Foundation for Survival of Women and Children

Strengthening of Home Based Essential New-born and Maternal Health Care by ASHAs in Haryana Using Mobile Phone Technology

Background: Since the inception of NRHM (2005), a lot of progress has been made in the field of maternal, new-born and child health in Haryana. Despite many efforts, there has been slower than expected decline in new-born mortality rate in the state. The training of all levels of health care providers including ASHAs has not lead to a change in key practices and behaviours that determine favourable outcomes. Reporting of vital events continues to be unsatisfactory and the current reporting system does not lend itself to timely action, if there are problems.

SWACH had an experience of working in villages of Bilaspur using mobile phone technology in the form of phone calls and messages in SMS which were extensively used to collect information on vital events, capacity development of ASHAs, follow up of new-borns and solving problems of the families and ASHAs. As a result, reporting of births, deaths, still birth and abortion improved. This was shared with Mission Director, NRHM, Haryana and his team in the state and the district and expressed their willingness to implement it in a backward block Chhachhrauli in district Yamunanagar on a pilot basis.

Objectives:-

1. To register all the pregnancies and outcomes of pregnancy
2. To follow-up the new-born through home visits by ASHAs as per the guidelines of HBPNC.
3. To establish a system of networking to strengthen on-going capacity development of ASHAs for home based new born and maternal health care
4. To establish an electronic communication system for empowerment of families and facilitate early and appropriate corrective actions.
5. To facilitate timely and appropriate referrals.
6. To determine the status of mother and the baby after 28 days and 42 days.

Methodology: The project was initiated in Chhachhrauli block (Khizrabad CHC) of the district from 1st June, 2013. After initial implementation for a period of 3 months, Bilaspur Block was included w.e.f. 1st September, 2013.Naharpur and Sadhaura were added w.e.f. 1st March, 2014. Finally Mustafabad and Radaur blocks have been added since June 2014. In short, information from all the blocks of Yamunanagar district started coming since June, 2014. Before the implementation of the project Senior Medical Officers (SMOs), medical officers (MOs), district ASHA coordinators (DACs) and block ASHA coordinators (BACs), lady health visitors (LHVs), auxiliary nurse midwives (ANMs) and accredited social health activists (ASHAs) were oriented about the project.

Status	Chhachhrauli	Bilaspur	Naharpur	Sadhaura	Mustafabad	Radaur	Total
Population	189,902	135,429	210,488	81,324	149,459	140,000	9,06,602
No. of PHC	4	3	4	2	3	2	18
No. of Village	159	121	142	53	128	126	729

No. of ASHA	191	138	174	80	126	138	847
ASHAs oriented by SWACH on HBPNC	146 (84.4%)	121 (87.7%)	170 (97.7%)	80 (100.0%)	114 (90.5%)	132 (95.7%)	763* (90.08)

Table 1: Profile of the Six Community Development blocks in district Yamuna Nagar

* The rest of the ASHAs have been included in the system through ongoing phone contacts by SWACH and through ongoing interactions by the ASHA facilitators.

Reporting from district Ambala started in a phased manner (Mullana - January, 2015; Chaurmastpur - March, 2015; Shahzadpur – April, 2015; and Barara - May, 2015). The reporting from all the 4 CHCs started from May2015. It covered a population of 7, 59,802. Out of 809 ASHAs, 735 ASHAs were oriented in this project. Rest of the ASHAs were informally oriented by ASHA facilitators and trained by project staff through phone on an ongoing basis.

Status	**Mullana**	**Chaurmastpur**	**Shahzadpur**	**Barara**	**Total**
Population	1,34,626	2,78,225	2,09,391	1,37,560	759802
No. of PHC	4	6	4	4	18
No. of Village	85	180	166	73	504
No. of ASHA	148	282	226	153	809
ASHAs oriented by SWACH on HBPNC	138 (93.2%)	267 (94.7%)	182 (80.5%)	148 (96.7%)	735 (90.8%)

Table 2: Profile of the Community Development blocks in district Ambala

Key activities:

- One day PHC wise orientation of ASHAs jointly by NRHM, SWACHand the district on HBPNC with a specific focus on phone usage.
- Provision of guidelines (printed material) in Hindi on birth preparedness, essential new-born and maternal health and special care of LBW babies for use by families
- Supply of MCP cards to all pregnant women registered
- Text messaging through SMS to educate families on birth preparedness and essential home based maternal and new-born care where there are pregnant women and new-born babies
- Use of standard formats to report births, deaths and adverse outcomes of pregnancy (abortions and still births)
- Regular and on-going phone calls to all the registered ASHAs
- Regular monthly feedback to PHCs, CHCs, District and State NRHM
- Periodic review meetings with NRHM and district authorities
- Provision of pictures of babies with birth defects to ASHAs

Standard operating procedures (SOPs) were developed for reporting by ASHAs and data was entered on a format developed by the state NHM. All neonatal deaths and still births were recorded and investigated by phone. A methodology was developed and standardized to facilitate the investigation of still births and neonatal deaths by the

use of phone. The methodology for investigation of neonatal deaths and still births by phone was supported by WHO India office. Since July 2015, all cases of congenital defects were investigated and these were uploaded on the NBBD platform ofWHO. Those who were live born were followed up. These cases of birth defects were provided assistance to prepare them for corrective treatment and rehabilitation. Weights were obtained through a quarterly follow up. SOPs were developed for population based surveillance of birth defects. Pictures of common birth defects were given to ASHAs to facilitate identification and reporting.

Results:A total of 99589 live births were reported since the inception. Abortion was reported in 4820 cases (rate 45.3/1000 births), in addition to 1891 still births (rate 17.8/1000) (a baby born dead after POG 28 weeks). During the reporting period there were 107 maternal deaths.

Period	AbortionRate /1000	Still birth Rate/1000	Live birth	Total births
June,2013- Sep,2013	89 (49.0)	17 (9.4)	1692	1798
Oct,2013- Sep, 2014	732 (61.0)	244 (20.4)	10960	11936
Oct,2014-Sep,2015	1322 (57.0)	411 (17.9)	21227	22960
Oct,2015- Sep,2016	1265 (44.0)	525 18.3)	26863	28653
Oct,2016-Sep,2017	969(35.0)	464 (16.7)	26292	27725
Oct,2016-Mar,2018	326 (25.3)	230 (17.9)	12307	12863
DOB NA	117	0	248	365
Total	4820 (45.3)	1891 (17.8)	99589	106300

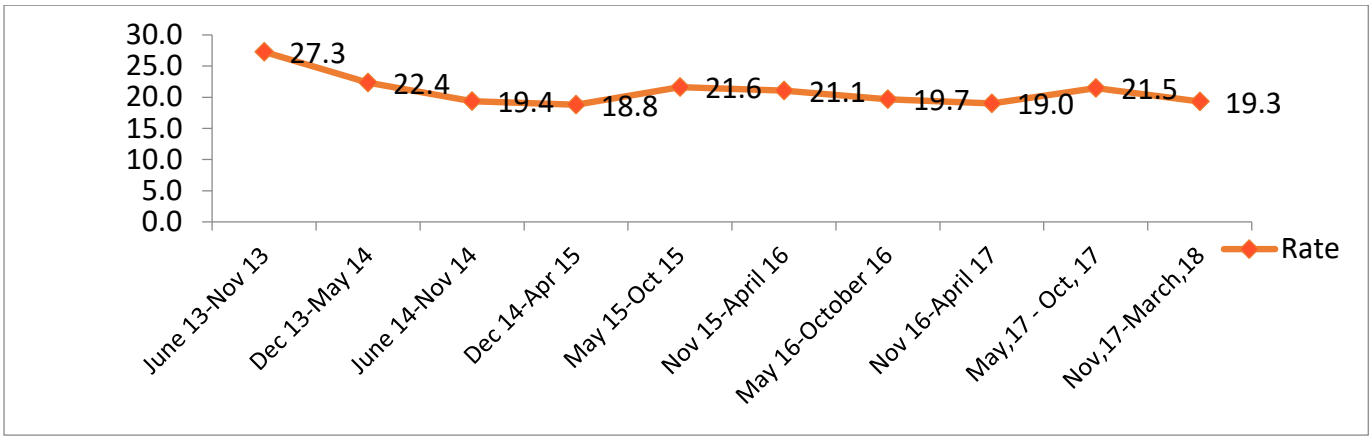
Table 3: Live births, still births and abortions in 2 districts (Ambala and Yamuna Nagar)

The proportion of child births in government hospital centres and hospitals exceeded 50% since the start of the project. These deliveries occurred predominantly at the DH and the SDH while the cases those were high risk or had complications delivered in tertiary hospitals. Proportion of home deliveries declined to only 1.2% from 11.2 % in the beginning. In Ambala district more than 99% deliveries occur in the institutions.

Initiation of first breast feed: Early breast feeding was reported in about 55% women during the first one year and half of the project. Through persistent efforts made by ASHAs and the staff responsible for conducting the child birth this improved to about 70% which is an important achievement. The efforts need to be sustained and extended to women who have a C section.

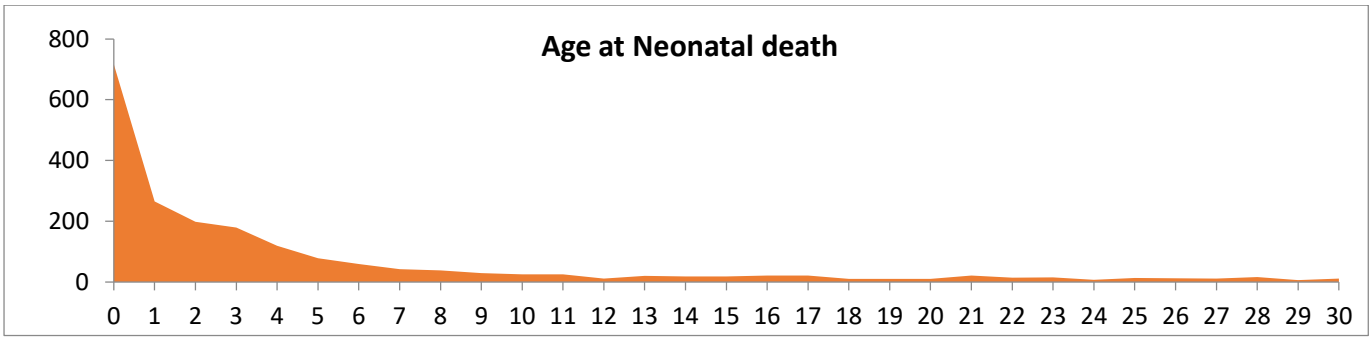
Decline in neonatal mortality rate: The neonatal mortality rate in the project declined steadily. The high mortality in the first 6 months was probably related to a small sample size. Moreover the project was initiated in Khizrabad block of Yamuna Nagar district. This is the block where more than 15% of the deliveries were home deliveries. The neonatal mortality rate of less than 20/1000 live births in the two districts is an important achievement. This is much lower i.e. by 6-8/1000 as compared to most other districts in the state.

Figure 1: Trends in neonatal mortality rates in district Ambala and Yamuna Nagar



Maximum deaths occur in the first week after child birth and amongst them the peak is within the first day.

Figure 2: Age at occurrence of neonatal death in district Ambala and Yamuna Nagar



The high rate of still births exceeding 18/1000 births and the high rate of day 1 deaths highlighted the need for the maximum focus on child birth. While the goal of institutional deliveries has been met, time has come to improve the quality of child birth through improved clinical practices and provision of quality skilled birth attendance. The figure shows a small peak at 3 days which may be an indication that discharge preparedness should be strengthened

Table 4: Early and late neonatal mortality in district Ambala and Yamuna Nagar compared with SRS

Neonatal mortality rate comparison (June 13-March 18) with SRS

Neonatal deaths	Number and rate/1000	Percent of neonatal mortality	Haryana (2016)
0-7 days	1657 (16.7/1000 LB)	81.3	16/1000 (66.6%)
8-30 days	382 (3.8/1000 LB)	18.7	8/1000 (33.3%)
Total	2039 (20.5/1000 LB)	100	24/1000

Our verbal autopsy on 1782 neonatal deaths showed that neonatal asphyxia or hyaline membrane disease was the most common cause of neonatal death (36.8%). The figures for perinatal asphyxia would be higher if intranatal still births are also considered. This has important policy implications (1) Deliveries should only occur in institutions where the staff has the capacity to prevent asphyxia and resuscitate babies with asphyxia confidently (2) babies who develop asphyxia should not be referred in panic but efforts should be made to stabilize them before transfer (3) babies who are resuscitated should be safely transferred with prior information to the referral unit.

LBW as the only cause of neonatal mortality was found in 18% but many LBW babies die due to very early breathing problems or due to infections. Care of very low birth weight babies by KMC and provision of the basic package comprising of warmth cleanliness and feeding should be an essential part of family centered care. It is also worthwhile to emphasize that in 13.4 % cases no clear cause could be identified. There was a strong correlation of neonatal mortality with birth weight. The lower the birth weight the higher is the neonatal mortality. Below 1500 grams the mortality rate was 358.1/1000. It reduced to about 107.2/1000 in babies who were 1500-upto 2000 grams. Above this weight the neonatal mortality was only 24.6/1000. These findings should be considered in determining the cut off points and this should be 2000 grams instead of 1800 grams at present .Similarly for the extremely low birth weight the cutoff point should be 1500 grams instead of 1200 grams at present.

Indicator	**Round-1**	**Round-2**	**Round-3**	**Round 4**
Total cases	684	769	1059	1138
Follow up done	528 (77.2)	769 (100.0)	1029 (97.2)	712
Weight available	395 (57.7)	495 (64.4)	764 (72.1)	490 (69.9)
(Normal)	72(18.2)	93 (18.8)	167 (21.8)	127 (25.9)
Moderate under nutrition (-2 Z)	89 (22.5)	109 (22.0)	148 (19.4)	125 (25.5)
Severe undernutrition (-3 Z)	234 (59.2)	293 (59.2)	449 (58.8)	238 (48.5)

Table 4: Follow up success rates and undernutrition in babies with birth weight 2000 grams or less

S NO	**Condition/factor**	**Number (percentage)**
1	Fresh	960 (80.0)
2	Macerated	240 (20.0)
3	Poor foetal movements or absent foetal movements	402 (33.2)
4	Intrauterine deaths	504 (42.0)
3	Major congenital defects	168 (14.0)
4	Bad obstetric history (abortions still births)	156 (13.0)
5	High BP, pre eclampsia or eclampsia	136 (11.3)
6	Antepartum or intrapartum haemmorhage	126 (10.5)
7	Foetal distress including meconium aspiration	156 (13.0)
8	Severe anemia	65 (5.4)
9	Breech, transverse, cord around the neck cord prolapse, obstructed prolonged labour	58 (4.8)
10	Family violence or accident	34 (2.8)
11	Sudden delivery including abruption	38 (3.2)
12	Diabetes	35 (2.9)
13	Post maturity	52 (4.3)
14	Multiple pregnancy	15 (1.3)
15	Prolonged rupture of membranes	19 (1.5)

Table 5: Summary findings in 1200 still births reported in district Ambala and Yamuna Nagar

Population based surveillance of birth defects:. A total of 727 cases have been reported The cases were classified according to ICD 10 and uploaded on NBBD platform SOPs were developed and all quality measures were adopted. Summary details are given in the table.

Pregnancy outcome	**Total number**	**Description**	**Pictures**	**Sketch**	**Investigation/hospital records**

Abortions	41	41 (100)	0	17 (41.5)	34(82.9)
Still births	103	103 (100)	14 (13.5)	51(49.5)	55(53.4)
Live births	583	583(100)	493(84.5)	46(7.9)	139(23.8)
Total	727	727(100)	507 (69.7)	114 (15.7)	228(31.4)

Table 6: Success rate of descriptions photographs sketches and reports

Photographs were available in large proportion of babies who were born alive. The most commonly reported birth defects were musculo skeletal. This was followed by defects of central nervous system. Amongst the babies born live more than 32% died. It is notable that deaths in babies occurred often after one month of age. These findings emphasize the need for follow up and care mechanisms that would help to improve survival in babies with birth defects that can be corrected. More than 85% of live children with birth defects have been partly or completely corrected. This is the result of efforts made by community and facility based providers and support through phone communication. The importance of surveillance is reinforced through measures to support the families in looking after their children through nurturing care.

Status	Number	Percentage
Dead	189	32.4
Alive	386	66.2
Lost to follow up	8	1.3
Total	583	100.0
Nutritional status available	386	100
Normal	289	74.8
Minus 2- Z	60	15.5
Minus 3 -Z	37	9.6

Table 8: Survival in live born babies with birth defects

Follow ups were done in 386 cases with birth defects who were alive. Amongst them 74.9% were normal while the other 25.1% were undernourished. This shows the enormous benefits of counselling for nurturing care by the families and emphasis on family centred care as complementary to correction of birth defects.

Discussion points:

- There is a need to rationalize the child birth at selected facilities to maximize the provision of high quality care during child birth services in adequately equipped and staffed facilities.
- Greater emphasis on earlier initiation of breast feeding is required to obtain its public health benefits.
- The two districts achieved remarkable success in reduction of neonatal mortality but these gains need to be sustained and further accelerated through the lessons learned from the project. It would be increasingly difficult and challenging to reduce the neonatal mortality rates further and this would be possible through improvement in quality of child birth and post natal care.
- Our investigation of deaths shows that 25% to 30% of the neonatal deaths occur during transfers or at home. These findings indicate that there is a need to strengthen care during transition and transfer.
- It is important to enhance the capacity of the families to be able to look after the basic needs of all new-borns and the special needs of very low birth weight and premature babies. The criteria for discharge of babies should be revisited and family centred care should be strengthened.

- It also points to the need for improving the early recognition of danger signs in the babies tofacilitate early referral.
- The high mortality in babies who were not weighed i.e. 193.7/1000 is a cause of great concern. We initiated an effort to follow up the survival and weight of babies who weighed 2000 grams or less. Persistent efforts yielded positive results but greater intensity in counselling and follow up is required to strengthen family centred care that is integrated (comprising of feeding, play and communication, prevention including immunizations and early and appropriate response to illness). The 12 family behaviours recommended by WHO should be adopted
- The RBSK program should not ignore the counselling of all cases of birth defects that should be home based. This is eminently possible in the state since the occurrence of birth defects is about 1% only.

Summary of achievements

1. High occurrence of neural tube defects in two community blocks highlighted the importance of preventing folic acid insufficiency related neural tube defects. The study helped the state government in Haryana to take a policy decision on fortification of wheat flour with folic acid, iron and vitamin B12 and roll it out as a pilot project in the two blocks before replication to the entire state.
2. This unique project demonstrated the feasibility of population based surveillance of birth defects. It provided an innovative methodology to document occurrence of birth defects in the community and provides a holistic picture of the problem of birth defects irrespective of the place of birth.
3. The knowledge of early pregnancy and occurrence of child birth in the project provided an opportunity for addition of nurturing care to the existing evidence based interventions during the critical 1000 days.

Future Directions for policy review and change

- The platform of strengthening home based post natal care by the use of mobile phones provides a great opportunity to expand its scope to strengthen home based care during pregnancy child birth and the first two years of life by adoption of nurturing care model to the existing provision of evidence based interventions during the continuum of critical 1000 days.
- This requires family participation to provide integrated care; the innovation should consider on-going digital interaction with the targeted families to achieve the goal of reduction of maternal depression and childhood stunting.
- This should be complemented by additional visits by ASHAs beyond the post natal period.
- Continue population based surveillance to monitor high risk groups like babies with birth defects, post asphyxiated babies, very low birth weight babies and sick babies discharged from the hospitals in an effort to improve the outcomes.