arguments. She also needs support from a group of trainers who visit her regularly and provide her work with legitimacy and constantly encourage and re-train her.

The activists often call larger meetings to discuss specific issues– for instance, feeding colostrum. In the larger meeting somebody would invariably say of their own initiative that they have fed the baby with colostrum and the baby is healthy – this can be emphasised by the facilitator as 'peer-proof' to convince others. This type of negotiation with a larger group requires even more skill and often the block trainers have to help the activist in conducting such discussions.

Similar house-to-house negotiations and group discussions are organised on women's health – together this becomes an intensive health education exercise in women and child health needs.



HEALTH INTERVENTIONS AND THE PREVENTION OF MALNUTRITION

The key health related activity is built around the concept of preventing malnutrition, especially severe malnutrition. The health activists are trained to visit homes of children with malnutrition and discuss with them what can be done to prevent malnutrition, especially in the age group of 6-18 months when most children slip into malnutrition. Also they are expected to rigorously visit the houses of families with grade I and II children, thus trying to prevent further slippage into severe malnutrition, and over time bringing them back to normal. For grade III and IV children, the central advice is referral, as it is difficult at the community level alone to reverse it – though even in such cases some good results have been seen.

During the home visit, the health activist is taught to do an individualised analysis of how five set of determinants combine to create child malnutrition.

1. One set of factors relates to optimising feeding practices: exclusive breastfeeding, timely initiation of complementary feeding, adequacy of complementary feeding in terms of frequency (4 to 5 times per day), quality (fats and oils, greens and reds) and feeding during and after an illness.
2. The other set of factors relates to the prevention and prompt management of illness: fevers, diarrhea, acute respiratory infections, worms, measles etc. A history of recurrent illness is taken as a cue to insist on active changes like hand washing that could lead to significant reductions.
3. The third set of factors relate to the family: the age of the mother, spacing of children, economic status etc. Though they are useful for awareness building, the practical possibilities are in ensuring that the next child is spaced adequately and most importantly, that the family comes to understand the importance of the time spent by the mother on child care as a key determinant of child health and child malnutrition, and that this constraint of time is one of the ways that poverty acts to create malnutrition.
4. The fourth set of factors relate to rationalising the family's own efforts at coping, so that money is not wasted on treatments for trivial illness and costly tonics and food supplements are not used to manage malnutrition, and warning against a number of food taboos.
5. The fifth set of factors relate to access of the family to essential services, especially those related to food and food security, immunisation, the range of anganwadi services, the public distribution system etc.

Once the activist reaches an understanding of the complex of factors that leads to malnutrition then the changes needed in each area are discussed and a possible/feasible alternative is agreed upon. Thus though the action is notionally on malnutrition, in practice it is a fully rounded family counseling. It is support organised by the community itself to help the poor family cope with its poverty better, or at least

for its greatest felt need – to save the lives of its own children. The health activist does provide support on essential newborn care, on prompt and appropriate management of diarrhea and ARI and on access to child health services – but as part of the effort at eliminating child malnutrition. Child malnutrition is thus not only about child nutrition, but an index of child health, and in the perspective of the programme, the ideal indicator for local and even global child health planning. Once in every six months, the children are weighed by the health activists- or in their presence to see the difference made and update the list of families at risk .

Also, in the perspective of the programme, the major gains in reduction of malnutrition are not made by reversing those already malnourished but by changing practices and enabling families to be able to prevent malnutrition. This is potentially seen as contributing to developing schemes to eliminate child malnutrition within a time bound manner. This is now a part of the Tamil Nadu government's policy on elimination of child malnutrition – the only state to have such a policy.² The challenge is to implement this excellent policy – to make child malnutrition unacceptable to society, as an earlier generation had made famine unacceptable, to take the elimination of child malnutrition off a long term agenda and bring it into a time bound measurable framework of action.

Linkages to Entitlements and Empowerment

In Arogya lyakkam, health is used as an entry point into discussing and intervening in broader issues that lead to poor health care – poverty, housing, sanitation and employment, inequalities (gender, caste and class), education, role of government services, policies of privatisation, etc.

The data collected at the village level as part of this programme (through village health registers) is combined with special surveys and studies at the block level on the utilisation, status and quality of government services. This is used to generate public pressure on the health system (part of the peoples health movement campaigns) and to fight for people health rights. Frequent meetings with Panchayat and ward members to update them on the programme and to get support from them on health issues, also build the capabilities of the panchayat to intervene in health action.

Health is used as an entry point into discussing and intervening in broader issues that lead to poor health care like:

- poverty
- housing
- sanitation
- employment



Impact

A sample survey of 197 villages was done where the programme was running for 1.5 years to see the improvement in child nutrition status. This study showed a significant improvement in child nutrition status. Based on this study, the Government of Tamil Nadu has introduced this approach (family counseling) as a part of the government policy on nutrition with a specific acknowledgement to Arogya lyakkam as the model for this intervention. UNICEF has also recognised this model as one of the ten best programmes in the world.

Of 7133 children weighed at the beginning of the programme and after 1.5 years, the number of normal children increased from 34.45% to 45.77 % - an absolute increase of 11.33%. The number of grade I children increased marginally by 1.23% and the number of grade II, grade III and grade IV children decreased by a corresponding 12.56 %.

If each child were followed to see what has happened to him/her, 34.9% of the children had improved, 25% of the children were retained at the normal level, while 13.6% of children worsened in this period. Compared with non-programme areas, the improvements had increased, the worsening had reduced and slippage from normal was also significantly reduced. Analysis shows that the programme had improved the nutrition status of an additional 29% of the children. This was particularly significant considering that Government programmes had managed only one tenth of this improvement every year for the last twenty years.

Significantly, the programme has been successful in increasing health awareness, improving women's health status and improving utilisation of health services – particularly increasing utilisation of Vitamin A, registering of pregnancies, provision of iron tablets, reach of nutrition mix to needy children, etc.

The key strengths and special features of the programme are

1. highly motivated fully voluntary village level health workers
2. an active set of supportive 'trainers' and continuous process of such supportive 'training'
3. skilled, individualised 'one-to-one' negotiation (counseling) with the mother / other caregivers on specific child health and nutrition issues
4. focus on child malnutrition as the idiom around which all child health interventions are organised
5. creation and linkage with self help groups / women's groups to provide a critical mass at village level that is involved and affected by the programme
6. linkages with and support to government services and building public pressure for better services and
7. to lead to a policy for state wide time bound planning for the elimination of child malnutrition.

The key weakness of the programme is that it is unable to address adequately the needs of the grade III and grade IV malnourished child. The facility tends to be weak and of uneven quality – but worst it is also not effective in reversing severe malnutrition. Obviously a facility level approach is needed to complement this.

INTERVENING IN SEVERE MALNUTRITION: THE BAL SHAKTI YOJANA, MADHYA PRADESH

BAL SHAKTI YOJANA IS AN INNOVATIVE INITIATIVE FOR SAVING CHILDREN'S LIVES AND TACKLING MALNUTRITION IN MADHYA PRADESH

The Background

Madhya Pradesh has some of the worst indicators of child mortality and malnutrition in its poorest pockets, especially in the districts of Seedhi, Sheopur, Shivpuri and Guna. Close to 70,000 children in the state survive with grade III and grade IV malnutrition. Many malnutrition deaths are reported year after year amongst the Sahariya tribe in particular from MP and adjoining Rajasthan and this has received much attention from press and media and the activist groups working in the area alike.

A programme known as the Bal Sanjivini Yojana was started as a response in 2002 by the Women and Child Department in MP. This comprised of 6 monthly 'rounds' by the AWW with a view to 'identify' children with severe malnutrition by weighing children intensively. In a sense, this was supposed to be a part of the routine tasks of the AWW in the first place, but the programme gave this routine work some more impetus and focus. However, by the time some rounds were accomplished, it was evident that a mere identification was not only fairly useless in terms of changing the situation, it was also causing frustration and apathy amongst the workers and community.

Thus, the concept of providing intensive intervention to deal with the children who were identified was developed in the form of the Nutrition Rehabilitation Centre. The first of these came up in Guna quite informally and as a result of the efforts by a group of people; a nurse with a special interest in nutrition, a UNICEF consultant (Guna and Shivpuri are focus areas for health for UNICEF), a supportive CMO and the District Collector. It was really a heartfelt response to the plight of children of a particular Sahariya family in village Gadlagidhh which was suffering from a diarrhea epidemic during the monsoons of July-August 2005. Initially the children were transported to the pediatric ward and while dealing with them, systems were developed for the other children that followed. Early successes surprised and enthused both the community and the health care service providers involved and led to a championing of the package of care for severely malnourished children, and this has led to the creation of the Bal Shakti Yojana in October 2005, currently being implemented in districts Guna and Shivpuri and to be replicated all over the state. The various achievements, potentials and difficulties of the scheme are being described briefly. Several small but significant differences exist in its implementation in the two districts and these will be highlighted wherever relevant.



The Scheme

Coordination and Convergences

The BSY essentially comprises of setting up of Nutritional Rehabilitation Centres to intensively manage children with severe malnutrition and provide nutrition training and counseling to their care takers. Identification, referral and follow up are to be taken care of by the ICDS system, which works in close collaboration with the Department of Health as far as this scheme is concerned. (*This is a real example of 'convergence' in actual practice, otherwise only seen for the immunisation programme!*). Children are picked up by transport arranged by the government after planning with the anganwadi workers regularly and as per the availability of beds in Shivpuri. There is no such arrangement in Guna where many more children come directly by self referral though they are also referred by the AWWs.

In Guna, the NRC functions as a separate society and is managed by the Pediatrician in-Charge and the CDPO. There is close support from the UNICEF teams both at Guna and Shivpuri. Many voluntary agencies, such as the Rotary Club and Sewa Bharati, and individuals also support with funds and management. Thus, there is an element of community participation and pride in this programme. Many children (anecdotally, 80%) are found to have TB and coordination is required between the NRC and the RNTCP programme. The official coordination mechanism is the monthly District Health Committee (Zilla Swasthya Samiti), but much informal coordination happens on a daily basis by phone and rounds of the concerned departments. Whether there is a fixed agenda for discussion and reporting of the NRC at the Zilla Swasthya Samiti was not clear, but it seemed that it was not felt to be required. The scheme allows for the NRC to be run entirely by an NGO or run by public private partnership.

Supportive Systems

The staff is highly motivated, going by the level of interest of the Collectors, CMOs, doctors and consultants, as well as by the early results of the programme. There is a distinct 'good attitude' towards the child and her family, and a caring, welcoming, positive energy in trying to solve any problem that arise but are not 'schemed for' and this is particularly evident in the services that are provided or linked to, for family members accompanying the child to the NRC.

Thus, for example, accompanying older children in Shivpuri are sent of to the bridge course in NFE (Sarva Shiksha Abhiyan) for the duration that they are there, and accompanying men are provided opportunity to work and earn (Rs. 60 per day) at the nearby construction site for the trauma centre. These arrangements are written into the scheme. Accompanying family is either fed (Guna) or provided money to eat every day (Rs. 35 per day in Shivpuri). Transport is provided to the family either as per the scheme (Rs. 200) or as per the actual amount spent by the family (Guna). In Shivpuri, vehicles from the CDPO office do rounds every 15 days to bring children in, and of the Rs 200 provided for transportation in the scheme, Rs 100 is given to the family at discharge for going home.



There is a distinct 'good attitude' towards the child and her family, and a caring, welcoming, positive energy in trying to solve any problems that arise.



The NRC Facilities

The NRCs are well located and accessible, have sign posts, and are very close to (adjoining) the district hospitals from which they derive all medical support. They are clean, spacious and airy. The kitchens are spotless and toilets are adequate. Children and mothers move freely in and out of the ward. Toys were seen in Shivpuri courtesy of UNICEF, but not in Guna. The only special equipment required is instruments for proper weighing and measuring lengths / heights of children, and heaters and cot warmers.

Daily OPDs are held for referred children by the pediatricians who also attend as and when called. There seems to be a good and responsive relationship between the hospital ward and the NRC, though the difference in attitude between the two persists.

Shivpuri has a total of 3 district and 2 block NRCs with a total of 76 beds and Guna has a single NRC with 16 beds. Neither district seemed to feel a dearth of beds as the communities' willingness to bring their children is the largest rate limiting factor at present. This is borne out by the fact that bed occupancy is about 60% at a time in Shivpuri though close to 100% or over in Guna. Only a modest proportion of children that are identified are in fact admitted. For example, in Shivpuri, of a total 3137 children identified in the last round, only 1069 were admitted – but this is itself a very good achievement.

The staffing pattern as per the scheme allows for

- 1 pediatrician / doctor trained by pediatrician
- 1 nutrition educator / feeding demonstrator
- 1 cook
- 3 nurses / ANMs (1 per shift)
- 1 cleaner

Children are admitted with the intention of keeping them for 14 days in order for stabilising the child's state, completing medical management, demonstrating weight gain and training the care givers on feeding at home. Some children take discharge early while some may be kept for longer if necessary. All children are seen initially by the pediatrician. Sick children are admitted to the pediatric ward at the district hospital initially. A Standard Treatment Guideline is followed (Annexure 2).



About Rs. 250 is the estimated cost for the medical management per child for the entire stay, excluding baseline investigations which are done at the district hospital. However, the scheme falls short of providing a specific budget for this, and this amount is made up from different budgets like the RCH budget. In Shivpuri these are purchased specially from an earmarked chemist, in Guna, they are availed from whatever is available at the district hospital. A lot of intravenous fluids and blood transfusions seem to be given. Nasogastric tube feeding is not done.

About Rs. 15 per day is estimated as the cost of food for the child per day which is given 2-hourly in 8 rations through the day. Shivpuri NRCs use processed foods like soya biscuits liberally (at Rs. 315 per child) whereas in Guna, no pre-packed food is used at all with the understanding that this has more long term sustainability and better home management is achieved. Well-worked out and standardised recipes are used by the cook under supervision of the nutrition educator. Daily training sessions are held with the mothers. For each mother 'trained', the cook and special educator are to share an incentive fee of Rs 50.

The Guna programme is much cheaper than the Shivpuri programme for reasons described above. Total costs per child at the facility itself of approximately Rs. 500 including salary costs for additional staff as compared to Rs. 50×14 (days) + 250 + 315 + 100 = Rs. 1365 per child, excluding salaries and infrastructure. The cost in Shivpuri is about Rs. 4 lakhs per month (covering 1690 children)

Follow Up

As mentioned, follow up is mostly the responsibility of the ICDS programme. Each child is sent home with a discharge paper and growth card. A list of children discharged is supplied to the DWCD. Each child is supposed to be seen at least 4 times in 6 months by the AWW/ANM and brought back to the facility if necessary. In Shivpuri, follow up camps are organised every 2-3 months where the doctors also go to see the discharged children. These camps also function as catchments for new admissions. The scheme allows for private pediatricians to be invited to hold camps at Rs 800 per day if government doctors are not available. (For children who are not admitted, the scheme allows for a day's training on nutrition and provides a budget for the same: Rs 400 per day for trainer, Rs 60 per attendee. However, this is not seen in practice.)

Iron and vitamin supplements are provided for 1 month at discharge and to be received from the AWC later in the follow up period. In Shivpuri, a stock of soya biscuits is provided for 1 month at discharge. ATT is also provided for 1 month after which the family is to go to the TB centre for the rest of the treatment period.

Impact

Since the scheme is recent, it is not reasonable to expect to see changes in IMR, U5MR or malnutrition rates as yet. Studies for long term follow up and impact are also not currently on except informally by the consultants associated with the programme.

Where a total of 4000 children with grade III and IV malnutrition were identified in round 6 in Shivpuri, the number was 3137 in round 7. Similarly, in Guna, the numbers fell from 1700 to 1500. This needs to be studied over longer periods of time and more systematically.

However, initial results at the level of the facility are hopeful; in a total of nearly 400 admissions in Guna, there has been only one death and 9 deaths in 1069 admissions in Shivpuri, which is in itself remarkable considering that many children were brought in in a moribund condition. (Note that this is a mortality of less than 1% as compared to expected mortalities of about 20% in severe malnutrition.)

Children have gained an average of 482 grams at discharge in Shivpuri. Case studies and photographs abound (digital cameras are included in the scheme.) that tell their own tale of visible improvements in the child's condition after this kind of intensive intervention. Anecdotal evidence suggests that many children continue to do well in the community for at least some months after discharge.

Main Supportive Circumstances

1. supportive, interested and involved district collectors
2. presence of technical and management support from UNICEF
3. additional possibilities for impact because of IMNCI
4. involvement of other citizen's groups
5. convinced champions amongst local consultants and staff

Main Accomplishments and Potential Gains

1. A focus on the issue of malnutrition within the community, the health care system and the ICDS system.
2. A demonstration to all these that something can be done.
3. A demonstration of a better, caring, non judgemental attitude to poor women and children at a government facility.
4. A demonstration of creative innovation, flexibility and convergence amongst many schemes and programmes (Bal Sanjivini Yojana, Bal Shakti Yojana, ICDS, RCH, NRHM, Rajiv Gandhi Mission, Education Dept, Labour Dept etc.) and many different funding lines (European Commission, UNICEF, DFID, Panchayat Funds, voluntary contributions etc.) to achieve objectives.

Main Gaps

1. Weak village level services for follow up – both health care and ICDS: Here a linkage with an Arogya lyakkam type programme or even the ASHA programme, with a greater stress on nutrition could make for a major impact.



2. Weak linkages for full management and follow up of very important diseases like TB, again at community level, and lack of pediatric drugs for TB and poor inclusion of children in current TB programmes. Here also the role of linkage with the ASHA programme and the anganwadi system moulded like the Arogya lyakkam programme would make for a substantial synergy and improvement in outcomes.
3. Lack of pediatric formulations for iron supplementation.

Review Questions

1. What is the relationship between malnutrition and sickness in children?
2. How do health care services intervene in malnutrition if at all they do?
3. What are the various levels at which the sick malnourished child needs to be managed? Describe briefly.

Application Questions

1. Prevention is certainly better than cure and facility based intervention in malnutrition is expensive and does not attack the problem at its root.
 - How would you justify it?
 - What steps can you take to put together evidence in support for effective advocacy?
 - What parameters or indices would you like to monitor to see if your facility based intervention is 'working'?
 - What difficulties do you foresee in making it work?

2. In every lesson, the role of the CHW is being further elaborated – as a breast feeding and nutrition counselor, as a neonatal care agent, as a ASHA etc. Has this changed or expanded your attitude to health care services? If yes, how? How is your understanding different from the prevailing system of health care in your district?

Project Assignment

1. What is the relationship between the ICDS system and the health care facilities in your district? Which are the points of systematic 'convergence' between the two? Why is it important?
2. What services, programmes and schemes should be available for the prevention of severe malnutrition apart from the ICDS? How do these function in your district?
3. How many severely malnourished children would you estimate in your district? Make a proposal for comprehensive intervention in the situation of severe malnutrition in your district.

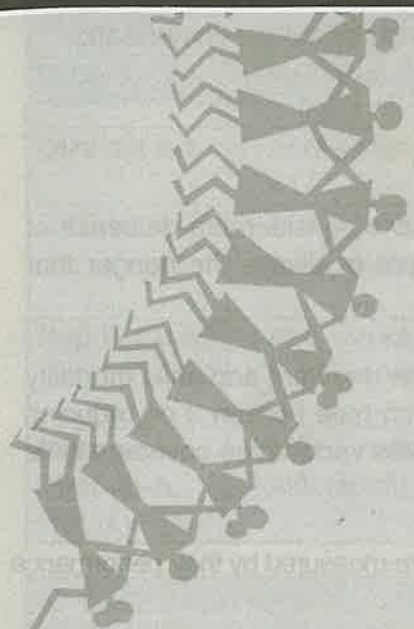
1. Named after Sree Avittom Thirunal Hospital where it was formulated.

2. This Tamil Nadu state department document is a key reference document for this section.

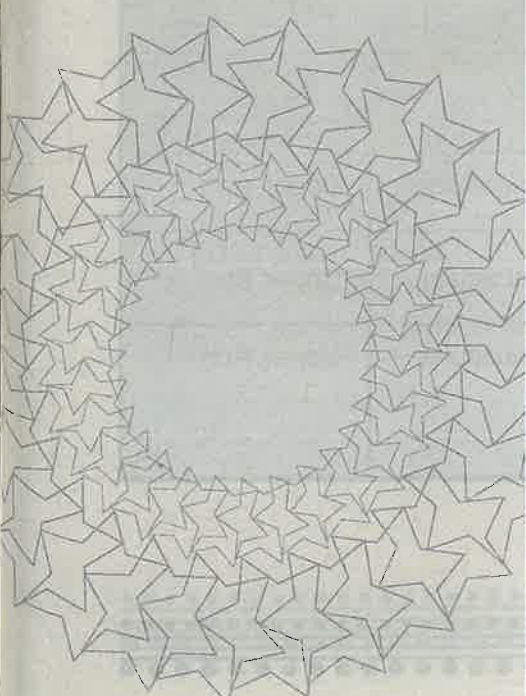


Lesson SEVEN

Why is 100% Immunisation so Elusive?



In this lesson we shall discuss:

- The performance of states in immunisation
 - The main currently stated reasons for failing to reach 100% immunisation
 - The main existing strategies to close the immunisation gaps
 - The bottlenecks that remain, and possible ways to overcome these bottlenecks
 - The key issues relating to quality of immunisation programmes
 - The vitamin A programme
- 

[Note: this chapter must be read along with the recently published "Immunisation Handbook for Health Workers". This is a Ministry of Health and Family Welfare, 2006 publication. This handbook is a clear lucid explanation of all the facts and operational guidelines that are needed to achieve universal immunisation. In this chapter we only look at what more it takes to incorporate immunisation into the district health plan.]

INTRODUCTION

Immunisation is an essential component of child health and it has led to a considerable decrease of immune preventable diseases in the past. If immunisation rates fall there is always the danger that some of these diseases could reappear.

We also note that by most estimates immunisation would lead to a decline on infant and child mortality rates in the range of 1-3% and that too largely due to measles vaccination (see Lesson 3 on reducing child deaths). That is why the MDG goals for child health have only measles vaccination coverage in its indicators (other than IMR and under-5 mortality rates).

Universal immunisation has however become a goal in itself – and countries are measured by their performance on this score. It is one of the deliverables of the total immunisation package.

The immunisation schedule is given in table 1.

Table 8.1 NATIONAL IMMUNISATION SCHEDULE FOR INFANTS, CHILDREN AND PREGNANT WOMEN

Vaccine	When to give	Dose	Route	Site**
For pregnant Women				
TT-1	Early pregnancy	0.5 ml	Intra-muscular	Upper Arm
TT-2	4 Week after TT-1	0.5ml	Intra-muscular	Upper Arm
TT- Booster	If pregnancy occurs within three yrs of last TT vaccination*		Intra-muscular	Upper Arm



For Infants				
BCG	At birth (for institutional deliveries) or along with DPT-1	0.1ml (0.05ml for infant up to 1month)	Intra -dermal	Left Upper Arm
OPV- 0	At birth if delivery is in Institution	2 drops	Oral	Oral
OPV 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	2 drops	Oral	Oral
DPT 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	0.5 ml	Intra-muscular	Outer Mid thigh (Anterolateral side of mid thigh)
Hep B 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	0.5 ml	Intra-muscular	Outer Mid thigh (Anterolateral side of mid thigh)
Measles Vitamin-A (1st dose)	9-12 months At 9 month	0.5 ml 1 ml (1lakh IU)	Sub-cutaneous Oral	Right upper Arm Oral

For Children				
DPT booster	16-24 months	0.5ml	Intra -muscular	Outer Mid thigh (Anterolateral side of mid thigh)
OPV Booster	16-24 months	2 drops	Oral	Oral
Vitamin-A (2nd to 5th dose)	• 16 months with DPT/OPV booster • 24 months, 30 months & 36 months.	2 ml (2 lakh IU)	Oral	Oral
DT Booster	5 Years	0.5 ml	Intra-muscular	Upper Arm
TT	10 years & 16 years	0.5 ml	Intra-muscular	Upper Arm

* TT-2 or Booster dose to be given before 36 weeks of pregnancy.

* For institutional deliveries, give at birth, 6 weeks and 14 weeks.

** site of injection is standardised to make recall and cross-checking easier.

A fully immunised infant is one who has received BCG, three doses of DPT, three doses of OPV and Measles before one year of age.

Note that the schedule has vitamin A – which is usually considered along with immunisation. There is a child health goal that calls for giving one dose of vitamin A to all children at least 5 times before the age of 5, at six month intervals after a first dose at the age of 9 to 12 months.

Note also that the schedule has immunisation against hepatitis B. This is fortunately only to be introduced in states where immunisation coverage is over 70%. Therefore further discussion of this would be omitted in this chapter. (See Lesson 3 for discussion on Hepatitis B vaccine)

CURRENT PERFORMANCE IN IMMUNISATION COVERAGE : COVERAGE EVALUATION SURVEY, 2005

According to Data from the Evaluation and Intelligence Division (2002) of the Ministry of Health and Family Welfare, in 176 districts for which data was collected, there was an average decrease of 15.4% in full immunisation rates in the preceding five years. In the period preceding this, a comparison between NFHS-I (1992-93) and NFHS-II (1998-99) also shows that the immunisation rates were declining.

As mentioned in lesson 2, one of the main objectives of the CES - 2005 was to look at the status of routine immunisation as well as uncover programmatic factors that influenced its coverage. Preliminary reports of the study show some improvements in the immunisation coverage in the country as compared to previous studies.

The coverage levels (% children immunised) of BCG, DPT3, OPV3 and Measles in India were found to be 83.4, 67.3, 61.3 and 68.1 respectively. But the “full immunisation” (Receiving all the four vaccinations—BCG, DPT3, OPV3 and Measles) level was 54.5 percent; that is, 54.5 percent children aged 12-23 months were found to be fully immunised. The percentages of eligible children receiving booster dose of DPT/OPV, Vit. A and Pulse Polio were 30.5, 54.0 and 94.8 respectively. There were statistically significant differences in the coverage levels of rural and urban areas - urban coverage levels were about 20 percentage points higher than rural. The coverage levels were also significantly higher for (1) younger women than older, suggesting, perhaps, a trend towards greater utilisation of programme services, (2) families living in Pucca houses (indicator of economic level of the family) compared to those living in Kutchha houses, (3) Hindus compared to Muslims— a reflection of socio-economic status of the religious groups in the community, (4) children of literate mothers compared to illiterate mothers, and (5) “Other” caste groups compared to Scheduled castes.

A large variation was noticed among the states/Reporting units, ranging from 19.0 percent children fully immunised in Bihar to 89.8 percent in Himachal Pradesh.



The comparative coverage levels from RCH-RHS survey 2002-04 for three indicators have been shown below:

Immunisation	CES-2005	RCH-RHS 200204
BCG	67.3	59.0
DPT3	68.1	58.0
Measles	54.5	47.6

Table 7.1 : Coverage of immunisation of children (by antigen) by state and India Total (CES)
(Percentage)

Sl. No.	State/India	Coverage levels by antigens						
		BCG	DPT3	OPV3	Measles	Full Immunisation	Vit.A	Polio
1	Andhra Pradesh	97.0	85.0	83.4	82.7	72.3	43.3	96.3
2	Assam	66.5	45.2	33.7	44.2	25.8	30.6	88.3
3	Bihar	52.8	36.5	27.1	28.4	19.0	31.0	99.1
4	Chattisgarh	89.2	65.5	49.2	72.0	44.4	58.1	90.2
5	Delhi	89.8	85.3	81.8	84.3	79.8	73.9	94.5
6	Goa	98.6	94.3	90.2	94.5	87.7	75.3	97.6
7	Guajarat	89.8	74.1	65.5	82.5	63.1	53.5	93.0
8	Haryana	81.9	66.5	61.2	70.5	57.2	55.2	93.0
9	Himachal Pradesh	97.9	94.2	93.0	92.9	89.8	86.6	99.8
10	Jammu & Kashmir	93.3	89.8	86.5	87.9	83.2	74.7	96.1
11	Jharkhand	76.5	57.8	53.0	58.0	45.7	50.0	98.2
12	Karnataka	94.3	89.4	88.0	88.8	86.9	88.3	98.3
13	Kerala	98.7	91.5	84.7	94.5	82.1	83.2	86.0
14	Madhya Pradesh	80.3	51.4	46.5	58.8	38.9	50.8	81.0

Sl. No.	State/India	Coverage levels by antigens						
		BCG	DPT3	OPV3	Measles	Full Immunisation	Vit.A	Polio
15	Maharashtra	95.6	81.0	68.1	82.3	58.9	70.6	90.9
16	N-E States	80.8	61.7	55.1	63.4	47.3	46.7	85.3
17	Orissa	94.6	80.3	60.5	81.9	53.2	80.5	96.5
18	Punjab	93.7	87.5	86.7	87.5	83.5	63.6	96.7
19	Rajasthan	70.4	63.9	52.8	68.2	49.9	54.7	94.1
20	Tamil Nadu	99.6	88.1	87.2	88.7	79.6	55.2	99.0
21	Union Territories	98.2	94.5	89.8	93.8	86.1	73.8	98.5
22	Uttar Pradesh(W)	64.1	40.7	38.5	39.3	30.7	26.7	99.4
23	Uttar Pradesh(E)	65.8	45.8	44.7	45.5	37.5	32.7	99.6
24	Uttanchal	80.6	69.7	69.3	72.0	61.1	57.7	98.8
25	West Bengal	94.4	66.0	63.2	72.6	54.4	69.2	95.0
	India	83.4	67.3	61.3	68.1	54.5	54.0	94.8

It should be noted that the proportion of children who received full immunisation has reduced to 39.3 percent, if coverage of vaccinations is considered upto first 12 months of age. This decline is also higher in rural than in urban areas.

The slow gains in immunisation require a lot of reflection and explanation, for the simple fact is, that ever since the mid 1980s, and certainly in all of 1990s, the entire functioning of sub-centers and indeed a major part of the considerable resources expended on the RCH programme, has been prioritised on immunisation.

What are the factors behind this crisis?

REASONS FOR POOR PERFORMANCE IN IMMUNISATION

The Handbook for health workers lists a few key field level issues. They are:

1. **Failure to provide planned outreach sites**, or due to poor functioning or non- functioning of these facilities at sub-centers or PHC.
2. **Drop-outs**: Children who receive one or more vaccinations but do not return for subsequent doses.



3. Unreached populations

- a. Lack of geographic access.
- b. Lack of information about this programme.
- c. Social barriers
4. **Resistant populations:** Children whose parents do not believe in immunisation.
5. **Missed Opportunities:** Children who visit the center for other needs, but this is not used as opportunity to immunise them.
6. **Improper logistics management leading to unmet need:** Failure of vaccines supply to the point where it is needed, gaps in cold chains, lack of transport etc.

There are other strategy issues attributed to poor performance:

Poor monitoring: Largely, the system believes that there is really very little to be done in the way of programme design or even in programme management. It is simply a matter of whether the system is sincere about their work or not, if the people implementing the programme are not sincere or if they are not monitored strictly. Thus a typical review meeting on immunisation at a district or state level would be an exhortation to achieve 100% with threats of disciplinary action if they do not.

Inadequate IEC/BCC investment: The other frequently attributed cause is a lack of awareness and inadequate investment in IEC/BCC campaigns.

Pulse Polio: Since the decline of routine immunisation parallels the introduction of pulse polio there has been considerable concerns expressed that the shift of focus to pulse polio was at the cost of routine immunisation. In many places the impression was created that it was adequate to deliver on pulse polio targets, and routine immunisation was of a lower priority. The fact is that if routine immunisation is not of effective coverage, it is difficult for even the pulse polio campaign to succeed, especially in the long run.

Service Provision Gaps: Gaps in staff and lack of adequacy of sanctioned centers are other major causes.

Cold Chain Problems and other logistics issues leading to supply side constraints are another well recognised cause.

PROGRAMME FACTORS AFFECTING COVERAGE; CES-2005

1. Mothers with immunisation card have significantly higher coverage rates of their child for all vaccinations
2. Mothers who have come to know about immunisation from Govt. doctor, private doctor or radio / TV have significantly higher coverage rates.

3. Mothers who get support / help from their husbands have better coverage rates significantly .
4. Mothers with better access to the immunisation venues (ICDS centre or subcenter) in terms of time taken to reach there are more likely to get their child immunised significantly.
5. Mothers who report more frequent visits by ANM have significantly better coverage.
6. Mother reporting occurrence of immunisation sessions in their village / area have better coverage.
7. Mothers who report holding of immunisation sessions once a month or more often have better coverage of immunisation of their child.

STRATEGIES TO IMPROVE IMMUNISATION COVERAGE

A number of strategies have been proposed. Below are a few taken from Operational Guidelines for Immunisation issued over the recent past:

1. Immunisation Day

This is the key strategy that almost every state follows. The area under an ANM is divided into anywhere from 4 to 6 outreach centers. On a fixed day of the week she would visit one of these four centers and give immunisation to those children who need it. If there are more than 4 centers she could even have two days per week fixed for this activity. One of the four or six days in the month is at the sub center headquarters. The same days are decided for the entire state.

The village is given the information that the ANM would visit on a fixed day of the month. Thus, parents can plan to not go to work and come to the center with the child.

The preferred venue for the outreach immunisation session is the Anganwadi center. If an anganwadi center is not there then the local primary school could be used – or else any suitable building or even the house of a cooperative villager. However over 95% would be in anganwadi centers.

The anganwadi worker and sevika are thus responsible for bringing the children who need immunisation to the camp. They can combine this with nutrition advice to mothers and health education programmes etc. Hence many states call this day the child health and nutrition day health mela day, etc.

This immunisation day has been further strengthened with the addition of ASHA . Now the ASHA is also required to mobilise children and pregnant women who need immunisation or antenatal care or other services and bring them to the anganwadi center on the pre-fixed day. For this she is to be paid at Rs. 150 per ASHA per camp session she comes to.

By bringing ASHA, the anganwadi worker, the ANM and the panch or sarpanch together on this day, the goal of convergence is also addressed in terms of physical space and time, for many issues needs to be acted upon by them in synergy.



2. Catch-up rounds

In many areas children get left out for a number of reasons. Such large gaps typically happen if there has been a supply side problem, such as the vaccines not having reached for a long time or there not having been an ANM in that place for a long time. If the numbers of these problems have been large, then the preferred plan has been to address the problem by organising a campaign like the pulse polio campaign. This has been particularly used with success for measles vaccination, for this is the one disease that has the immediate potential to lead to a major epidemic leading to considerable loss of lives in an unimmunised pocket. Often such a catch up round is organised only in response to an epidemic. On a given day or a given set of days, all workers are mobilised to go to every house in a given village and check whether any children are left out, and immunise them wherever such children are found.

3. Outreach Camps

In many states, recognising that there are many children left out of routine immunisation due to either geographic isolation or lack of an ANM, special outreach camps are organised. Ideally this is organised once every three months so that there is not too much time lost between when the service is needed by children and pregnant women, and when they get it.

4. Immunisation weeks

In view of very low performances in many states to bring back the emphasis to immunisation, it has been proposed to designate two weeks as immunisation weeks. These are meant to close gaps in planning by drawing administrative and management attention to this. The focus is now on all villages with priority as follows:

- a. villages where no ANM has been posted and there were no immunisation days scheduled due to this,
- b. where immunisation days have been irregular (2 or more sessions not held in last three months, based on vaccine issue data and corroborated by ICDS supervisors), and
- c. hard to reach villages- hamlets /villages not included in regular microplans.

5. ASHA programme

This has been fixed as one of the important outcomes of the ASHA programme.

The introduction of a performance based incentive for the ASHA to attend the immunisation session and a work definition of bringing in those who are currently getting left out, would be a major step forward.

6. **Alternative delivery mechanisms**

Where regular immunisation days are not possible to organise or not happening despite efforts, the suggestion is to work out alternate delivery mechanisms.

Such alternatives include a **vehicle carrying vaccines** and vaccinators starting from the headquarters in the morning reaching to three centers **along a pre fixed** route in that day. Places getting left out are marked on such routes and the vehicle is put to such work many times in a month.

Another suggestion is to use **private health care providers**, trained and qualified, to provide immunisation and use the health workers to refer patients to them.

Yet another suggestion is to use nurses working or recruited by an NGO or private sector hospital willing to under take this task for particular areas as a special task.

7. **Micro-planning: Monitoring and Tracking Charts, and Immunisation cards**

Micro-plans refers to the process where a plan is made for each sub-center at the PHC level specifying the exact days of the ANM's immunisation sessions, where each session would be held, as well as the use of alternative strategies where she cannot reach. Such planning requires to be followed with monitoring and tracking mechanisms to ensure that the plan is being followed.

The issue of immunisation cards to the families and looking at these and marking these before each immunisation, helps not only in better assessment of that child but also in better monitoring and therefore better planning.

8. **Urban Strategy**

There is increasing recognition that one major weak point is the lack of planning for urban coverage, since the urban poor are inadequately recognised despite large numbers and are usually left out of planning and welfare schemes. Indeed they present a unique difficulty and challenge for achieving 100% immunisation despite a concentration of services (See below).

9. **Improved Supervision and Monitoring**

All operational guidelines that were ever issued emphasise better supervision and monitoring. The role of external evaluation is also emphasised in these guidelines.



10. IEC and Social Mobilisation

The emphasis has been on a multi media strategy – where electronic mass media and bill boards are used along with interpersonal communication by field level personnel. There is also mention of involving all sections of society. Note that the CES - 2005 reveals that women who get support and help from their husbands have significantly better coverage rates for their children.

11. Better Logistics and Management

- a. **Cold Chain Gaps:** All vaccines need to be stored at a limited temperature range of 2 to 8 degrees Celsius.
 - i. DPT, TT and DT (and hepatitis vaccines) freeze at lower temperatures and freezing spoils the vaccine. These, however, are relatively stable in heat.
 - ii. OPV and Measles on the other hand can withstand freezing but temperatures above 8 degrees destroy their potency.
 - iii. BCG is relatively stable to heat and freezing but is sensitive to light.
- b. **Vaccine Carrier:** These are used for carrying vaccines from PHC/CHC to the field. This is an insulated portable case which carries four ice-packs which keep the inside temperature in the 2 to 8 degrees Celsius range. It should be opened minimally, and then it can maintain this temperature for one day. In many places it takes one day to go to the CHC and bring the vaccines back to the sub-center. And it late in the day on the next day, that the vaccine is used, though as per the rules vaccines have to be collected on the same day of administration. Only in a few places is the facility near enough to collect the vaccine and administer it in the same day. The carrier can also carry about 16 to 20 vials only. Going to get the vaccine can itself be one or two days work every week. There is another issue- getting unused vaccines back to the refrigerator after a full-day immunisation programme. Too often therefore a number of the vaccines cross the time period and as a result they – especially the most important of all, the measles vaccine – lose potency.
- c. **Ice-lined refrigerator (ILR):** This is a top-opening refrigerator with pipes or ice packs lining the walls. Even if there is 8 hours of power supply every 24 hours, it is enough to keep the temperature at 2 to 8 degree Celsius range. Longer power cuts can potentially damage the vaccines. A thermometer is placed along with vaccines and this temperature has to be recorded on a chart daily. This regular monitoring of the temperature is one area of frequent laxity.
- d. **Cold Boxes:** The vaccines are brought from the district store in cold boxes. They are also used to store the vaccine if the ILR is not working, or when defrosting the freezer. This box has to be lined with ice packs on all sides with one layer above the vaccines. There is a dial

thermometer inside to monitor the temperature, but this may often still not get done. It can be stored for 4-6 days depending on the size of the box.

- e. **Deep freezers:** These are used to prepare the ice packs in the facility level. About 20 icepacks can be frozen per day. Temperature is maintained at -18 to -20 degrees Celsius. Deep freezers are kept in the facility level for making icepacks and at the district hospital.
- f. **At the state level there are walk in freezers that can keep an entire states vaccine supplies.**

The problems are to keep all the machines working; if they break down, to get them working again promptly, with alternative mechanisms till then; to have enough capacity in the refrigerators; to have adequate icepacks and vaccine carriers and cold boxes; to have a system of regularly monitoring and recording the temperature in all aspects of the cold chain etc. The core of the system is the hiring /training of refrigerator mechanics, and supervision to see that procedures are followed and temperature is regularly maintained.

BOTTLENECKS & STRATEGIES

The list of strategies to improve immunisation seems so comprehensive that it seems that district planning only needs these strategies to be translated in the district context. But then most of these strategies have been tried for long years. So what are the bottlenecks and what are the possible strategies to over come them?

1. Discrepancy between internal monitoring and external evaluation

Most internal reports of the department put achievement levels at close to 100%, even while external reports show less than 50% coverage. This huge discrepancy between external and internal reports prevents any systematic effort to find where the gaps are.

Because of the unreliability of internal figures:

- the districts or blocks or sectors that are doing worse and need support cannot be identified,
- the operational bottlenecks cannot be identified, and
- the sections by caste or ethnicity or gender cannot be identified.

Specific plans to address these gaps cannot be made and if any better approach is tried it cannot be proven immediately.

Internal reports usually over-report. We need to understand at what level over-reporting occurs, why it occurs and what can be done to improve the gap so that external reports approximate with internal reports.



The CES - 2005 study looked specifically at the actual findings and compared it with the recorded reports of the ANM, and found only a 1% over-reporting at the level of the ANM in the two states of Orissa and Chhattisgarh. Yet internal reports showed 105% achievement as compared to external reports of 44% for total vaccination and 72% for measles vaccination. This is surprising, because most assume that the mistake is made at the level of the ANM, while the evidence seems to point to data corruption at intermediate levels.

Another common reason for the unreliability of figures is target-fixing. The target itself is so low that though 100% is achieved, a large number of children are left out. Setting the targets for the last census level (2001), without using the current years' estimated mid-year population, is one common problem. Vaccine supplies would thus fall short and this would not even be noticed because 100% is being said to be achieved.

A third problem is that children above the one year age also are included in the target. Thus though the expected number of children have been immunised a large number of children in the 0-1 age group have been left behind. Again since there is no clear format of reporting this, the vaccine supply does not meet requirements. Note that there has been a decline in complete immunisation for children under the age of 1 year as per the CES study.

IMPROVING ACCURACY OF INTERNAL MONITORING REPORTS

All supervisors must be trained to do a cluster sampling analysis in their block. The sample villages should be drawn and provided by the district or state resource team. The district data analyst must feed data in and provide the report. The supervisor should also be able to tabulate the data, get the report, and cross-check her finding with the ANMs records to see whether they match.

In addition, in every quarter or every month the number of vaccines used should also be cross-checked with immunisation reports and they should match (after applying the formula to account for opening vials for lesser than full quota of patients).

Then the district supervisor and/or an external agency would do just a sub-sample of the same sample that the supervisors have studied. The external agency would thus get an accurate picture of the district coverage as well as be able to find the accuracy of the supervisors' report.

The system should reserve disciplinary action only for those where there is a wide divergence between their reports and their supervisors /cross-checking report. In this approach, the external evaluation provides an immunisation status report as well as validates and strengthens the internal monitoring report making it useful for planning purpose.

Once in six months is a desirable frequency for this effort. This effort is considered wasteful and academic only because the importance of this gap is not recognised. By being able to direct efforts and resources, it saves money from being wasted on unnecessary camps and drives in places which do not need them.

2 Reaching the Unreached

The strategy for reaching this section of the population would depend on the current level of achievement of the state and on better quality of internal data.

In places where there is an over-70% total immunisation or measles immunisation coverage, the focus needs to be on identifying accurately where the gaps are and reaching there. This would require community support to map out unreached populations – within villages, to identify low coverage hamlets and within the blocks, to identify low performance villages, for holding special outreach sessions or reaching by an alternate delivery mechanism. The entire effort should be on accurate identification of gaps – closing them being a relatively easy task. Disaggregating villages into hamlets or community-wise areas would go a long way to identifying gaps. Thus one would find that though villages report good coverage, within villages there are large gaps left due to caste factors acting often in an indirect way. Thus considering the village as a homogenous unit misses this out and efforts at correction and universalisation would still miss these hamlets or intra-village pockets of poor outreach or resistance. **Micro-planning with community participation becomes the key to such identification.**

In places where there is performance in the 40-70% range, the same effort needs to be supplemented by campaign drives such as the ones done in pulse polio, when there are house-to-house visits by many teams on a pre-fixed well-publicised day. The publicity leading up to this day should be a well thought out BCC campaign based on good formative research (See below). Those without immunisation are identified and brought in on the day with enough vaccine supplies being made available to meet a larger number. In practice, many children will still not be covered by this camp – but it can help become a community assessment of coverage. It would help to update ANM registers, and within the next two months the coverage could be made total. A detailed cold chain report and supervision process would also be a priority.

In places with less than 40% measles immunisation coverage- the focus needs to be on basic systems- filling up vacancies, training all supervisors, finding alternative delivery mechanisms and getting the cold chain in place.

In urban areas also, there are specific bottlenecks to achieve 100% immunisation due to problems of outreach. The available workforce is limited here, and therefore, micro-planning, determining venues and planned deployment of available human resources is critical. It is equally important to map areas so that all children are identified, even those who are, so to speak, illegal settlers such as children dwelling in



unauthorised slums and on the streets. There are other large unreached pockets, such children on construction sites that require determined outreach, and yet no one can really be held accountable for catering to them. A specific problem in urban areas is the multitude of service providers, and the confusion that exist about responsibility for certain areas or certain pockets. For quite some time, anganwadi centers were not sanctioned at all for slum areas, and health care services were also not located in slums.

However, there is at least recognition now that targets cannot be achieved without taking into consideration, these dense areas of highly deprived and vulnerable children. Specific strategies include making the local PHC and anganwadi responsible for all migrant children flowing into their area by including them in their outreach programme. This will certainly require more effort and perhaps special and extra staff. However, these difficulties have been circumvented quite successfully for pulse polio, often by using the additional services of the many NGOs working in slum areas in most cities, and now this has to be done for routine immunisation also. Closing staffing and facility gaps is also critical.



Targets cannot be achieved without taking into consideration, these dense areas of marginalized highly deprived and vulnerable children.



3. ASHA, Community Mobilisation & Micro-Planning

Micro-planning would be effective only with informed community participation. Asking the ASHA to attend the immunisation session/day is only the smaller part of her role. The ASHA, the anganwadi worker as well as active women from community-based organisations like self help groups should review the immunisation performance at the level of the Panchayat along with the presence of PRI members.

Disaggregating into hamlets and community-wise areas is important to identify gaps. The ASHA is the vehicle to bring all these players into the micro-planning process, especially representatives from weaker sections of the community. Representatives from these sections need to attend the meeting where plans are made, and follow them up. This process should identify hamlets or areas where coverage is poor and discuss the reasons for it. In the Panchayat health committee and in the micro-planning session, the ANM's dates for each immunisation center should be proposed by her. The sessions-schedule in the whole Panchayat should be worked out along with plans for specific steps to close the gaps in that area. This would include mobilisation of those left out as well as BCC activities with them. The ASHA is not the person who does these activities. She is the person who organises community awareness and support for such activity. It is identification of the gaps that needs community mobilisation and support. Once the gaps are identified, the ASHA or equivalent person can undertake the mobilisation.

Micro-planning should become a form of community participation, instead of what it often is reduced to – the ANM writing down her tour schedule in isolation. The main contribution of the community should be a micro-planning effort where the roles of different players are identified and defined.

4. BCC gaps

The current strategy is to give publicity to immunisation. It does not identify behaviours or try to change them. A good BCC strategy needs formative research to identify what are the behaviours to address. Every block cannot and need not call in a research agency to do this. A few well planned focal group discussions are good enough.

One could use a check list of possible problem practices and behaviours and find out which of these are relevant to the programme and then address these. Note that sometimes, it is the behaviour of the service provider that needs change, and not the family. *Behaviour Change Planning Check List*

1. Immunisation has not been heard about.
2. Immunisation is heard about, but its benefits have not been discussed.
3. Exact venue is not known.
4. Venue is known but the information of the time does not reach.
5. All the above are known but people are not able to leave their work for a day to get immunisation done.
6. Immunisations are known but not that it has to be repeated, and the exact number of times needed is not known, and so drop outs are the main problem.
7. There is fear of side effects- especially fever- which may have happened in first or second immunisation leading to drop outs in subsequent doses.
8. Children are rejected because they have crossed the age for immunisation.
9. Children are rejected because vaccine tends to run out or vials are not opened for insufficient number of children, as with the BCG.
10. A particular staff member is rude or insulting if the child is brought late, after a period of 'drop out' or on account of hygiene, caste, religion or family size.
11. Management of fever after DPT is unsatisfactory. (Paracetamol is not given or is not given its proper dose with proper information.)
12. Follow up of or information about complications like rashes, lumps and abscesses is unsatisfactory.
13. Quality of care issues – like what sort of syringe is to be used – are not known.
14. Parents being asked to purchase disposable syringes in some places.
15. Family support to escort child for immunisation is poor.

Once formative research indicates the main bottlenecks, the exact focus of the messages can be decided on. Thus for example, in a district, if the coverage of the first dose of DPT is as high as 80% but total



immunisation is as low as 40%, the focus of BCC is on letting people know the whole course and on counseling about side effects- which are the leading causes of drop outs.

Once the message is decided, the audience group is also decided upon. For example, in more difficult to reach areas, there is a greater need to involve the family whose cooperation becomes essential. Once the message and the audience are decided on, then and only then should the media-mix that is needed and what each media would convey, be decided. Too often, BCC planning proceeds in the reverse order – choosing the media, then the message, then the audience and finally only observe what behavior changes, or not even that.

5. Systemic Gaps

Priority needs to be given to closing the gaps in terms of ANMs and supervisor vacancies as well as vacancies in positions like the refrigerator mechanic.

Further, the proposal to have two ANMs per sub-center would go a long way to improve access to the ANMs services, take outreach camps to every hamlet and ensure that the sub-center is kept open on most days.

Another immediate measure is to enhance the contribution of the male MPW. The male MPW can contribute to community mobilisation and the micro-planning and BCC activities. Today, even in official publication, little is made of this critical second member of the sub-center – even though assistance to immunisation is on their job schedule. In many remote areas where ANMs do not stay, their male counterparts provide immunisations also. Instead of doing this apologetically, they should be trained for this, and be able to provide immunisation services just like the ANM. Workforce issues of the male worker including the high vacancy situation are discussed in the first module.

DROP-OUTS

Drop out rate = $(\text{DPT 1 coverage} - \text{DPT 3 coverage}) / \text{DPT 1 coverage} \times 100$

Left out rate = $(\text{Children eligible for DPT 1} - \text{Children getting DPT 1}) / \text{Children eligible for DPT 1} \times 100$

1. Drop-outs occur due to lack of awareness of number of doses required and due to supply side constraints in providing the coverage regularly. This needs effective BCC.
2. Another problem is exclusion of children who have crossed the age of 1 year – largely because of problems in matching with vaccine supply.

The general rule is this:

- DPT may be given up to 2 years. After this DT is substituted till 5 years and after this TT is to be given. In a child who has never been immunised, all three doses have to be given.
 - BCG may be given any time up to the 12th month.
 - Measles – 1 dose – may be given any time up to the 5th year.
 - Polio may be given anytime up to the 5th year.
 - If needed for an un-immunised child coming after an year – one can give BCG, a dose of DPT, OPV, measles vaccine and vitamin A on the same day
3. Side-effects also scare off patients from coming for subsequent doses. Counseling the family, giving anti-fever medicine routinely for at least 24 hours after immunisation and improved quality of immunisation, are both important in reducing the problem due to this.
4. There is also considerable unmet need due to the vial opening problem. The rule is that even for a single patient a vial of measles or BCG can be opened. But there is reluctance to do this due to the need to conserve and optimally use supplies. A vial has 10 doses of measles vaccine. In DPT there is a need to have at least 10 children before a vial is opened- and therefore we have to permit some delay for some children so that enough children accumulate. This could be very difficult to handle under field conditions. Close monitoring and flexibility on logistics would help cope with this. The recommendation is to plan an outreach session for 25 children at least and two sessions for covering more than 50. If there are less than 25 to be immunised then a session every alternate month is advised. In sparsely distributed populations, reaching the critical numbers would be a major problem unless much more flexibility is used.

BUILDING IN SURVEILLANCE ISSUES

The purpose of immunisation is disease prevention. The test of its effectiveness should be disease surveillance even though vaccines are not 100% effective and some cases of preventable diseases are not unexpected. Sometimes due to quality issues – even where the immunisation is complete – disease outbreaks occur. However, the system should be able to report vaccine preventable diseases (VPD) on a regular basis. Most of the patients who would have vaccine preventable disease may go to the private sector or, as in the case of measles, may not seek treatment at all and thus go unreported.

For polio, a programme has been launched for surveillance of polio but such an effort would be desirable for many other diseases too.



BEST PRACTICE : DISTRICT LEVEL DISEASE SURVEILLANCE : NATHI

For over 30 years there has been a very effective model of disease surveillance for vaccine preventable disease called the North Arcot and Tiruvenamalai Health Intelligence Programme. This is organised by the Christian Medical College, Vellore for the two districts of Tamil Nadu.

The concept is simple. A number of private practitioners and government facilities are recruited and motivated to act voluntarily as sentinel surveillance posts. They are given printed post cards. If they see a case – the case definitions being clearly given to them – they fill in a post card and post it the same day.

The next part is important. On receiving the post card, a squad immediately goes, visits the case and takes whatever outbreak measures are necessary. In a measles outbreak for example, all children in that and in neighboring villages would have to be immunised and given vitamin A syrup, irrespective of their current immunisation status. The person sending the report would also be met and thanked. All the sentinels are also linked by a newsletter. Further, amongst the diseases to be reported are some diseases of public health importance like encephalitis which have no ongoing preventive measures. Thus by comparing reports of such diseases with that of vaccine preventable diseases the project was able to show whether there is an actual decline in disease incidence or whether it was only a decreased interest in reporting.

LOGISTIC ISSUES

These are:

- The key issues are of cold chain management
- The use of auto destruct (AD) syringes, disposable syringes and their disposal
- The need to retain as back up, the use of glass syringes and mechanisms for sterilisation.

These are discussed in the handbook in sufficient detail. However the district plan needs to point out specific problems of cold chain maintenance – especially the places where ANM is not able to collect the vaccine carrier and give vaccinations in the field on the same day.

KEY QUALITY ISSUES OF IMMUNISATION PROGRAMMES

Other than the issue of attaining universal immunisation coverage, there are also concerns of quality in immunisation programmes. These in turn affect immunisation coverage. Given below is a list of the main quality concerns:

- a. Ensuring that the vaccines given are potent. Check the vaccine vial monitor on each vial. If the vaccine is too old or has been heat damaged, the indicator changes colour to what is called discard point and it should be discarded. For freeze damage to DPT one has to check sedimentation rate after shaking. Preventive measures are mainly the maintenance of the cold chain. Proper reconstitution is also important.
- b. Ensuring that safe injection practices are followed.
- c. This includes following contradictions to immunisation; reconstituting correctly, correct positioning of the child, and unsterile needles due to any cause.
- d. That syringes and needles are disposed off safely and as per guidelines.
- e. Ensuring that safe waste disposal practices are being followed.
- f. Preventing adverse effects and managing them competently.
- g. Informing patients completely and satisfying their queries.

NATIONAL VITAMIN A PROPHYLAXIS PROGRAMME

The current recommendation for children under 5 years is as follows:

GIVE A SINGLE DOSE OF VITAMIN A

100,000 IU (1ml) at 9 months with measles immunisation
200,000 IU (2ml) at 16-18 months with DPT booster
200,000 IU (2ml) at 24 months
200,000 IU (2ml) at 30 months
200,000 IU (2ml) at 36 months

You will note that the first two doses of vitamin A are related to the routine immunisation schedule. Thus bottlenecks related to the immunisation programme also have an impact on vit a prophylaxis. In addition, there are severe and chronic problems of vitamin a supplies as well as difficulties in storage that contribute to poor coverage.

According to the CES 2005, the national coverage for vitamin a is at 54%. This corresponds closely to 54.5% children being fully immunised in the age group 12-23 months. On an average, these children have about 2 doses of vitamin A.



Review Questions

- a. What can be done to improve the quality of internal monitoring?
- b. What are the strategies of achieving universal immunisation?
- c. What are the programme factors for low coverage?
- d. What are the usual bottlenecks of the cold chain?
- e. What are the cut off ages for giving different vaccinations to children?
- f. What are the main reasons for drop-outs?

Application Questions

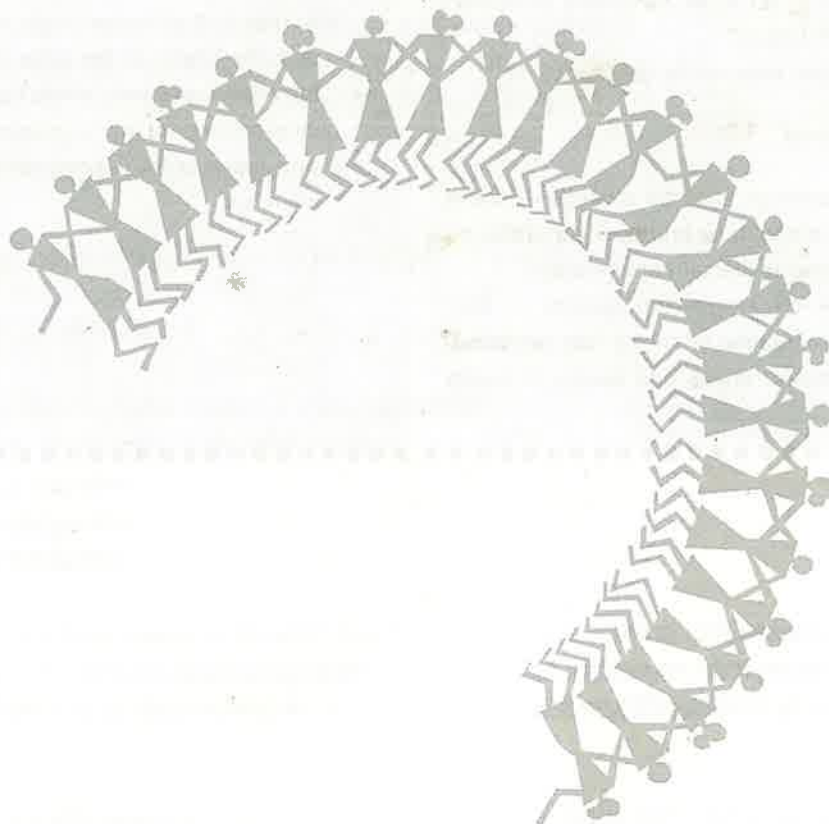
1. What are the learnings from the strategies used in the pulse polio programme and how can these be used for achieving universal immunisation?
2. How does the coverage and quality of the immunisation programme (if known with reliability) reflect on the overall status and quality of health care services?

Project Assignment

1. Find out if you have a scatter of figures sub-center wise – or are all Sub-centres reporting an uniform 100%.
2. Which are the pockets of unreached children in your district? Support with facts.
3. How would you involve the community to reach unreached children in your district? List and describe briefly all the steps involved.
4. Interview one family which has refused to bring its child/children for immunisation. Identify the problem and make a BCC programme based on your interview.

1. Source: Pg 95, Burden of Disease in India, National Commission on Macroeconomics and Health

NOTES



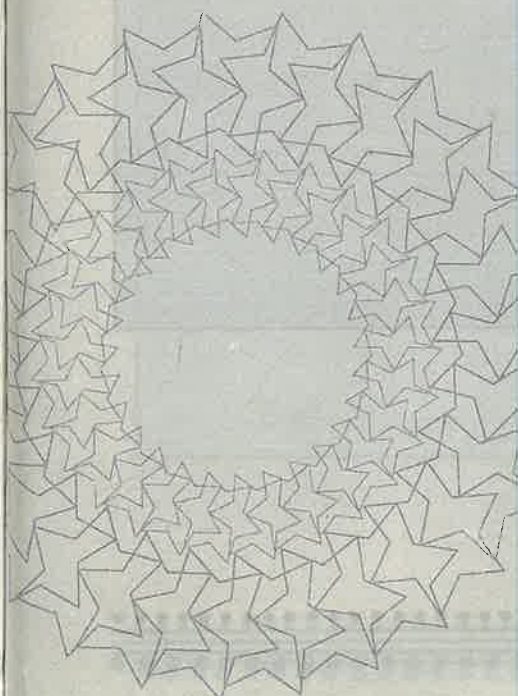


Lesson EIGHT

Behaviour Change Communication for Child Health



In this lesson we shall discuss:

- Some examples of good and bad practices in tradition with regard to child health
 - The approach to make a strategy for Behaviour Change Communication (BCC) for child health
 - A template of a plan for making a BCC plan for child health
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INTRODUCTION

There are a number of good practices that are part of local tradition. These should be encouraged, built on and strengthened. There are other practices which, in the light of what society has learnt from studies and experience, we should now actively discourage. And there are many practices – which are part of what patterns of practices people follow – which do no harm, but are not essential either.

Child care is an area where there are a large number of traditional practices that a public health programme has to assess and either promote or discourage. Some of these are very widespread problems or issues applicable across the country for which a nationally designed campaign would be of use. Immunisation is one such example. But even in such a campaign it is important to know what the problems are in that particular context that contribute to the poor performance of the programme. There may be different perceptions locally that would need to be addressed.

SOME NEWBORN AND CHILD CARE PRACTICES

PERIOD : CARE AT BIRTH

Possibly/definitely good practices	Possibly/definitely harmful practices	Inconsequential practices
1. mouth to mouth breathing if the baby is blue or white at birth 2. using a cloth to clean the mouth and wipe out the secretions	1. holding baby upside down, slapping the bottom 2. cutting cord with a used blade or any unclean instrument 3. application of ghee, dung, betel nut on cut end of cord 4. using unclean cloth to wipe secretions from mouth	



SOME NEWBORN AND CHILD CARE PRACTICES

PERIOD : CARE AFTER BIRTH

Possibly/definitely good practices	Possibly/definitely harmful practices	Inconsequential practices
1. breastfeeding as a norm 2. heating the room with <i>angeethee</i> or <i>tawa</i> 3. massaging the baby with oil (after a few days) 4. keeping the baby well-wrapped 5. exposing the baby to sun after bath and massage 6. putting breast milk in the eyes to prevent conjunctivitis 7. segregating the baby for 42 days	1. caring less for female children 2. bathing babies soon after birth. 3. discarding colostrum 4. giving pre-lacteal feeds like <i>ghutti</i>, honey, glucose or sugar water 5. delaying initiation of breastfeeding to fulfil some tradition like waiting for a visit by the sister-in-law 6. giving water, <i>ghutti</i> etc. even in the first months of life. 7. putting oil in the baby's ears or nose 8. using witch craft (<i>jhaad phoonk</i>) for neonatal illnesses 9. using <i>kajal</i> or <i>surma</i> in the eyes 10. feeding opium to sedate the baby 11. using a pillow for very small babies 12. keeping a knife under the pillow of the baby to ward off the 'evil eye' 13. not allowing the baby to be weighed 14. using the 42 days rule to prevent health workers from seeing the baby 15. causing superficial burns around the umbilicus of the baby to prevent illnesses 16. giving '<i>ajwain</i> and water' to treat colic during the first six months	1. piercing the nose or ears of the baby 2. massaging the anterior fontanel gently 3. using old clothes for the baby till a particular ceremony is done 4. <i>mundan</i> ritual of shaving head 5. putting black spots on face, tying amulets around waist 6. rubbing ghee or applying '<i>ajwain</i>' on healed umbilicus to prevent colic

Many of the harmful practices are potentially life threatening. For example there are regions in the country where putting oil in the baby's nose to clean it, is one of the important causes of serious pneumonia in the child. It is therefore important to address all these issues and to develop local campaigns to supplement national BCC campaigns. Indeed the major part of BCC expenditure should be in forms that directly reach messages to the families that are being addressed.

The approach therefore is for every district to:

- a) Assess the BCC needs through some qualitative studies and then decide the key behaviours that need to be addressed based on this.
- b) Then decide the audience, the messages to be conveyed, the medium to be used, the activities to be carried out and the indicators of progress and outcomes.

This is what is given in the tables below. This table is a general tool of planning for BCC work. A few common practices are addressed in the table below - a plan can be prepared for any other problem that presents locally.

PLANNING FOR BCC ON CHILD HEALTH: NEWBORN CARE PRACTICES

AUDIENCES :

PREGNANT WOMEN

FAMILIES OF PREGNANT WOMEN

DOCTORS AND HEALTH CARE PROVIDERS

Behaviour	Key Factors	Activities
Breastfeeding initiated within the first hour	▶ Information on the reasons for these changes	▶ Small scale formative research on the barriers to the recommended behaviours
Mother fed nutritious diet from first day	▶ Effectively counter the existing understanding of not feeding baby or mother for first 3 days.	▶ Home visit and counselling to the pregnant woman's family - supported by flip charts/flash cards- by Mitranins or AWWs or ANMs during the pregnancy and on the day the child is born.
Children weighed on first day	▶ Skill to identify what is nutritious diet	
Babies kept warm - and not bathed for three days esp. if low weight	▶ Skills of initiating sucking reflex, taking weight and managing start up problems.	



Low birth weight babies taken for referral if appropriate referral facility accessible, BCG injection taken	▶ Creation of family level and community level enabling environment for these changes based on information of why this is needed ▶ Ensuring that doctors and other health care providers are supportive - not detrimental to these behaviours ▶ Information about the nearest accessible affordable referral centre for the low birth weight baby	▶ Radio jingles and TV spots on the six messages to make this behaviour the status norm - we are ready to change ▶ 'Dear Doctor' letters to all doctors and to be met as if being met by "sales-representatives" for breast feeding ▶ Sensitisation programmes for health care providers with a printed set of FAQs based on formative research ▶ Wall paintings/stone pillars announcing facility for low birth weight babies
Indicators	Indicators	Indicators
▶ % of women who breastfed in first hour ▶ % of women given full diet on the first day ▶ % of newborns weighed in first three days ▶ % of LBW babies who sought referral care where it was affordable and accessible	▶ Woman who has recently given birth to a child can recall the above as the steps she needs to take, can ▶ Public awareness of this issue and the campaign ▶ Can name the nearest referral centre ▶ Unprompted recall among doctors and other health care providers of above behaviours	▶ Number of women who were visited on the first day of child-birth ▶ Number of sensitization programmes held ▶ Content, quality and choice of place for wall paintings/stone pillars ▶ 'Dear Doctor' letters designed and used ▶ Availability of Frequently Asked Questions (FAQs) with health care providers

MANAGEMENT OF THE SICK CHILD

AUDIENCES :

ALL RURAL FAMILIES ESPECIALLY WITH CHILDREN BELOW 5 YEARS

ANMs/AWWs AND MITANINS

SCHOOL CHILDREN

Behaviour	Key Factors	Activities
Use ORS solutions as prescribed in case of diarrhea.	► Information and skill (why, how & how much) to use ORS for diarrhea, home remedies in trivial ARI and first contact care in fever	► Compilation of useful home remedies and disseminated to workers for use during discussions
Use of home remedy if trivial ARI and avoidance of injections for the above.	► Information and skill to differentiate between trivial and serious illness and the need to consult the local health volunteer for this	► Mitninins/ AWWs and ANMs between them hold discuss with women's groups and at gram sabhas
Seek help of local paramedical health care provider to distinguish between home care, first contact care and need for referral in cases of fever, ARI or diarrhea.	► Skills to give home remedies and seek Mitnin's help	► Incorporate message in <i>Kala Jattha</i> to be held after gram sabha
	► Recognize and question existing harmful beliefs and health care seeking practices for this context	► One visit to all houses by a team asking families to seek Mitnin/ANM/AWW help on the very first day if there is any one of these problems
	► Information about affordable and accessible referral centre for the sick child and neonate	► Special hoardings/posters/ Wall writings announcing need to consult the ANM/ AWW/Mitnin to differentiate between trivial illness and serious illness
	► Information and skill to recognise underlying preventable factors if diarrhea or ARI recurrent	► Inputs during school health programmes for prevention of recurrent infections and for prompt care



Indicators	Indicators	Indicators
▶ No. of children with diarrhea given adequate ORS in the previous month ▶ No. of children with diarrhea, fever ARI, who consulted the health worker and % of this who needed referral in the previous month ▶ Decrease in % of children who were given injections for ARI.	▶ Knowledge of the role of first contact care ▶ Skills to make and administer ORS ▶ Able to tell why to use ORS ▶ Public awareness and recognition of the work of first contact care	▶ Number of times issue has been discussed in gram-sabha and panchayat meetings ▶ Number of school health education programmes held ▶ Number of folk art programmes with this message held in the block.

Review questions

1. What should be the process of deciding the behaviour change that is required in a particular community?
2. List some good, harmful and harmless practices that relate to child care in your district.

Application Questions

1. What is the difference between IEC and BCC?
2. What are the key principles behind a successful BCC campaign?
3. What methods would you use for IEC / BCC keeping in mind the local culture?

Project Assignment

Keeping in mind the questions and your answers above, select 3 key messages for behaviour change communication in your district and make a district plan for the coming year for implementing your strategy.

Lesson NINE

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LESSON 5: INTEGRATED MANAGEMENT OF NEONATAL AND CHILDHOOD ILLNESS (IMNCI)

Ministry of Health and Family Welfare, "Operational Guidelines for Implementation of Integrated Management of Neonatal and Childhood Illness (IMNCI) (www.mohfw.nic.in)

LESSON 6: MANAGEMENT OF THE SEVERELY MALNOURISHED CHILD

K.E Elizabeth, *Nutrition and Child Development*, Paras Medical Publishers, Hyderabad, 2002
Recent Advances In Pediatrics Special Volume Nutrition, Growth And Development
 WHO manual for senior health workers
 AID India, Arogya Iyakkam Project Documents and Reports (http://www.ncsu.edu/stud_orgs/aid/html/hbp.html)
 Department of Health and Family Welfare, Government of Madhya Pradesh, *Bal Shakti Yojana Project: Guidelines for Management of Severely Malnourished Children at Nutrition Rehabilitation Centres* In collaboration with Department of Women and Child, Govt. of Madhya Pradesh & UNICEF (Madhya Pradesh)

LESSON 7: WHY IS 100% IMMUNIZATION SO ELUSIVE?

UNICEF/WHO, Immunization Summary 2007
 UNICEF, All India Coverage Evaluation Survey 2005, Draft Report
 Ministry of Health and Family Welfare, Reproductive and Child Health Rapid Household Survey (RHS-II) (www.mohfw.nic.in)

LESSON 8: BEHAVIOUR CHANGE COMMUNICATION FOR CHILD HEALTH

National Neonatology Forum; *State of India's Newborns*, Save the Children, Delhi, 2004 (<http://www.savethechildren.org>)

FURTHER READINGS AND TECHNICAL RESOURCES

World Health Organization (WHO)

Publications available for download at:

http://www.who.int/reproductive-health/publications/maternal_newborn.en.html

Standards for Maternal and Neonatal care

The Standards for Maternal and Neonatal Care consists of a set of user-friendly leaflets that present World Health Organization (WHO) key recommendations on the delivery of maternal and neonatal care in health facilities, starting from the first level of care.

Neonatal and perinatal mortality

The report provides estimates of neonatal and perinatal mortality in regions and countries for the year 2000. It also chronicles sources of data and methods for developing estimates from countries with incomplete or no available data.

Managing newborn problems: A guide for doctors, nurses and midwives

This guide, based on the latest available evidence, provides up-to-date, authoritative clinical guidelines that are relevant to a facility with basic laboratory facilities, selected essential drugs and supplies, and the capability to provide safe blood transfusion.

Basic newborn resuscitation

Written for health professionals responsible for the care of the newborn, this document describes a simple method for resuscitating newborn infants, even where resources are limited.

Postpartum care of the mother and newborn: a practical guide

This document reports the outcomes of a technical consultation on the full range of issues relevant to the postpartum period for the mother and the newborn. The report takes a comprehensive view of maternal and newborn needs at a time, which is decisive for the life and health, both of the mother and her newborn.



WHO Child and Adolescent Health and Development (CAH) Resources and publications available at: [http://www.who.int/child-adolescent-health/Top of Form](http://www.who.int/child-adolescent-health/Top%20of%20Form)

Resources on Integrated Management of Childhood Illness (IMCI) <http://www.who.int/child-adolescent-health/publications/pubIMCI.htm>

Includes a set of 13 briefing sheets providing a concise overview of the IMCI strategy, rationale and components, clinical training of health care providers, global implementation and research priorities. The process of planning national IMCI implementation and process of the adaptation of IMCI clinical guidelines are also described in publications on Planning, Guidelines and Training, Monitoring and Evaluation, and Research.

Resources on Neonatal Health and Development (<http://www.who.int/child-adolescent-health/publications/pubneonatal.htm>)

Includes Newborn Health Policy and Planning Framework and research papers on 'Optimal Feeding of Low Birth Weight Infants: A Technical Review', 'Explore simplified antimicrobial regimens for the treatment of neonatal sepsis' and 'Hypoglycemia and the Newborn: Review of the Literature.'

guides -Focus on

Resources on Child Health and Development (<http://www.who.int/child-adolescent-health/publications/pubCNH.htm>)

Resources on Child Nutrition (<http://www.who.int/child-adolescent-health/publications/pubnutrition.htm>)

Includes major publications and resources on Infant and Young Child Feeding (IYCF)

The Lancet Child and Neonatal Survival Series

The Lancet Child Survival Series (http://www.thelancet.com/collections/series/child_survival)

The Lancet Neonatal Survival Series (<http://www.thelancet.com/collections/series/neonatal>)

UNICEF (www.unicef.org)

The State of the World's Children Reports: <http://www.unicef.org/sowc07/>

Publications on Child Health: http://www.unicef.org/publications/index_pubs_health.html

Publications on Child Nutrition: http://www.unicef.org/publications/index_pubs_nutrition.html

Statistics and Data: http://www.unicef.org/publications/index_pubs_statistics.html

The Unicef Innocenti Research Centre undertakes original research to improve international understanding of issues related to child rights (<http://www.unicef-icdc.org/>)

The Millennium Project MCH Task Force Report: "Who's Got the Power? Transforming Health Systems for Women and Children (http://www.unmillenniumproject.org/reports/tf_health.htm)

Save the Children (www.savethechildren.com)

The State of India's Newborns (2004): http://www.savethechildren.org/publications/technical-resources/saving-newborn-lives/SOIN_Document-pdf.pdf

JHPIEGO: Maternal and Child Health Resources (http://www.jhpiego.org/scripts/pubs/category_detail.asp?category_id=24)

Basic Maternal and Newborn Care: A Guide for Skilled Providers (BMNC)

Learning Resource Package for Basic Maternal and Newborn Care

Managing Newborn Problems: A Guide for Doctors, Nurses and Midwives

Learning Resource Package for Managing Newborn Problems

Shaping Policy for Maternal and Newborn Health: A Compendium of Case Studies

Site Assessment and Strengthening for Maternal and Newborn Health Programs

Scaling Up Practices, Tools and Approaches in the Maternal and Neonatal Health Program

Implementing Global Maternal and Neonatal Health Standards of Care

OTHER WEB RESOURCES

National Neonatology Forum (www.nnfi.org)

USAID Maternal and Child Health (http://www.usaid.gov/our_work/global_health/mch/)

Basic Support for Institutionalizing Child Survival (BASICS) (<http://www.basics.org/home2.shtml>)

The Child Survival Countdown (<http://www.childsurvivalcountdown.com/>)

ICDDR,B (Bangladesh) (www.icddr.org)

The International Baby Food Action Network (www.ibfan.org)

Breastfeeding Promotion Network of India (<http://www.bpni.org/>)

LINKAGES Project (improving Infant and Young Child Feeding) (<http://www.linkagesproject.org/>)

The Child Survival Partnership (<http://www.childsurvivalpartnership.org/>)

Healthy Newborn Partnership (<http://www.healthynewborns.org/>)



RGI/CGHR PROSPECTIVE STUDY
SRS - VERBAL AUTOPSY FORM
Form 10A: Neonatal Death (28 days or less of age)

SRS unit number		Unique form number 1	
Year : 20		1st HYS ☐	2nd HYS ☐
Name of head of the household		Identification code of the head	
Full name of deceased		Identification code of the deceased	
Name of mother of the deceased		Identification code of mother of the deceased	

Section 1: Details for respondent and deceased	
Details of respondent	
1. Name of respondent	Identification code of respondent
2. Relationship of respondent with deceased	
☐ 1. ☐ 7. ☐ 2. Brother/Sister ☐ 6. ☐ 3. ☐ 9. Grandfather/Grandmother ☐ 4. Mother/Father ☐ 10. Other relative ☐ 5. ☐ 11. Neighbour/No relation ☐ 6. ☐ 99. Unknown	3. Did the respondent live with the deceased during the events that led to death? ☐ 1. Yes ☐ 2. No ☐ 9. Unknown 4. Respondent's age in completed years 5. Respondent's sex ☐ 1. Male ☐ 2. Female
Details of deceased	
6. Age in days	10. Place of death?
7. Sex ☐ 1. Male ☐ 2. Female	☐ 1. Home ☐ 3. Other place ☐ 2. Health facility ☐ 9. Unknown
8. House address of the deceased (include PIN) 	11. What did the respondent think this person died of? (Allow the respondent to tell the illness in his or her own words)
9. Date of death / /	

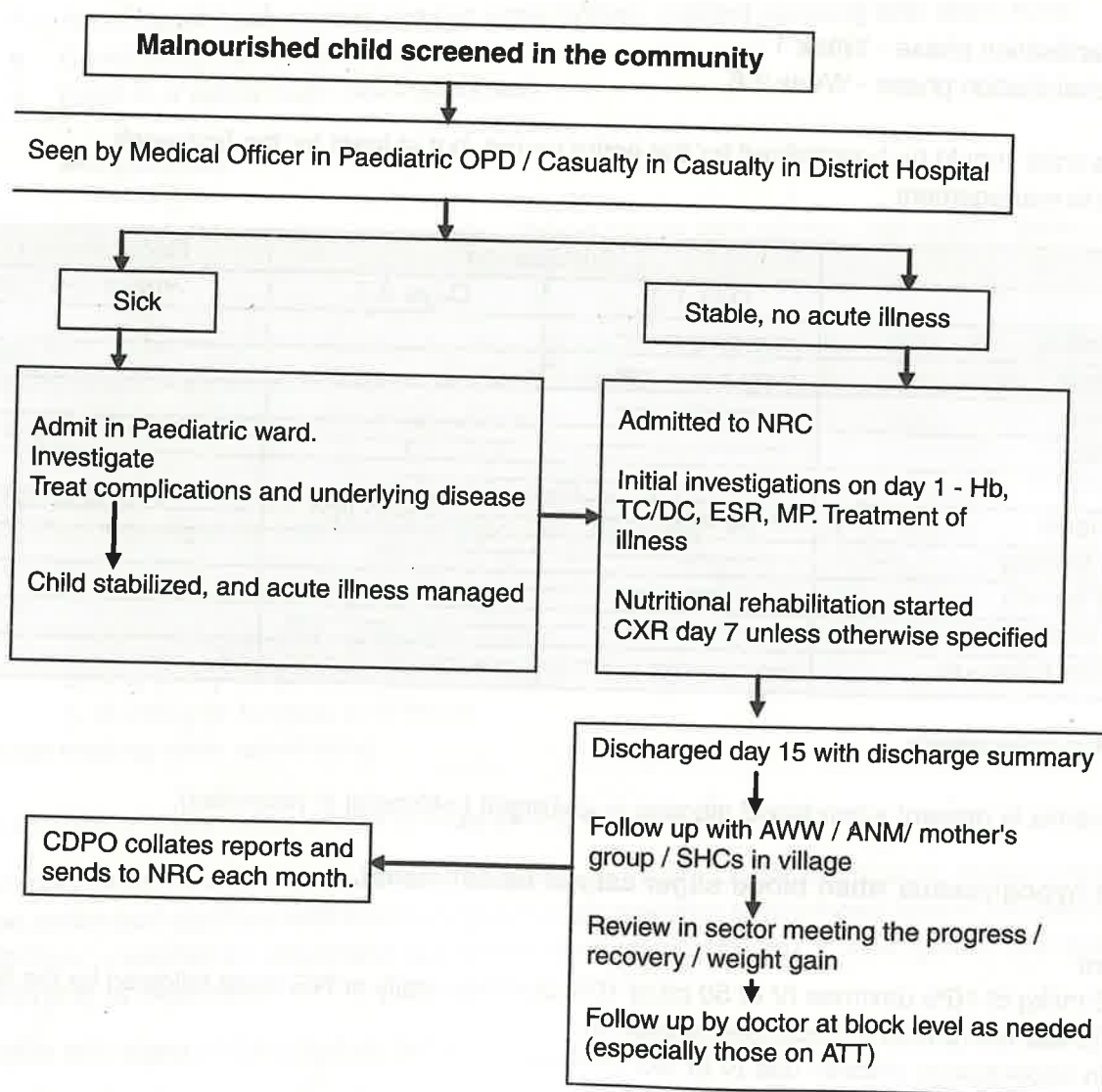
Section 2: Neonatal Death	
12A. Did s/he die from an injury or accident? ☐ 1. Yes ☐ 2. No → Skip to Q13 ☐ 9. Unknown	
12B. If yes, what kind of injury or accident?	
☐ 1. Road traffic accident ☐ 4. Burns ☐ 2. Falls ☐ 5. Drowning ☐ 3. Fall of objects ☐ 6. Poisoning	☐ 7. Bite/sting ☐ 99. Unknown ☐ 8. Natural disaster ☐ 9. Homicide/assault
Details of pregnancy and delivery	
13. Was the child a single or multiple birth? ☐ 1. Single ☐ 2. Multiple ☐ 9. Unknown	17A. Was there any complication during the pregnancy or during labour? ☐ 1. Yes ☐ 2. No → Skip to Q18 ☐ 9. Unknown
14. Where was s/he born? ☐ 1. Home ☐ 3. Others ☐ 2. Health facility ☐ 9. Unknown	17B. If yes, what complications occurred? (Check all that apply)
15. Who attended the delivery?	☐ 1. Mother had fits ☐ 2. Excessive bleeding before/during delivery ☐ 3. Waters broke one or more days before contractions started ☐ 4. Prolonged/difficult labour (12 hours or more) ☐ 5. Operative delivery ☐ 6. Mother had fever ☐ 7. Baby delivered bottom or feet first ☐ 8. Baby had cord around neck ☐ 9. Unknown
16. How many months long was the pregnancy?	18. Did the mother receive 2 doses of tetanus toxoid during pregnancy? ☐ 1. Yes ☐ 2. No ☐ 9. Unknown
Details of baby after birth	
19. Was the baby born alive (alive if the baby ever cried, moved or breathed)? ☐ 1. Yes ☐ 2. No ☐ 9. Unknown	23A. Was s/he able to breathe immediately after birth? ☐ 1. Yes ☐ 2. No → Skip to Q24A ☐ 9. Unknown
20. Were there any bruises or signs of injury on child's body after the birth? ☐ 1. Yes ☐ 2. No ☐ 9. Unknown	23B. If yes, did s/he stop being able to breath/cry? ☐ 1. Yes ☐ 2. No → Skip to Q24A ☐ 9. Unknown
21. Did s/he have any visible malformations at birth (very small head, mass on spine, etc)? ☐ 1. Yes ☐ 2. No ☐ 9. Unknown	23C. If yes, how long (days) after birth did s/he stop breathing/crying?
22. What was the child's size at birth?	24A. Was s/he able to suckle normally during the first day of life? ☐ 1. Yes ☐ 2. No → Skip to Q25 ☐ 9. Unknown
☐ 1. Very Small ☐ 4. Larger than average ☐ 2. Smaller than usual ☐ 9. Unknown ☐ 3. Average	24B. If yes, did s/he stop being able to suck in a normal way? ☐ 1. Yes ☐ 2. No → Skip to Q25 ☐ 9. Unknown
	24C. If yes, how long (days) after birth did s/he stop sucking?





Annexure 2

Standardised Treatment Protocol for Hospital Management of Sick and Severely Malnourished Children



Criteria for admission to the hospital

- Severe visible wasting - muscle wasting, especially over the buttocks; prominence of bony structures, especially over the chest.
- Bipedal oedema - swelling on both feet.
- Weight for age < -3 z
- Weight for height < 70% NCHS median

Management of the severely malnourished child - Two phases

- Stabilisation phase - Week 1
- Rehabilitation phase - Week 2-6

Ideally the child should be hospitalised for the entire period, but at least for the first week.

Ten steps to management

	Stabilisation		Rehabilitation
	Day 1-2	Days 3-7	Weeks 2-6
Hypoglycemia	→		
Hypothermia	→		
Dehydration	→		
Electrolytes			→
Infection		→	
Micronutrients	— no iron —	with iron —	→
Cautious feeding		→	
Catch-up growth		→	
Sensory stimulation		→	
Prepare for follow-up		→	

a. Hypoglycaemia

Hypoglycemia is present when blood glucose is <54mg/dl (<40mg/dl in neonates);

Assume hypoglycemia when blood sugar cannot be estimated.

Treatment

- 2 ml/kg of 10% dextrose IV or 50 ml of 10% dextrose orally or NG route followed by the first feed
- Follow with 2 hourly feeds (see section 4)
- In unconscious children use IV or NG route only.



b. Hypothermia

Hypothermia is present when axillary temperature $<35^{\circ}\text{C}$ or rectal temperature $<35.5^{\circ}\text{C}$

Assume hypothermia if temperature cannot be measured.

Treatment

- Cover child with blanket, put on warm clothes
- Keep skin to skin contact with the caretaker as much as possible
- Avoid direct heat contact and hot water bottles; Indirect warming with warm pads
- Cover head with scarf or cap
- Keep in a warm room (with convector)

c. Dehydration

It is best to assume that all severely malnourished infants and children with watery diarrhea have some dehydration.

Signs that remain useful for assessing dehydration are; recent onset sunken eyes, eagerness to drink (sign of some dehydration); prolonged capillary refill, weak or absent radial pulse and decreased or absent urine flow (signs of severe dehydration).

Whenever possible, a dehydrated child with severe malnutrition but not in shock should be rehydrated orally (use low osmolar ORS now approved by GOI).

Give

70-100 ml/kg of ORS orally or NG over 12h

5ml/kg every 30 minutes for 1st 2 hours

5-10 ml/kg/hr for next 4-10 hours

Initiate feeding while rehydrating

Give 2 hourly feeds using starter formula (F-75) from 4th hour onwards.

Consider septic shock if there is poor response to IV fluids, hemodynamic status (increase in heart rate, prolonged capillary refill time [CRT]) is out of proportion to diarrhoeal losses, presence of a focus of infection, unexplained abdominal distension (normal potassium), coffee ground vomitus and dilated peripheral or skull veins.

A child with signs of dehydration, but without watery diarrhea, should be treated as having septic shock.

d. Electrolytes and minerals

Potassium: Give 5-6 mEq/kg/day of potassium daily for the first few days orally or in IV fluids and then 2-3 mEq/kg/day orally (0preparation) for at least two weeks. **Give potassium rich foods.**

Magnesium: Give 0.2 ml/kg of 50% magnesium sulphate IM 12 hourly for 2-3 days. Continue with 0.8-1.2 mEq/kg/day orally for at least two weeks.

Sodium: Points to remember:

- Serum sodium may be low
- Giving high sodium increases mortality
- Do not add salt to food
- Do not use diuretics for edema
- Treat symptomatic hyponatremia

Vitamin A: orally in single dose as given below:

<6 months: 50,000 IU (if clinical signs of deficiency are present)

6-12 months: 1 lakh IU

Older children: 2 lakh IU

Children <8 kg irrespective of age should receive 1 lakh IU orally

Start iron only when there is no diarrhoea and weight gain begun, at 3 mg/kg/day.

e. Infection

Infections are common in severely malnourished children. In severe malnutrition the usual signs of infection, such as fever, are often absent

Therefore, give routinely to All admissions:-

- broad-spectrum antibiotic(s) AND
- measles vaccine if child is > 6m and not immunised (delay if in shock)

Also - Do blood sample for malarial parasite and investigate for tuberculosis (history of contact with tuberculosis, mantoux test ,if needed x-ray) if cough with sputum present then sputum AFB

Investigations

If facilities are available, following may be done

- Blood Culture
- Urine Examination for RBC, WBC, protein, sugar
- Urine culture & sensitivity (by supra public tap)



- Stool Examination for parasites
- X-ray chest
- Gastric Aspirate for AFB
- X-rays of other family members if required
- Peripheral Smear for Malaria
- CSF examination if meningitis suspected

Choice of antibiotic:

1. If no complication -co-trimoxazole
 - 5 ml in twice daily for five days
 - 2.5 ml if <6 kg
2. Severely ill (apathetic, lethargic) or have complications (hypoglycaemia, hypothermia, broken skin, respiratory tract or UTI)
 - Ampicillin 50mg/kg I.M. or I.V for 4 days
 - Followed by oral Amoxycillin 15 mg/kg 8 hourly for five days
 - Gentamicin 7.5 mg/kg I.M or I.V once daily for seven days
 - If the child fails to improve within 48 hrs add chloramphenicol 25 mg/kg I.M or I.V 8 hrly for 5 days
 - Where specific infections are identified add specific antibiotics if appropriate
 - Anti-malarial treatment if the child has the positive blood film for the malarial parasite
 - If anorexia persists after 5 days of antibiotic treatment, complete a full 10 days course
 - If the anorexia still persists organism and ensure that Vitamin and Mineral supplements have been correctly given
 - Other associated infections-Give appropriate antimicrobials for associated infections i.e.
 - Anti-malarial, anti-tubercular therapy.
 - Duration of antibiotic therapy depends on the diagnosis i.e.-
 - Suspicion of clinical sepsis: at least 7 days
 - Culture positive sepsis: 10-14 days
 - Meningitis: at least 21 days
 - Deep seated infections like arthritis and osteomyelitis: at least 4 weeks

REMEMBER

A severely malnourished child can die due to

- a. Dehydration
- b. Infection
- c. Low body temperature
- d. Low blood glucose

And therefore needs urgent round-the-clock attention

Rehabilitation Phase

Monitor response to treatment

Failure to respond

Criteria for discharge before full recovery

Monitor response to treatment

- If weight gain is good, ie >10gm/kg/day, continue the treatment
- If weight gain is moderate 5-10 g/kg/day, check if food intake is adequate and any infection has been missed out
- If weight gain is poor <5 gm/kg/day, make a full assessment - food intake, untreated infection, TB, or psychological problems
- Child has recovered if he/she attains 90% expected weight for height of NCHS median

Criteria for discharge before full recovery

- Age 12 months or older
- Antibiotic treatment completed
- Good weight gain
- No oedema
- K, Mg, mineral and vitamin supplements taken for two weeks
- Mother or other caretaker not working outside the home has been given adequate training in appropriate feeding, has finances to provide the food, and is able to follow advice given.

Follow up of discharged children

- Give the follow up card to the parent
- Inform the concerned CDPO/ ANM/ AWW about the child
- Ensure the child is followed up for at least six months after discharge.
- Home visits essential.

Dietary advice in hospital and at home according to locally appropriate diet charts. Model diet charts available on request.

This section borrows from 'Guidelines for Management of Severely Malnourished Children at Nutrition Rehabilitation Centres, Shivpuri (Balshakti) Madhya Pradesh'. •

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