

STRATEGY FOR CHILD SURVIVAL

B.N.S. Walia
S.B. Mantry

The infant mortality rate and the under five mortality rate in India are unacceptably high. The low birth weight (LBW) neonates comprises 30% of all births. Prevalence rate of malnutrition in pre-school children is high. Almost half the deaths in children are occurring as a result of diseases which are simple to identify and amenable to treatment with inexpensive medicines, thus qualifying for the criteria laid out by Walsh and Warren(1) for inclusion in Primary Care Programme.

Available experience from several centres in the world indicates that a Primary Health Care approach using well trained paramedical personnel near the homes of the patients, who are provided with ensured supply of essential medicine, can reduce infant mortality rates by 50-60% within a period of 1-5 years.

What should be the components of such a programme? Experience from several centres in the world would lead us to the conclusion that the undermentioned programmes would require consideration:

From the Department of Pediatrics, Post Graduate Institute of Medical Education and Research, Chandigarh 160 012.

Reprint requests: Dr. B.N.S. Walia, Director, Post Graduate Institute of Medical Education and Research, Chandigarh 160 012.

1. Prenatal care.
2. Delivery by Trained Birth Attendant.
3. Care of newborn infant.
4. Primary health care for undermentioned conditions:
 - (a) Diarrhea,
 - (b) Acute respiratory infections,
 - (c) Other common diseases.
5. Immunizations.
6. Prophylaxis against anemia and vitamin deficiency and iodine deficiency.
7. Growth monitoring and nutritional guidance of staff.
9. Strengthening of secondary and tertiary care.

How should it be done?

Some of these programmes have been in existence for several years, yet coverage of target population is grossly inadequate as has been shown by the Indian Council of Medical Research (ICMR) survey conducted in Bihar, Gujarat and Kerala(2).

The two major reasons for this failure are inadequate training of staff and absence of an assured supply line for essential medicines and equipment. Poor communication and poorer transport facilities lead to inadequate supervision and thus non adherence to desirable norms and expected standards.

In order to be feasible and acceptable to the workers and the health authorities the programme must be based on existing infrastructure, though it might change the emphasis from some targets to others, involve training in skills required for performance of certain tasks and additional inputs of medicines, supplies and mobility may have to be made. While doing the latter, it must not be forgotten that the effort would be worthwhile only if it is replicable

at a national scale. The total cost of inputs should preferably not exceed 2% of the per capital income of the population(3). Any amount of rearrangement or reappropriation within the sanctioned budget should be permissible. Primary health care is reported to constitute 90% of the total health demands, 2/3rd of which can be managed by paramedical personnel. Out of the remaining 10%, approximately 2% are expected to need tertiary care(4).

The kingpin of the programme would be the female multipurpose worker (FMW) who would be given a crash course of training in different facets of the programme for a month, in actual field situation under an experienced health visitor (community nurse). Every skill to be performed by her shall be broken into its several components and the capacity of the worker to perform the task at the preset standard of accuracy and proficiency will be tested, before she is actually allowed into her allocated field practice area. Each multipurpose worker will be held responsible for a group of 5-6 villages with a population of 5000, within a radius of 5 km from her headquarters. Five such workers shall be supervised by one health visitor on once a week basis. A doctor shall visit two such posts in a day, one in the morning and another in the afternoon. Thus, for a population of 25,000, 5 female multipurpose workers, one health visitor and one doctor would be required. This staff is much less than the one being advocated for the new style Primary Health Centre meant for 30,000 population.

A major shift in the emphasis will have to be brought about by training and supervision, so that the total programme and not just the Family Planning (FP) Programme becomes the focus of her attention. In pilot areas where this programme is proposed to

be introduced, there shall be no targets for tubectomy nor any family planning camps. The latter service shall be offered as a part of routine activity of the health service of the area. Four decades of chasing FP targets without success rather than delivery of needed and demanded services should be enough to convince us of the futility of the earlier approach and a willingness to try a new strategy. The health services in India have fought shy of trying anything different, which is surprising since they are not being asked to give up something which works.

1-3. Prenatal, Natal & Neonatal Services

The prenatal service would consist of registration of pregnant women, identification of those with 'at risk' factors, tetanus toxoid, iron-folic acid supplementation and advice on what to eat and how much work to undertake.

At birth, the parturient woman should be attended by a Trained Birth Attendant whose training would include how to conduct a clean delivery, recognition of danger signals in the infant as well as management of a normal newborn. Registration of birth and its notification to the Multi Purpose Worker (MPW) would also be one of her duties.

4. Primary Health Care

(a) *Diarrhea Control Programme*

Diarrheal disease is responsible for 35-40% deaths in infancy(5). Numerous projects have demonstrated that diarrhea related mortality which results from dehydration can be reduced by 50-60%(6) by the use of oral rehydration therapy (ORT). Calculated on the basis of one

episode of diarrhea requiring rehydration every year, 200 million preschool children of India would require the same number of sachets or oral rehydration salts. If just two sachets per episode are provided, at a cost of Re. 1 per sachet, it would involve an expense of Rs. 400 million or 40 crores per year for the ORT programme. The initial sachet having been used for demonstration, the mother would be taught how to prepare oral rehydration solution (ORS) at home from sugar, table salt and baking soda. Another 5 crore would be required for providing teaching materials and plastic measure of half a litre to all the para-medical workers.

(b) *Acute Respiratory Infections (ARI)*

These are responsible for 25-30% of total infant deaths. Nearly 50-60% of deaths caused by pneumonias can be averted by treatment of ARI at home by a para-medical worker using co-trimoxazole or amoxycillin. Workers are trained to grade cases of ARI as belonging to mild, moderately severe (breathing rate in excess of 50 per minute) or severe (off foods, chest retractions or grunt). Mild cases are watched, those of moderate severity are given antibiotics and severe cases are reported to health stations where oxygen is available. An average child suffers 4-5 episodes of ARI per year or a total of estimated 1000 million episodes in 200 million children per year. If 1 in 10 is graded as of moderate severity, 100 million would need antibiotics and 10 million are likely to need oxygen which should be available in a Community Health Centre. Calculating at the rate of Rs. 10 per moderate case and Rs. 100 per severe case, the expected expense would amount to 1000 million + 1000 million, i.e., Rs. 2000

million. It is estimated that half of the patients will be from families which can afford to buy their medicines, thus an outlay of Rs. 1000 million, i.e., Rs. 100 crore per year would be required.

Whereas, the primary health centre should have facilities for administration of oxygen and keeping the baby in a warm clean environment, every district hospital should have a 6-8 bed nursery, where in addition to phototherapy, facilities for administration of oxygen, resuscitation, and intravenous therapy should be available. Every medical college should have a Level II nursery, with facilities for exchange transfusion and pediatric surgery. Level III nurseries though necessary can be postponed for the present, except for the creation of 10 training-cum-demonstration units in the entire country, though one nursery of 10 beds is needed for 10000 births.

(c) *Other Common Diseases*

The drugs supplied to the rural health services require to be rationalized. A list of 20 essential drugs generally accepted to be adequate at the subcentre level and of 50 drugs at the Primary Health Centre. If a constant supply of these drugs is ensured, then the two levels of health facilities referred to above, can be expected to be able to deal with 80-90% of illness episodes that report to them. The present system where 70% of the budget of a PHC is expended on staff salaries, leaving only 30% for drugs and supplies is grossly unbalanced. It would be preferable to have half the manpower with double the supplies. Otherwise all the manpower sits idle for 300 out of 365 days. No country can afford to supply all the medicines to its sick people. If state Red Cross opens a shop with stock of 50

episode of diarrhea requiring rehydration every year, 200 million preschool children of India would require the same number of sachets or oral rehydration salts. If just two sachets per episode are provided, at a cost of Re. 1 per sachet, it would involve an expense of Rs. 400 million or 40 crores per year for the ORT programme. The initial sachet having been used for demonstration, the mother would be taught how to prepare oral rehydration solution (ORS) at home from sugar, table salt and baking soda. Another 5 crore would be required for providing teaching materials and plastic measure of half a litre to all the para-medical workers.

(b) Acute Respiratory Infections (ARI)

These are responsible for 25-30% of total infant deaths. Nearly 50-60% of deaths caused by pneumonias can be averted by treatment of ARI at home by a para-medical worker using co-trimoxazole or amoxycillin. Workers are trained to grade cases of ARI as belonging to mild, moderately severe (breathing rate in excess of 50 per minute) or severe (off foods, chest retractions or grunt). Mild cases are watched, those of moderate severity are given antibiotics and severe cases are reported to health stations where oxygen is available. An average child suffers 4-5 episodes of ARI per year or a total of estimated 1000 million episodes in 200 million children per year. If 1 in 10 is graded as of moderate severity, 100 million would need antibiotics and 10 million are likely to need oxygen which should be available in a Community Health Centre. Calculating at the rate of Rs. 10 per moderate case and Rs. 100 per severe case, the expected expense would amount to 1000 million + 1000 million, i.e., Rs. 2000

million. It is estimated that half of the patients will be from families which can afford to buy their medicines, thus an outlay of Rs. 1000 million, i.e., Rs. 100 crore per year would be required.

Whereas, the primary health centre should have facilities for administration of oxygen and keeping the baby in a warm clean environment, every district hospital should have a 6-8 bed nursery, where in addition to phototherapy, facilities for administration of oxygen, resuscitation, and intravenous therapy should be available. Every medical college should have a Level II nursery, with facilities for exchange transfusion and pediatric surgery. Level III nurseries though necessary can be postponed for the present, except for the creation of 10 training-cum-demonstration units in the entire country, though one nursery of 10 beds is needed for 10000 births.

(c) Other Common Diseases

The drugs supplied to the rural health services require to be rationalized. A list of 20 essential drugs generally accepted to be adequate at the subcentre level and of 50 drugs at the Primary Health Centre. If a constant supply of these drugs is ensured, then the two levels of health facilities referred to above, can be expected to be able to deal with 80-90% of illness episodes that report to them. The present system where 70% of the budget of a PHC is expended on staff salaries, leaving only 30% for drugs and supplies is grossly unbalanced. It would be preferable to have half the manpower with double the supplies. Otherwise all the manpower sits idle for 300 out of 365 days. No country can afford to supply all the medicines to its sick people. If state Red Cross opens a shop with stock of 50

essential drugs at PHC and 200 drugs at Community Health Centres, then patients can be expected to buy these at reasonable rates. Patients do not like to wait several hours at PHC for obtaining a 2 minute prescription for a minor ailment!

Further, expansion of manpower should not be on the basis of new PHCs to be opened, but on the pattern suggested above with several rural dispensaries under existing PHCs as discussed above.

5. Immunization

Immunizations are considered essential part of any child survival programme. It is estimated that if 80% of the infants are immunized, the mortality caused by tetanus and measles can be eliminated and the infant mortality reduced by 8%(7). Though indicated as a preventive measure, these are not a very effective tool for improving child survival. In fact, most of the reduction in infant mortality in the developed countries took place before immunizations were widely used(8). Yet every Five Year Plan has been pushing immunization to the exclusion of everything else. If the infrastructure exists, then the vaccines are likely to cost Rs. 30 per child. Calculating on the basis of Rs. 30 per infant for the estimated 20 million infants born every year, the vaccines are estimated to cost Rs. 600 million per year (i.e., Rs. 60 crores). Children older than one year in age should be encouraged to receive immunizations, by purchasing their own vaccine.

6. Prophylaxis of Vitamin A Deficiency and Anemia

Out of the 400 million children, approximately half belong to families which live below the bread line. All of them should

have two doses of Vitamin A and ferrous sulphate 50-100 mg per day. A liquid preparation of ferrous sulphate is likely to be more acceptable to children. Infants would required iron supplementation from age of 6-12 months. Iodization of salt and iodized oil injections in areas of country where goitre is endemic would be needed.

7. Growth Monitoring and Nutritional Guidance

Nutritional surveys indicate that half the children of the country are grossly underweight. Our work has shown that two third of this malnutrition results from the ignorance of the mother about what the child needs to be fed after the first 5-6 months of life. If a health worker could identify malnourished children in her community and guide mothers on feeding them the same "dal-roti" or "dal-rice" which the rest of the family members eat, a large proportion of malnutrition could be ameliorated. The remaining third with absolute lack of food would need help from Supplementary Nutrition Programme. Experience in Tamil Nadu has shown that a programme costing Rs. 200 per year per child can reduce the prevalence of malnutrition by 50%. The expense of feeding of 10 million children in this category would be Rs. 2000 million per year.

8. Training of Staff

Table I outlines the estimated outlay for training of different categories of staff.

9. Strengthening of Institutional Infrastructure

The proposals envisage a massive retraining effort of staff at all levels from village health volunteers to superspecialists

TABLE II—Proposed Expenses to Augment Different Levels of Care

Facility	No.	Expense per facility		Total expense in crores	
		Capital	Recurring	Capital	Recurring
PHC	600	20000	20000	12.0	12.0
Upgraded PHC	2000	50000	50000	10.0	10.0
Taluka Hospital	1000	1 lac	2 lacs	10.0	20.0
District Hospitals	400	5 lacs	2 lacs	20.0	8.0
Medical Colleges	100	10 lacs	4 lacs	10.0	4.0
Regional Institute	5	100 lacs	30 lacs	5.0	1.50
National	1	1000 lacs	50 lacs	10.0	.50
Total				77.0	56.0

The cost over 5 years = 77 crores + 56×5 = Rs. 357 crores.

The annual requirements for all the Programmes are summarized in Table III.

TABLE III—Summary of Budget Requirements

Programme	Expense (Rs. crores)	
	Per year	Plan period
Minimal Perinatal Care	15.0	75
Primary Health Care	10.0	50
Diarrhea control	40.0	200
Acute respiratory infection	100.0	500
Immunization	60.0	300
Vit. A and anemia prophylaxis	20.0	100
Supplementary nutrition	200.0	1000
Training	20.0	100
Institutional strengthening	71.4	357
Health education	2.0	10
Total	538.4	2692

There is enough evidence to show that such programmes have reduced infant mortality rate to half. Calculated on the basis of 20 million births every year if the infant mortality rate is halved from 90 to 45, the proposals can be expected to save

an estimated 9 lac lives every year. The cost of saving a child's life can be roughly estimated to be Rs. 29,800. Human life cannot be cheaper than that ! The satisfaction of public demands, prevention of disease and a healthier nation will be 'spin off' benefits.

The question one would like to ask is—Will Mother India like to accept children of India as citizens of India?

10. Health Education

A large proportion of morbidity and mortality is preventable by appropriate self care programmes practised by the people. The value of knowledge regarding breast feeding, appropriate feeding of infants and preschool children, prevention of diarrhea, effectiveness of vaccines and Vitamin A and the need for proper spacing of children is well proven. Appropriate health messages using proper aids need to be delivered to the total population. Concepts may take time to change but the value of repeated messages delivered in a polished persuasive manner is unquestioned. The resulting change to health promoting attitudes and practices could be very cost effective. A sum of Rs. 2 crores for production and presentation of appropriate health materials at a central resource centre would be highly cost effective investment.

REFERENCES

1. Walsh JA, Warren KS. Selective primary health care. *N Engl J Med* 1979, 301: 967-974.
2. Indian Council of Medical Research. Evaluation of MCH services in 3 states of India. Indian Council of Medical Research, New Delhi, 1988.
3. Gawatkin DR, Wilcok JR, Hary JD. Can health and nutrition interventions make a difference. *World Health Forum* 1981, 2: 119-128.
4. de Mercado GS. Brazil: A wide ranging plan for basic health services. *World Health Forum* 1982, 3: 249-253.
5. Lei Singer KN. Health policy: Using time factor to good effect. *World Health Forum* 1984, 5: 247-251.
6. Gomaa AI. Strengthening rural services in Egypt. *World Health Forum* 1982, 1: 385-386.
7. Luis RB. Costa Rica saves infant lives. *World Health Forum* 1988, 4: 430-443.
8. McKeown T. The Road to Health. *World Health Forum* 1990, 10: 408-416.