

Review Article:

Prevention Of Perinatal Mortality- Beyond Mayurbhanj Model

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Received: July 27,2017; **Reviewed:** October 11,2017; **Accepted:** January 9,2018

Citation of article: Sarangi G.D. et al . Prevention Of Perinatal Mortality-(Beyond Mayurbhanj Model)

Abstract:

There is a dramatic reduction of IMR (Infant Mortality Rate) in past two decades in India. Neonatal mortality which was 41% of under five deaths in 1990 have increased to 56% by 2012 with largely invisible still births. The average annual reduction of early NMR is 2.8% from 2000 to 2012 where as Late NMR and Post NMR has reduced almost double of early NMR. About 72.92% neonatal deaths occur in the 1st week of life. 97.8% of deaths due to Asphyxia 74.8% death due to Prematurity and 50% neonatal deaths from sepsis occur in 1st week. Much of the deaths in 1st 24 hours or 1st week is due to the Prolongation of adverse Perinatal events. Still birth rate of 23/1000 live births speaks of the pregnancy wastage. Care of the mother, safe delivery practices and prophylactic antibiotics to the new born will reduce the 1st week neonatal mortality.

Key words – *IMR (Infant Mortality Rate), NMR (Neonatal Mortality Rate), Perinatal Mortality, Late Neonatal Mortality, Post Neonatal Mortality, Prophylactic Antibiotic.*

Introduction:

India has witnessed dramatic reduction in under five mortality and IMR in the past two decades. Neonatal mortality has not been proportionally reduced as much as post neonatal mortality. The 1st week neonatal deaths more so the 1st day deaths are very high and needs to be

improved in war time footing.. this area is also important for maximum morbidity and compromised quality of life in future. Most of the deaths and future of disability in this period had their beginning in intranatal or Perinatal events. Still birth rates are still high in India which indicates pregnancy wastage. Mothers undergo the process of pregnancy with its inherent hazards without any benefit. Two doses of Prophylactic Parenteral antibiotic could save many from Sepsis and death. With reduction of Late neonatal, Post neonatal and under five mortality the focus should be on Perinatal mortality. It can be considered as a better Index of social wellbeing as it deals with the most two vulnerable segments with maximum wastage of life.

Aims and objectives of the project:

Reduction of Perinatal mortality by reducing early neonatal mortality and still births. Reduction of ENMR can be done by (a) Reduction of the Mortality due to birth Asphyxia and prompt therapy of HIE. (b) Reduction of mortality due to Neonatal Sepsis and (c) Reduction of mortality due to Prematurity. Death due to congenital malformations can be taken up as long term problems. Reduction of still births in a poor and middle income setting will bring down the pregnancy wastage.

Review of literature:

There is a dramatic reduction in under five

mortality and IMR in past two decades in India. Neonatal mortality has reduced much less than Post-neonatal deaths. In 1990, 41% of under five deaths are due to neonatal mortality which has increased to 56% by 2012. Still births are largely invisible(1) By 2015 the under five mortality was 47.70, IMR 37.90 and Neonatal mortality 27.70.

73% of IMR is due to neonatal loss. This area needs intensive attention. (2) From 1990 upto 2000 the reduction in neonatal mortality was 2 to 3%. After 2000 with inputs from both Government and Private Sector the Neonatal Mortality is decreasing with more than 3% every year. The late neonatal mortality has shown a reduction of 50% from 2000 to 2012. But the early neonatal mortality except for the year 2000 to 2001 have not shown any substantial decline. (3)

The average annual reduction in late NMR and Post NMR are 5.8% and 5.1% respectively while the average annual reduction of early NMR is 2.8% from 2000 to 2012 (3). About three fourth (72.92%) neonatal deaths occur in the 1st week of life. 2nd week accounts for 13.5% and last 2 weeks account for 13.5%. 50% of the early neonatal deaths occur in the first 24 hours of birth. Broadly four categories of diseases are responsible for early and late neonatal deaths, They are Asphyxia, Prematurity, Sepsis and Malformations. Baqui AH et al (4) Provided data on timing of cause specific neonatal deaths in rural India.

Almost all deaths from Asphyxia (97.8%) occurs within the 1st week of life with 70% of them within 1st 24 hours. About three fourth of the Prematurity deaths (74.8%) occurs in the 1st week with 30% in 1st 24 hours. Less than 50% of neonatal deaths due to Sepsis occur in 1st week with 30% in the 2nd week. Three fourth of the deaths due to Malformation occur in the 1st week with nearly half being contributed within 24 hours (5).

From the above discussion it is clear that early neonatal mortality and more so the 1st 24 hours mortality is of concern to reduce the IMR. Much of these deaths are the result of Prolongation of adverse Perinatal events. Introduction of National

Health Mission and ASHA workers increased the Health Awareness, Common Curative Services and Facilitation of access to services from Health care system (6). Therefore it will not be difficult to count every delivery and introduce plan of action to reduce 1st week morbidity and mortality.

Neonatal mortality is influenced by various socio economic and demographic factors. Neonatal mortality in urban area is far less than the rural counter parts. Though the number is less yet the causes are similar. Report by Bapat et al from Mumbai Slum (7) revealed 28 percent intrapartum related deaths, 23 percent prematurity and 22 % infection related Neonatal deaths . Death from birth Asphyxia was reported to be 39% from Vellore with 21% from Prematurity. (8).

A multicentric study taken up in four states of India revealed that Birth Asphyxia to be a major killer in the first week followed by Sepsis and Prematurity (9). Birth Asphyxia with Sepsis and Prematurity accounts for 78%. Neonatal deaths (10). Liu L etal have shown neonatal mortality in India from the above three causes to be 88% (11). 60% babies lost due to Asphyxia are term and normal birth weight. Which entails these are the newborns with full potential (9).

Added to the scenario is the still birth rate of 23/1000 live births which causes the highest number of late pregnancy wastage which is a large socioeconomic burden. The perinatal loss is more than IMR in India at present. The answer to these problems is also present in the perinatal period.

Administration of oral cotrimoxazole and injectable Gentamycin in suspected cases of Sepsis reduced the neonatal mortality by 62.2% (12). Administration of Prophylactic antibiotic for selected cases will not be out of place. Gentamycin to babies <32 weeks in a dose of 5mgs/kg/48hours and in >32 weeks 4mgs/kg/24 to 36 hours gives adequate coverage (13). Preterm neonates do not reach targeted peak and trough gentamycin concentration after a standard does of 4mgs/kg/day which suggests a need for higher loading does with increased interval (14). When administered to cases

of suspected Sepsis Gentamycin needs 9 doses at least to develop nephrotoxicity and Auditory toxicity (15). Hence two doses of 6mgs/kg/day of Gentamycin with interval >48 hours can protect the child from Sepsis in the 1st week. It is not excreted to the gut and will not destabilise the gut flora.

Prevention of Birth asphyxia and Prophylactic care with Gentamycin can take a long way in reducing HIE and Sepsis. Which accounts for more than 60% of neonatal deaths. It will also improve the quality of life by preventing HIE.

Maternal height was supposed to inversely correlate with foetal outcome. Mother's height of less than 145 cms is accepted as the cut of value. But two variables are found to be important. Mothers weight is directly proportional to foetal weight and height is proportional to the adequacy of birth passage which is inversely proportional to foetal outcome. We have choosen BMI as a predictor of foetal outcome during delivery which has weigh in the nominator and height as the denominator. (16). The cut off point in BMI >18kg/m² with height less than or equal to 145 cms correlates well with the pregnancy outcome/mode of delivery.

The still birth rate in India is 23/1000 live births. This is almost equal to Early Neonatal loss. 67% of the still births are non macerated which indicates most could have been salvaged with proper obstetric care. Obstructed labour, difficult presentation (Breach, transverse, oblique, etc.) eclampsia/pre eclampsia, Antepartum Haemorrhage and foetal distress are the most important causes where immediate attention might have saved the lives of the foetus as well as mother. 8% of the still birth still require LSCS to take out the dead babies. Early intervention could save 15-16 babies per 1000 live births which are not counted in IMR. (16)–(17).

Perinatal mortality at rural mysore is 28.93 (18). Hospital based study at Rajasthan showed Perinatal mortality to be 35.8/1000 live births. Current Perinatal mortality in India (2013) is

26/1000 live births with a range of 16 to 28 in urban and rural areas respectively.(19).

The project model:

Action at village level:

ASHA worker at village level will identify and follow up the expectant mothers as per the Government protocol. They will take the weight as soon as they became aware of the conception and also the height. The first recorded weight can be taken as pre conceptional weight. She will be provided with a BMI chart or if she can make simple calculations she will be taught how to take out BMI. Otherwise she can contact the ANM at the centre or village to calculate and tell her the risk and need for assisted delivery. BMI less than 18 are taken as high risk group (16).

These mothers and their family should be prepared mentally for assisted delivery and with delivery pain the mother should be directly sent to the centre where obstetricians and facilities for LSCS is available round the clock. This type of deliveries can be treated as National emergency and should be rushed to labour room for immediate evaluation.

She should be trained to recognise the initiation of the process of labor and make arrangements to shift her to the nearby PHC where normal deliveries are conducted by trained personnel. During the process of transmission the fluid and food of the mother should be taken care of. 108 Ambulance and the project Ambulance will attend the call to take the mother to the nearby facility as soon as possible. Any delay of beyond 2 hours has to be informed to the helpline given to her. She should be able to recognise the danger signs during pregnancy and inform the ANM SOS. These are there in their training curriculum.

The Centre:

The CHCs or PHCs pointed out to handle deliveries are to be equipped with adequate number of trained Paramedical workers to handle 10-12

deliveries per day.

As the case will arrive the staff will make a thorough check up. If no complication is expected she will admit the mother in the labour room taking care of cleanliness and possible steps to prevent transmission of infection. She will do a PV to record the foetal Head position and the Cervical dilation.

She will repeat PV after 2 hours to find out the station of Head and the dilation of Cervix. If the Head has descended to position 0 (Ischial tubersity) but there is inadequate dilatation which can be known from Partogram, she will inform the Doctor in duty and arrange for Syntocinon drip. This delivery will be conducted in presence of the Medical Officer.

In spite of syntocinon if no progress of dilatation or if the head does not descent then the mother has to be referred to the Nodal Centre as she may need assisted delivery.

During the process she will observe the foetal Heart rate also. If the heart rate decelerate without contraction, the doctor will be informed and she has to be referred to the Nodal Centre.

The PHC/CHC doctor is in above all charge. He will inform all concerned for arrangement of assisted delivery and care of the new born after birth. Any child falling sick after birth in the PHC has to be referred early.

There will be a sick new born care area with overhead warmer. Phototherapy units, Oxygen supply (Concenrate or Cylinder) and other Materials for use. Intra muscular injection can be administered by staffs which are both antibiotics and Vit-K.

The Nodal Centre

The District Head quarters can be taken as the nodal centre. It is to be equipped with two obstetricians, two paediatricians and two anaesthetists. However a third hand for Obstetrics can be obtained with special training of the general

surgeon in only LSCS. The private practitioners in obstetrics can be mobilised in emergency with payment from private sector. That will ensure LSCS within the minimum time from the arrival of the mother. Out of Pediatricians who will attend the deliveries one will be in turn in charge of the Nursery which should be upgraded from SNCU to NICU with facilities for ventilation. Nurses can be trained for resuscitation in the delivery room or OT. In order to make anaesthetics available for LSCS round the clock the Medical Officers/LTRMOS in the District Hospital can be trained in spinal anaesthesia. All these will make a team to cater services round the clock. Apart from regular duty Doctors can be given incentives for work beyond their scheduled time. One of the ADMO should be working as a co-ordinator and his office should co-ordinate round the clock with all the peripheral Hospitals supposed to refer the cases. If the officer or the person in charge could not be contacted due to reasons both intentional or accidental other emergency contact numbers should be available to the referring authority.

Capacity building of the nodal centre:

To complete the obstetric team if private Obstetrics specialist are not available the surgery specialist/ENT specialist/Orthopedic specialist should be trained in LSCS.

For adequate Anaesthesia coverage required number of General duty Medical Officers may be oriented with 3 to 6 months training in spinal or epidural anaesthesia.

GNM nurses should be trained in NICU management, nursery care of Premature and Resuscitation Methodology. Their number should not be less than 10.

Two Paediatricians should be made available to look after the NICU and attend labour room calls. They can be supported by General duty Medical Officers in daily management of wards and NICU and Premature Nursery.

Training can be imparted to them in Medical

Colleges with sufficient turnover.

At The Centre For Normal Delivery

The Doctor posted will be reoriented in normal delivery and treatment of abnormalities before sending the patient to the nodal centre.

To attend to the delivery 10 ANM/GNM should be trained in conducting normal delivery as well as doing PV to assess the station of the head, dilatation of cervix, and assessment of foetal heart sounds. Normograms from Partogram should be provided and they will be trained in completing it. They should be taught to recognise progression of labour beyond particular points in primi and multies and should inform the doctor accordingly. They will be taught basic new born resuscitation, maintenance of temperature, initiation of breast feeding and Oxygen administration in hood/ mask if necessary.

For AHSA Workers

- Assessing the preconceptual/1st trimester weight of the mother
- Assessing the Height of the pregnant women.
- Calculate BMI with help of the ANM of the Centre and refer accordingly
- Should be taught to recognise symptoms of initiation of labour.
- Should know the danger signs (Red Flags) in perinatal Period.

Conclusion:

The process of pregnancy and the pregnant mother should be viewed as a National Priority. The delivery as a National Emergency. Facility based Newborn care should be replaced by “Need based services and facility based care”. This will reduce the Perinatal loss. The slogan should be to “Count every birth” not every newborn. Today early neonatal mortality and still births are more important as denominator of social wellbeing. Therefore PNM should be more acceptable as an effective health index than IMR.

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