

## REACHING MATERNAL AND CHILD HEALTH MDG'S THROUGH A MULTI-SECTORAL APPROACH MODEL FOR HEALTH AND DEVELOPMENT IN RURAL INDIA

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### ABSTRACT

**Introduction-** Antenatal care is an essential component of health care delivery system in pregnant women. It is the most effective and proven strategy for optimum pregnancy outcome. Large disparities still exist in providing pregnant women with antenatal care and skilled assistance during delivery. The national Family Health Survey(2006) revealed that, only 52 percent of women receive 3 antenatal contacts and 42 percent receive any postnatal care. Largest number of births in the world are reported from India per year (27 millions). Poor women in rural and remote areas are least likely to receive adequate care due to various adversities .

**Objectives -***Improvement of access to* maternal and child health (MCH) services to rural underserved population.

**Methodology-** Multisectoral health and developmental project was implemented in 235 underserved and tribal villages of Ahmednagar district of Maharashtra, India for the period of four years(2006-2009). Two hundred sixty five trained female health volunteers( FHV's) and TBA's received structured training and were equipped with disposable delivery kits(DDKs). The nine rural health centers (RHCs) and five mobile clinics (MCs) were established in the project area. A referral linkage was developed between villages and a tertiary care center.

**Results-** Early ANC registration increased from 52% to 63% , full ANC coverage increased from 51 % to 78%, percentage of institutional deliveries increased from 40% to 74% , percentage of home deliveries attended by TBAs increased from 70% to 91% during the study period. MMR declined from 350 per 100,000 live births/650 in tribal areas to 117 per 100,000 live births/ in tribal areas). IMR declined from 80 per 1000 live births/110 in tribal areas) to 43 per 1000 live births/in tribal areas.

**Keywords:** High risk pregnancy; Maternal and child health; MDG's; Maternal mortality

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### 1. INTRODUCTION

Antenatal care is an essential component of health care delivery system in pregnant women. It is the most effective and proven strategy for optimum pregnancy outcome. Unfortunately, maternal health has not received due priority in health planning and funding in the developing countries. Large disparities still exist in providing pregnant women with antenatal care and skilled assistance during delivery.<sup>1</sup>The National Family Health Survey (NFHS) Report (2006) revealed that, only 52 percent of women receive 3 antenatal contacts and 42 percent receive any postnatal care in India. Abortion

and birth spacing services are not given any attention. All these factors have adverse effect on maternal health indicators.<sup>2</sup>Largest number of births in the world are reported from India per year (27 millions).<sup>3</sup>More than 60 percent of deliveries still occur at home without skilled birth attendant. Poor women in rural and remote areas are least likely to receive adequate care due to various adversities. About 75,000-1,5,0000 maternal deaths take place in India every year, which account for 20 percent of deaths reported in the world.<sup>4,5</sup>Hence, progress shown by India in reducing maternal mortality assume a special importance.<sup>5</sup> In rural India, one woman dies

every five minutes after giving birth, often due to poor health, unsafe domiciliary delivery practices and lack of access to emergency obstetric care (EmOC).<sup>6</sup> Today, reduction in maternal mortality has become both a state and national priority, that is reflected through government's National Health Policy (2002) and National Rural Health Mission (NRHM) health policy. Midterm evaluation of the achievements of millennium development goals (MDG 4 & 5) has revealed that, although some progress has been made towards reaching these goals, much remains to be done to reach the ultimate target by 2015. The reasons for high maternal and child mortality are political, administrative or managerial, rather than lack of technical knowledge<sup>7</sup>.

## 2. OBJECTIVES

To improve access to Maternal and child health (MCH) services in the project area

- To establish upgraded Rural Health Centers (RHCs), Mobile Clinics for providing MCH and diagnostic facilities for screening STI, RTI and HIV/AIDS.
- To provide maternal and child health services (MCH) through Rural Health Centers and mobile clinics at village level for normal and high risk antenatal cases and children.
- To develop a nurse based Maternal and Child Health Care system including computerized data entry.
- To build capacity of peripheral health workers (TBAs, FHV's) in delivery of MCH care.

## 3. MATERIALS AND METHODS

**Study design:** A prospective observational study.

**Study Period:** The study was carried out during Jan 2006 to 2009.

**Study area and study population:** A total of 235 villages selected from nine blocks of Ahmednagar district, Maharashtra, India, forms the study area. These villages spread in three major contiguous geographical areas – Loni (100 villages – 240,000 population), Bhandardhara (100 tribal villages – 110,000 population) and Shevgaon (35 villages – 100,000 population) of Ahmednagar district. Two hundred sixty five trained female health volunteers (FHV's) and TBA's received structured training and were equipped with First Aid Box and disposable delivery kits (DDKs). They worked as link workers and helped in providing primary health care

services at the village level. They were specially trained in detection of high risk pregnancies by the use of WHO classifying form. The schedule of minimum visits for low risk and high risk antenatal cases was prepared as per standard guidelines. Health workers used WHO checklist for completing the task during individual antenatal visit. They used separately colour coded antenatal cards for low risk and high risk cases. The information of individual case was entered in the computer by trained data entry personnel for subsequent analysis. Same information was used for identification of defaulters and for tracking the dropouts. The expert faculty from Linkoping University Hospital, County Council of Ostergotland, Sweden and from Pravara Medical Trust, conducted regular training programmes for the medical and nursing staff of the project.

The nine rural health centers (RHCs) and five mobile clinics (MCs) were established in the project area for providing Primary Health, Woman's Health, Child and Youth Health and Laboratory services. A referral linkage was developed between periphery [FHV's, RHCs, and MCs] and a tertiary care center [Pravara Medical College Hospital]. Obstetrical critical care unit was upgraded at tertiary referral center. The activities of the project were regularly supervised by the coordinator and the field supervisors. The project focused on the major intervention areas during the project period. The Central Project Office with adequate administrative and monitoring staff supported by consultants from PIMS-Deemed University, administered and monitored the project with field level offices established at Bhandardhara and Shevgaon. For providing the medical services through Mobile Clinics, the total project area was divided into 5 clusters (2 in Loni, 2 in Bhandardhara (tribal) and 1 in Shevgaon) with around 50 villages in each cluster. The Project implementation and monitoring was done professionally through project management committee meetings and periodic staff meetings. Advanced weekly action plans for field staff and monthly action plans for RHCs were drawn up. The Mobile Clinics visited the villages as per a fixed monthly Advanced Tour Program (ATP). Monitoring & Evaluation of the Project work was done by through various mechanisms like, a) In-built Monitoring: The Project Director, the Project Coordinator and the Consultants – Woman's health, Child Health, Nursing Care

and Diagnostic services conducted monitoring visits periodically to the RHCs, Mobile Clinics and target villages, target beneficiaries etc. b) Monitoring by Swedish Partners: The expert faculty from Linkoping University, Sweden conducted monitoring and evaluation of the medical services rendered through RHCs and MCs in the project their visit. All necessary and possible actions/measures were taken by the Indian partners to implement the observations made by the Swedish partners to improve the quality of the services rendered. c) Monitoring by Sida, Swedish Embassy: The Annual Review Meeting with Sida Staff – Stockholm & New Delhi with the Partners of the Project was held through teleconferencing.

Expected Outcome Variables used to assess the achievements related to the primary objective of improving the access to Maternal and Child Health services in the target population, especially amongst tribals, poor and underserved were,

1) Total number ANC, PNC, Child Health Check-ups. 2) percentage of early ANC registration (< 16 weeks) 3) Percentage of normal ANCs completed minimum 3 check-ups 4) Percentage of deliveries by trained personnel (TBA, Nurse, Doctor), 5) Percentage of institutional deliveries (Normal & High risk cases), 6) Percentage of high risk pregnancy admissions, 7) Percentage of children (0-5 years) malnourished (Grade I, II, III & IV), 8) Total number of infant deaths, maternal deaths in the project area

#### 4. RESULTS

The Project covered over 4,50,000 population from 235 remote and underserved villages of nine blocks of Ahmednagar district. These villagers, nearly 200,000 tribal and 250,000 drought-affected people, especially women and children were deprived from the medical, health and social process of development. It had been our endeavour to provide the much needed quality maternal, child health and primary health care services (**Table I**) at the door-steps of the villagers and to empower them to demand resources from the state and respective nodal agencies. The services provided by Mobile Clinics of the project were synchronized with the local Public Health (PHC and Sub Centre) MCH clinics of the same village in order to strengthen the overall service delivery to the community (**Graph I**). The Obstetric Critical Care unit at Pravara

Rural Medical College hospital, Loni was upgraded to handle the increased referrals/number of deliveries and obstetrical emergencies (**Table III**).

Selective outcome indicators of improved of access to Medical services were as follows:

- % of home deliveries (80% in tribal area) attended by trained TBA with 5 “cleans” increased from 40 in 2006, 70 in 2007 and 88 in 2008 and remaining same in 2009
- % early ANC registration (< 16 weeks of pregnancy) with skilled health care provider increased from 32 in 2006, 52 in 2007 to 57 in 2008 and 63% in 2009
- % of full ANC coverage (at least 3 encounters) from all sources (Govt, Private and Project) increased from 51% (BL-2005) to 65 in 2007, 71% in 2008 and 78% in 2009.
- % deliveries by trained/skilled birth attendant rose from 78 in '06, 87 in '07, 91 in '08 and 09 (**Graph II**). Increased identification of high risk ANC cases by peripheral health workers and thereby increased critical obstetrical cases (referrals) to tertiary level hospitals (**Table III**).
- % of institutional deliveries in the project area registered an increasing trend from 40 in 2005, 56 in 2007 to 71 in 2008 and 74 in 2009 (**Table I**).
- % of institutional level abortions increased by almost double as compare to 2005. (53 in 2005 and 94 in 2009)
- The number of maternal deaths declined from 32\* in 2005 (MMR: 350 per 100000 live births/650 in tribal areas), 18\*\* in 2007 to 8\*\* in 2008 (MMR: 138 per 100,000 live births/91 in tribal areas). and 7 in 2009 (MMR: 121 per 100,000 live births/93 in tribal areas). (**Graph III**)
- The number of infant deaths declined from 500\* in 2005 (81/1000 live births/110 in tribal areas), 270\*\* in 2007 to 268\*\* in 2008 (IMR: 46 per 1000 live births/50 in tribal areas) and 260 in 2009 (IMR: 45 per 1000 live births/ 47.5 in tribal areas). (**Graph III**)

\* Estimated figures as per Baseline Survey (2005).

\*\* Estimated figures from the available sources (MIS of the Project and other government sources) by Dec. 2007, 2008 and 2009

## 5. DISCUSSION

Pregnancy is a normal healthy state, which all women aspire to at some point in their lives. Yet, this life-affirming process carries with it serious a risk of death and disability.<sup>8</sup> Giving birth is risky, where women deliver without skilled care. The rural urban gap in the availability of skilled care at birth is striking.<sup>9</sup> The rural and tribal peasants are worst affected by this divide. The area selected for the implementation of this project was an example of such divide. For years together, the community remained cut off from the basic maternal and child health services, expected to be provided by government. The response shown by the community in awaiting these services, provided at their doorsteps were very encouraging. For some villages, it was dream cum true to see a doctor and nurse together in their village. After detailed study of the health profile of the area through baseline survey, the health needs were identified and the areas of intervention were decided. Based on mutual trust and common interests, the implementing organizations (PMT, LiU/LiO, UoS) believed in a healthy and mature relationship at State (Maharashtra), District (Ahmednagar) and Local government level, partner and non-partner NGOs working in the Project area. Special efforts were made to include all the stakeholders in planning and implementation of various activities of the project. The greatest achievement of the Project was to ensure quality reproductive and child health services (MCH, STI/RTI) at the doorsteps and timely referrals to higher level centers in all the 235 remote villages of the project area, especially in the 125 tribal / mountainous villages, where even primary health care services were either non-existent or fully defunct. Barriers related to lack of knowledge, distance from health facility, or perceptions about quality of services were overcome to a great extent in the project area through health education, advocacy, and capacity building (local women & other health care providers) especially by bringing community as well as clinic based care directly to people's doorsteps with a strong tertiary level institutional referral support. It was thought to strengthen Community level health care system through empowered village women and peripheral health workers. Well trained and highly motivated 235 FHV's in RCH, HIV/AIDS, documentation and reporting and various other socio-cultural

issues affecting the woman and child health. Well trained 384 TBAs, majority from tribal areas performing "clean" infection free deliveries were equipped with Disposable Delivery Kit (DDK), monitoring infants, recognizing high risk pregnant cases and referring/ accompanying to hospitals. (*This cadre of trained, motivated community health workers continued to work in the community even beyond project period*). As a result, the percentage of home deliveries attended by trained TBA increased from 40 in 2006, 70 in 2007, 88 in 2008 and remaining same in 2009. By the end of 2009, nearly 79 % TBAs identified high risk pregnancies correctly and referred them to higher centers while the rate was 40% in 2006. Now, every home delivery attended by TBA is registered at *Gram Panchayat* by the motivated TBAs and FHV's. The needy high risk cases were brought to PRH, Loni using the Mobile Clinics. For provision of new born & neonatal Care, five RHCs (Shendi, Rajur, Rahata, Kolhar and Karhetakali) were equipped with seven low cost neonatal monitoring, and transportation system to improve the survival rates of the premature and low birth weight babies born in home deliveries.. Specialized MCH Care was provided through speciality Clinics (Gynecology and Pediatrics), every fortnightly to three Rural Health Centers on pilot basis for examination, treatment and counseling the selective high risk ANC's, STI/RTI cases & needy children etc. As many as 321 women and 412 children were examined in these clinics by gynecologist and pediatricians respectively during 2008 in 63 clinics and 437 women and 649 children in 71 clinics in 2009. As many as 18608 children (<5 years) were served with a comprehensive health & development check-up, through Child Health Clinics (10236 at MCs and 8372 at RHCs) in 2009 and 17252 children (11487 at MCs and 5765 at RHCs) in 2008 as against to that of 13,921 children in 2007. The dual policy of visiting Anganwadi Centers for 3-5 years children, the change of incentive scheme of FHV's limiting their payment only to 0-2 years children has yielded positive results in 2009. However, there is lot remains to be done in the field of Child Health as we could reach only 2/3<sup>rd</sup> of the total children (< 5 years) under the Project. The constraints of increasing the coverage of BVC was attributed to the fact that shortage of staff (BVC Nurses) and the

ignorance, casual attitudes of the parents for preventive health check-ups and extensive recording format. With the routine use of WHO check list by the health workers for identification of high risk pregnancies, more and more number of cases were referred to tertiary care center for further evaluation and institutional delivery.

Nearly 30 – 40 per cent of the ANCs, which were examined at Sida Project RHCs and MCs were referred to PRH, Loni for further investigations and deliveries. Maternal anaemia, Hypertension, poor weight gain during pregnancy, bad obstetric history were the commonest reasons for the referral. As many as 4811 needy cases (high risk ANCs, special investigations in normal ANCs) and 840 needy children (Low Birth Weight, Malnourished, Sick children) and 4160 needy cases (high risk ANCs, special investigations in normal ANCs) and 439 needy children (Low Birth Weight, Malnourished, Sick children) were referred to Pravara Rural Hospital, Loni during 2008.

In India, more than 60 percent births are domiciliary deliveries. India needs to cum up with an option to provide skilled birth attendant at community level. Lack of qualified nurse midwife is a major human resource constraint for providing locally accessible skilled delivery care for rural women.<sup>6</sup> Training of locally available auxiliary nurse midwives (ANMs) as per the project needs and utilization of their services to achieve the desired objectives, worked well in this project. Proper selection of sincere and dedicated nurses, repeated short skill development programmes and little performance based incentives helped to retain the staff and get the best possible results. Since 1990s, it has been recognised that emergency obstetric care (EmOC) is one of the cost effective strategies for reduction of maternal mortality.<sup>10</sup> The EmOC services are still not available at majority of health centers located in rural and tribal areas. The National Rural Health Mission (NRHM) launched in 2005, has been promoting training of village health volunteers and institutional deliveries. Maternal mortality ratio (MMR) reported by WHO for south east Asia has declined from 380 deaths to 180 deaths per 100000 births.

<sup>11</sup>We observed the decline in MMR from 350 in year 2006 to 121 per 100000 births in year 2009. The decline was attributed mainly to identification of high risk pregnancies and

their timely referral to tertiary care center before complications arise. Similar decline of 81 infant deaths in 2006 to 45 infant deaths per 1000 livebirths in year 2009 was observed. This decline was attributed to improvement in the care of premature and low birth weight babies at periphery and at the tertiary care center, promoting early and the exclusive breast feeding and education of the community about the role of oral rehydration solution in diarrhoea and dehydration.

Challenges and lessons learnt: 1) Recruiting, motivating and retaining qualified & trained staff was a challenging task. 2) It was possible to introduce the delivery of maternal and child health care services on the line of Swedish system, through trained nurses. 3) It was difficult to have five ANC visits for normal cases and eight to ten visits for high risk cases. The medical teams hardly could hold ANC case for 3 to 4 month (4<sup>th</sup> month to 7<sup>th</sup> month (at Husbands Home) or 7<sup>th</sup> month to 9<sup>th</sup> month (Mothers Home). 4) Difficulty in establishing delivery facilities at RHCs in tribal areas due to lack of infrastructure and retention of trained staff. 5) Providing IT connectivity to the hilly and tribal areas of the project in the wake of absence of effective and affordable wireless technology.

## CONCLUSION

There is a need to draw the attention of everyone concerned with maternal and child health, towards the targets set for MDG 4 and 5 at the national level. The present project achieved significant improvement in the MCH indicators in the target population during 4 years of intervention. Although, there are signs of improvement in the status of maternal health, the annual decline of 5.5 percent in maternal mortality ratio, required to achieve the target of MDG -5 by 2015, appears to be a challenge in the developing countries.<sup>12</sup> Government must take lead in developing partnership with the NGOs working in the area of maternal and child health to achieve this goal. Unless, we keep regular watch on the progress being made and find out the bottlenecks in the implementation of the programme, the 2015 target is going to be the tough landmark to achieve.<sup>13</sup>

## ACKNOWLEDGEMENTS:

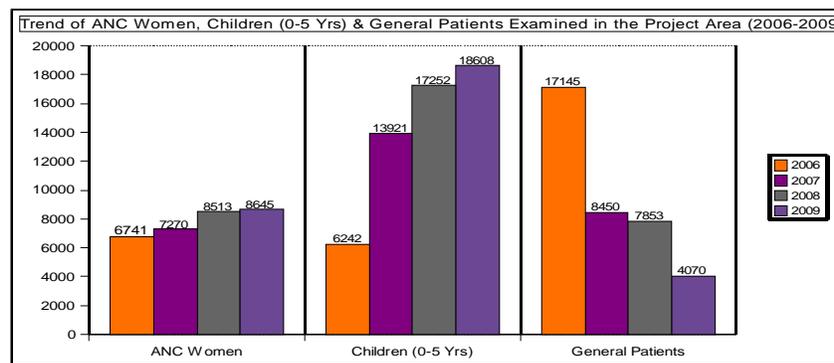
We thank Pravara Medical Trust, India, Swedish International Development Cooperation Agency, Sweden, Linköping

University and County Council in Östergötland, Sweden for financing the project. The authors also acknowledge the contributions and guidance of the Swedish Partners - Dr. Finnstrom O, Dr. Hermansson G, Dr. Alhagen S, Dr. Johansson A-K Linköping University, Sweden in implementing the Project.

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**Graph I: Beneficiaries of MCH Clinics and General OPD at Mobile Units**



As a result of collective efforts of the project staff there was a constant increase in the ANC women and children's visit to Rural Health Centers and Mobile Clinics, however initiation of user charges for general health services in 2007 lead to decline of patients subsequent years.

**Table I: Patients referred and treated at Pravara Medical College Hospital**

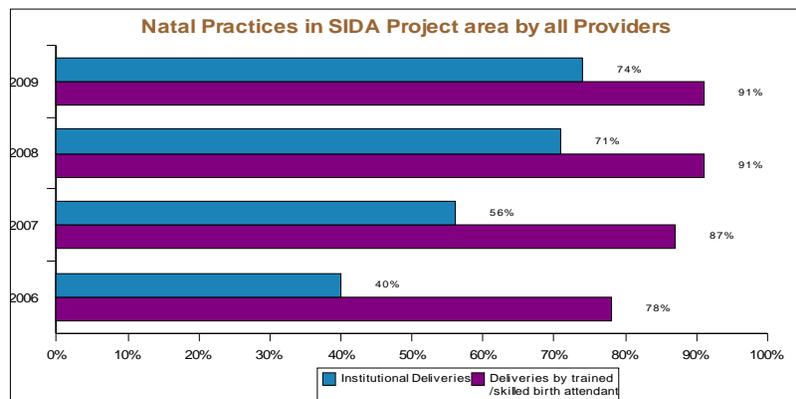
Year	OPD				IPD			
	Gync./Obst	Pead	Other	Total	Gync./Obst.	Pead	Other	Total
2007	1496	319	1388	3203	263	125	150	538
2008	4160	439	2014	6613	1410	241	271	1922
2009	4811	504	2181	7496	2067	336	831	3153
<b>Total</b>	<b>10467</b>	<b>1262</b>	<b>5583</b>	<b>17312</b>	<b>3740</b>	<b>702</b>	<b>1252</b>	<b>5613</b>

**Table II: Normal & abnormal deliveries at Pravara Medical College Hospital**

<i>Year</i>	<i>Normal Delivery</i>	<i>Abnormal Delivery</i>	<i>Total Deliveries</i>	<i>Percentage of abnormal deliveries</i>
2005	810	550	1360	40
2006	918	632	1550	41
2007	1251	641	1892	34
2008	1929	939	2868	32
2009	2604	712	3316	21
<b>Total</b>	<b>7512</b>	<b>3474</b>	<b>10986</b>	

**Table III: Patients treated at Obstetric Critical Care Unit of Pravara hospital**

<b>Disease</b>	<b>No of cases</b>	
	2008	2009
Eclampsia	96	102
Severe Hypertension with complications, Shock (Haemorrhagic)	192	186
Renal Failure	26	24
Severe Anaemia	187	181
Heart disease complicating pregnancy	48	51
Post operative critical care ( <i>Rupture uterus, Ruptured ectopic pregnancy with shock (post laparotomy critical care etc )</i> )	143	139

**Graph II: Natal practices in the project area****Graph III : Estimated no of infant & Maternal Deaths 2005 – 2009**