Preventative Rural Health Care Model

Emphasis on Maternal and Infant Health

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Executive Summary

The preventative rural health care model enclosed is a tool created for interested parties to use as a template for custom initiatives in coordinating the delivery of health care services and specifying transportation to and from health care facilities to rural villages in India. The model defines the health care services best practices for antenatal and neonatal care as well as resources necessary to ensure the health of pregnant women and infants are under medical supervision. Combining the model and current government programs results in an efficient and effective approach to implementing an independent health care program.

Introduction

There are approximately 3.4 million deaths worldwide in the first week following pregnancy as a result of poor maternal health and inadequate care during pregnancy and delivery (Donnay, 2000). Infant and maternal mortality numbers are unnecessarily high as free health care, and services are available to women in rural India in addition to non-government organizations (NGOs) with the objective of providing health care assistance to people in need. The following is a result of the initiative to create a program, set forth by the IDS grant proposal of Sodhana Charitable Trust (SCT). The goal of SCT is to improve antenatal care (occurring throughout the duration of a pregnancy) and neonatal care (newborn to first 28 days of life) in rural villages in India. The following sections detail the primary research on current health care services and availability in India and a model template to use as a tool in creating a program to assist in providing and obtaining health care for pregnant women and new born children.

Literature review

Before undertaking the initiative to understand the current health care practices in India and bringing about attitudinal changes in women in rural villages it is necessary to understand the dynamics of the current state of the health care system. The government of India has a number of programs, initiatives, and schemes in place related to maternal and infant health care.

At the village level, a government official, called a Panchayats, is responsible for developmental activities including health and population stabilization. This is an elected position with a 5-year term. The village Panhayats aligns village health initiatives with the government agency, National Rural Health Mission (NRHM) recently known as the National Health Mission (NHM). NHM has in place government funded financial assistance to pregnant women and children in financial need. In addition to financial assistance, they have a scheme in place offering free services for pregnant women with cash incentives for institutional childbirth for qualifying low income women. The main recipients of this assistance is women and children in rural villages.

Within each village, the NHM provides funding for an Angawadi center which means "courtyard shelter". This is a physical structure which is located in Indian villages and is part of the public health care system. An Anganwadi worker (AWW) is a salaried government employee that provides basic health care services which includes: contraceptive counseling and supplies, nutrition education, supplying supplementary nutrition such as cooking for village children or distributing rations, and disbursing basic medications.

In addition to Anganwadi workers (AWWs), the NHM also provides funding to Accredited Social Health Activists (ASHAs) who are also referred to as Health Care Workers (HCWs). The primary goal of the ASHA program is to promote uptake of skilled birth attendance in collaboration with facility-based auxiliary nurse midwives (ANMs). The ASHA program guidelines envisage three different roles for ASHAs.

- First, ASHAs are to function as a 'link worker', a bridge between the rural and vulnerable population within the health service centers.
- Second, ASHAs are to function as a 'service extension worker', whereby they are trained and provided with a kit that includes commodities such as condoms, oral contraceptive pills, delivery kits and simple life saving drugs including cotrimoxazole and chloroquine.
- Third, they are conceptualized as 'health activists in the community who will create awareness on health and its social determinants and mobilize the community towards local health planning and increased utilization and accountability of the existing health services'.

The national guidelines stipulate that ASHAs are selected from the community they serve and receive 23 days of training in the first year and 12 days of training every subsequent year thereafter. The training curriculum aims to impart the knowledge, skills and attitudes required of an ASHA to effectively perform their roles and responsibilities (Saprii, et al. 2015).

Within the NHM is the Janani Suraksha Yojana (JSY) which created the Safe Motherhood program to promote institutional deliveries among rural villages. Their objective is to provide a free and cashless services to pregnant women including normal deliveries and caesarean

operations, as well as care for sick newborn up to 30 days after birth (ARPH). JSY is a demand-side financing program incentivizing institutional delivery. ASHA health care workers (HCWs) are paid for every woman who is successfully referred for institutional delivery, and the post-partum mother is also entitled to monetary compensation. JSY also implemented a tracking system of pregnant women to help provide them with adequate health care services, as well as keep track of contact numbers, beneficiaries, and health providers. This system can cross check if services have been received by mothers and children (ARPH).

The objective of the NHM is to include community members in the planning and managing of healthcare facilities (ARPH 2011). The goal is that by educating people and bringing a link to public facilities to rural communities will result in an increased awareness and trust of nontraditional health services. The government plan is to place one trained health care activist in each village per 1,000 population, to act as that link. Government programs such as the National Health Mission (NHM) are specifically aimed at improving the accessibility of quality healthcare to the rural communities in India, which accounts for almost 70% of the 1.21 billion population.

The focus of these programs has to be restructured as the maternal mortality rate (MMR) and infant mortality rate (IMR) of deaths are the result of poor maternal health, inadequate care during pregnancy and delivery, and the critical immediate postpartum period There have been attempts in the past several decades to reduce the high MMR and IMR through government and non-governmental organization (NGO) programs, but a majority of these programs have been unsuccessful in developing countries.

For example, The Safe Motherhood initiative of 1987 put in place by the World Health Organization, was one of the first internationally recognized attempts to improve health conditions for women in general and to reduce maternal mortality in particular. The purpose of this effort was to highlight the persistence of maternal ill-health and to devise solutions for maternal mortality and morbidity. When this program was revisited in 1997 it showed only modest results. Interventions that were assumed to be effective, such as risk screening during antenatal care, were found to have made little difference to maternal morbidity and mortality outcomes (Gruskin, et al. 2008).

A multitude of studies and a significant amount of research has been done to improve the maternal mortality rate (MMR) in developing countries. The common thread of improvement was in regards to strengthening family planning services, promoting women friendly health services, increasing district-level planning with community participation, and most importantly ensuring skilled attendance at birth (Donnay, 2000).

The specific obstacles we are addressing are lack of coordination of health care services and transportation to obtain health care services for antenatal care (occurring throughout the duration of a pregnancy) and neonatal care (newborn to first 28 days of life). These are barriers that are preventing current programs, such as those afore mentioned, from being successful. What is needed is a better coordination among partners — governments, public services, the private sector, NGOs, UN agencies and donors — and an expansion of local projects to national programs. (Donnay, 2000). Overcoming such barriers requires their identification, careful analysis and their subsequent modification – through laws, policies and regulations that are consonant with human rights – with the ultimate aim of improving women's access to needed

services through the promotion and protection of their rights (Gruskin, et al. 2008). The model below has been created as a tool to help optimize the existing processes.

Model

The following template model (see Appendix 1 and 2) provides clear coordination to health services and transportation. It combines a geographic relationship to health facilities, identification of health care workers and hub managers as well as associated costs. The following initial steps need to be completed in preparation of customizing the model:

1. Determine the geographic relationships of villages intended to be served and area health care facilities.
2. Define the current road infrastructure between the villages and health care facilities.
3. Identify each village population size and % of expected pregnancies within the population
4. Determine the number of HCWs needed
5. Determine the number of hub managers needed

*the following assumptions are inferred in the model:

a. the population does not migrate, seasonally or otherwise
b. the health care facilities are government run and are free of charge

To determine the geographic relationship of the villages, it is strongly encouraged that the founders of the program initiative, along with individuals knowledgeable on village location create a detailed map (see Table 1). The more specific the map is; the more helpful it will be in determining the road infrastructure. When possible, identify and label road names; google maps is an excellent tool (see Table 2).

Table 1. Village map

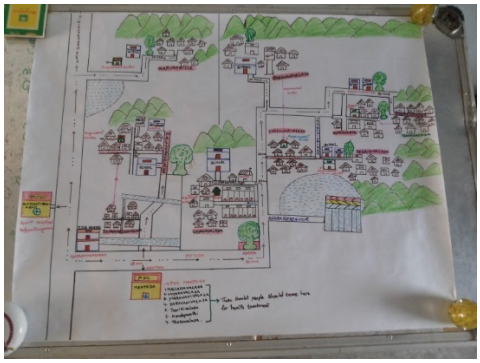


Table 2: Google Village map

The health care hub manager will evaluate road infrastructure and optimal modes of transportation available between each village and health facility. A primary mode of transportation will need to be procured (such as motorcycle or auto rickshaw) or verified to be a viable option (such as a nearby bus route or walking).

The village population can be obtained from village members or through census data. This is important for determining the number of HCWs and hub managers. The model takes into consideration the time the HCW will need to spend with multiple women in the village providing services and balancing time needed to travel and attend appointments for multiple women. The model recommends the number of hub managers allowing for a manageable work load of overseeing processes in place, ensuring HCWs are providing the necessary care and have required supplies and support, village visits, budgeting, collecting and analyzing data, and other administrative and non-recurring tasks.

The hub managers will be the responsible for to identifying the HCWs for each village and health facilities such as Primary Health Centers (PHCs) and Government Hospitals that will be used by women and children within the scope of the program. The hub manager will make contact with the health facilities to notify them of the newly created program and gather information, materials, training session schedules and other opportunities for the HCWs that are offered through the NHM, JSY, and other government programs. Coordination will be

necessary to deliver this information and materials with all HCWs with a meeting location determined by the hub manager. The manager would also be in charge of additional training of the HCWs about pregnancy best practices, the pregnancy timeline (see Appendix 3, 4, and 5). The timeline was built with HCW tasks (see Table 3) per pregnancy week with location and procedure.

Table 3 HCW tasks and locations.

Location	**HCW Task**
Hospital	Attend first doctor visit if necessary.
Village	Daily Checks - track vitamins, make sure women are going to their appointments
Village	Meet with Healthcare Hub Manager - report daily check data
Hospital	Monthly checkup visit
Hospital	Accompany to hospital for delivery

The timeline will be used as a guide for HCWs of the duties they are responsible for. These duties include coordinating when hospital visits need to be scheduled, initiating conversation about the benefits of taking prenatal vitamins and following health best practices. In addition to the healthcare tasks, they are responsible for administrative task such as gathering and recording data on the health and status of the women and children in her care.

Model Application

The following is an example of the model being applied to the rural villages that are serviced through the Indian Development Service in partnership with Lions Family Welfare Planning Trust focusing on Tribal Education. The model is built to be scalable to meet different program scopes and needs. Based on the number of villages serviced it will provide a recommended number of healthcare workers and hub managers.

We have provided a pregnancy timeline of what to expect throughout each stage of pregnancy, and what information should be acquired at each visit. We have also created a cost/time model to gain insight into the cost of implementation for the overall project as well as the transportation time from the villages to the health center or hospital.

There are 6 villages in scope: Uyyadavalasa, Kondaparthi, Yarravanivalasa, Malledavalasa, Saravanivalas, and Garudabilli which are all villages located in the Vizianagaram District, Andhra Pradesh (See Tables 4 and 5).

Table 4: Andhra Pradesh

Table 5: Vizianagaram District

The model breaks down the transportation time and cost from each of these villages to the health center based on a selected mode of transportation. Only one mode of transportation will be chosen for each village and would typically be the most reliable (Table 6). Once chosen the model will give a more accurate annual cost of transportation as well as the time women will spend traveling to and from their appointments

Table 6: Transportation modes by village.

Hamlet	Transportation Type	Transportation Cost	Transportation Time
Uyyadavalasa	Bus	30	50
Kondaparthi	Bus	30	75
Yarravani valasa	Bus	30	60
Malledavalasa	Motorcycle	100	20
Saravani valasa	Bus	30	70
Garudabilli	Motorcycle	70	60

In our model we make several assumptions including the salary of the health care hub manager and the HCW, the number of visits the manager is making to the villages and the number of visits the HCW make to visit the manager as well as the visits made for training and cost for training.

Recommendations

With variable population data and geographical scope, it is highly recommended to obtain detailed information as early as possible to determine the number of HCWs and managers necessary. Support of the HCWs in the anticipated work load, acceptance of the program by pregnant women and the community is vital; open dialogue may result in customized approach which is viable with the model being scalable. Having the HCWs receive a

standard salary, rather than institutional delivery incentive only compensation, is extremely important for their financial stability, acceptance of their position from family members, and will reinforce their dedication to the program; ensure funds are disbursed in a timely manner. This model does not specify the mode of data collection and method of analyzing. This is omitted due to the unknown preference of the program coordinators; excel spreadsheet on hand held tablets are recommended.

Conclusion

The model created will be an efficient and effective tool for creating a health care system structure to provide services and coordination of transportation to and from health care facilities for pregnant women and infants, assisting in the goal of reducing maternal and infant morbidity and mortality rates in rural villages. The model defines the transportation, distribution and attainment of health care services

The goal of this program is to ensure that these women are receiving the proper care and nutrients throughout their pregnancy through the first 28 days of the infant's life. By providing a program structure that employs individuals with specific roles and ensuring they have the necessary tools to provide optimal care for the pregnant women and infants, it is our conclusion the maternal mortality rate (MMR) and infant mortality rate (IMR) will improve.

Appendix

Appendix 1: Model template input

HAMLET INFORMATION

(Time=minutes, Costs=rupees)

Hamlet	Bus Time	Bus Cost	Motorcycle Time	Mototcycle Cost	Auto Rickshaw Time (	Auto Rickshaw C	Walk Time	Walk Cost	Transporte
Uyyadavalasa	50	30	35	120	50	40	0	0	Bus
Kondaparthi	75	30	50	140	70	50	0	0	Auto Rickst
Yarravani valasa	60	30	40	120	60	40	0	0	Motorcycle
Malledavalasa	0	0	20	100	0	0	40	0	Walk
Saravani valasa	70	30	45	140	65	20	0	0	
Garudabilli	0	0	60	70	60	40	0	0	
	(one-way)	(roundtrip)	(one-way)	(roundtrip)	(one-way)	(roundtrip)	(one-way)	(roundtrip)	

	Time (minutes	Cost		
Ambulance (one-way)	60	0		
Number of Villages	6			
	Annual Cost	# of Careworker per Village		
Careworker Cost	2000	1		
	Annual Cost	# per 10 villages		
Healthcare Hub Manager cost	20,000	1		
	Cost	Replenishment Times per Year		
supplies costs	200	1	can change to annual cost if needed	
	Cost of Training Se	Training Sessions per Year		
training costs/year	1000	4		
	Travel Cost	# of Assisted Vists		
HCW accompanying women to appointment cost	30	1	careworker can accompany mother on first trip to health center if necessary	
	Travel Cost	# of Careworkers	# of Meetings per year	
Meeting with Hub Manager Cost	30	6	6	
	Travel Cost	# of Villages	# of visits per Hamlet	
Hub Manager Visits to Village	30	6	12	
	Incentive Amount	# of Careworker receiving bonus		
Careworker Incentive Bonus	100	0		
	Travel Cost	# of Deliveries per village		
Careworker Delivery travel cost	30	5		
Delivery Travel to Hospital Cost	Travel Cost	# of Pregnant Women per Year		

KEY:
Input Data
Drop Down List
Total
1 USD = 66 rupees

Appendix 2: Model template output

PROGRAM IMPLEMENTATION

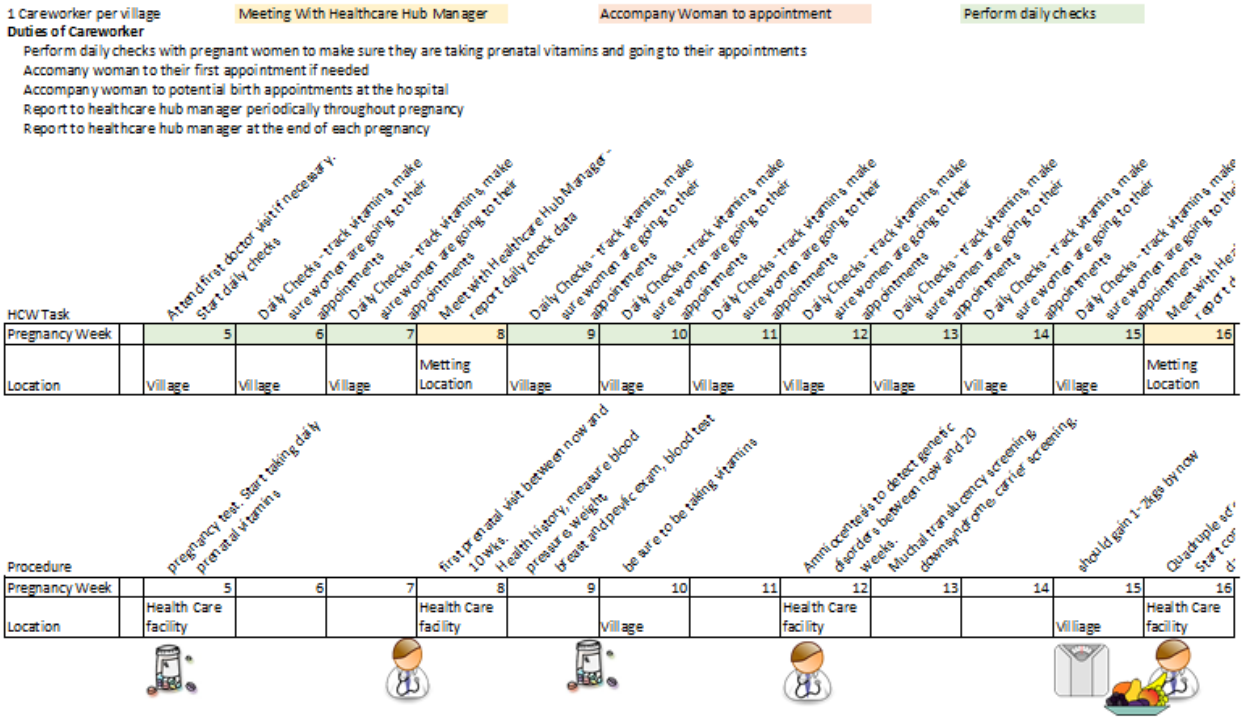
Hamlet	Transportation Type	Transportation Time	Appointment Time	Time Per Visit	Transportation Cost	# Pregnant Women	Visit cost	# Visits	Total Cost	Total Time
Uyyadavalasa	Bus	50	120	220	30	5	150	15	2250	16500
Kondaparthi	Bus	75	120	270	30	5	150	15	2250	20250
Yarravani valasa	Bus	60	120	240	30	5	150	15	2250	18000
Malledavalasa	Motorcycle	20	120	160	100	5	500	15	7500	12000
Saravani valasa	Bus	70	120	260	30	5	150	15	2250	19500
Garudabilli	Motorcycle	60	120	240	70	5	350	15	5250	18000

# of Healthcare Hub Managers	1
Healthcare Hub Manager Salary Cost	20,000
Healthcare Hub Manager Village Visit Cost	2,160
Total Cost of Healthcare Hub Managers	22160
# of Careworkers	6
Cost per Careworker	2000
Accompanying Women to Appointments Cost	30
Careworker Delivery Travel Cost	150
Meeting with Healthcare Hub Manager Cost	1080
Total Cost of Careworkers	13110
Training Cost per Year	4000
Careworker Incentive Bonus	0
Pregnant Women per Year	30
Delivery Travel to Hospital Cost per Year	750
Cost of Transportation per Year	22500
Suppliers Cost per Year	200
Total Appointment Travel Time (minutes)	104250
Number of Pregnant Women	30
Average Total Travel Time per Woman per pregnancy (hours)	58
Average Travel Time to Hospital for Delivery	60

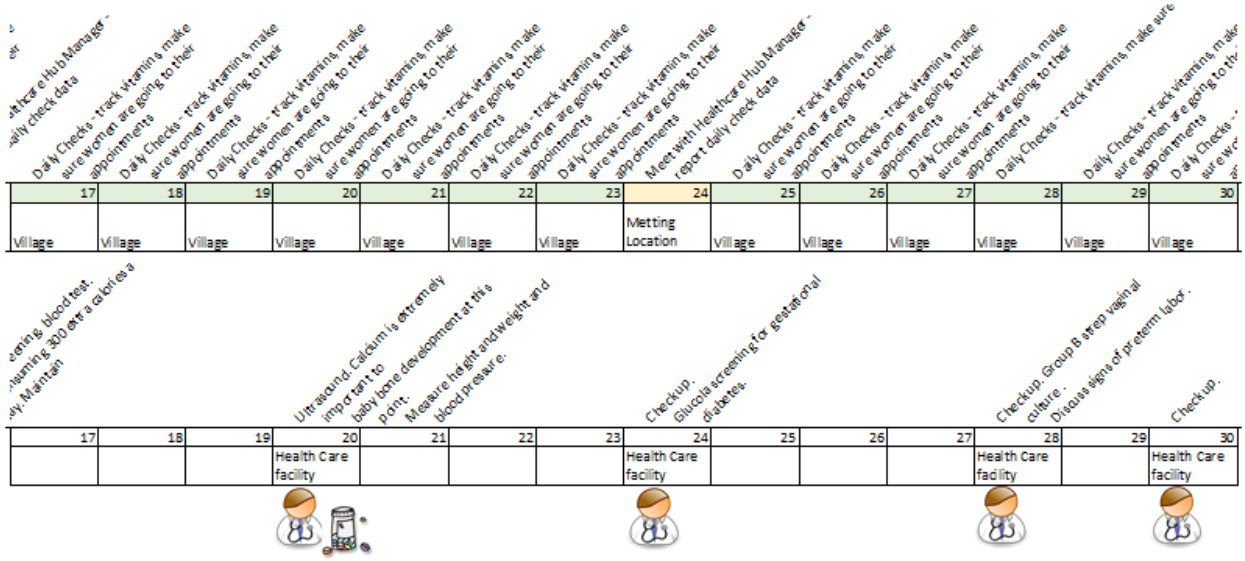
Total Management Cost	39270
Total Patient Transportation C	22500
Total Supplies	200
Total Training Costs	4000

Total Program Cost	65970

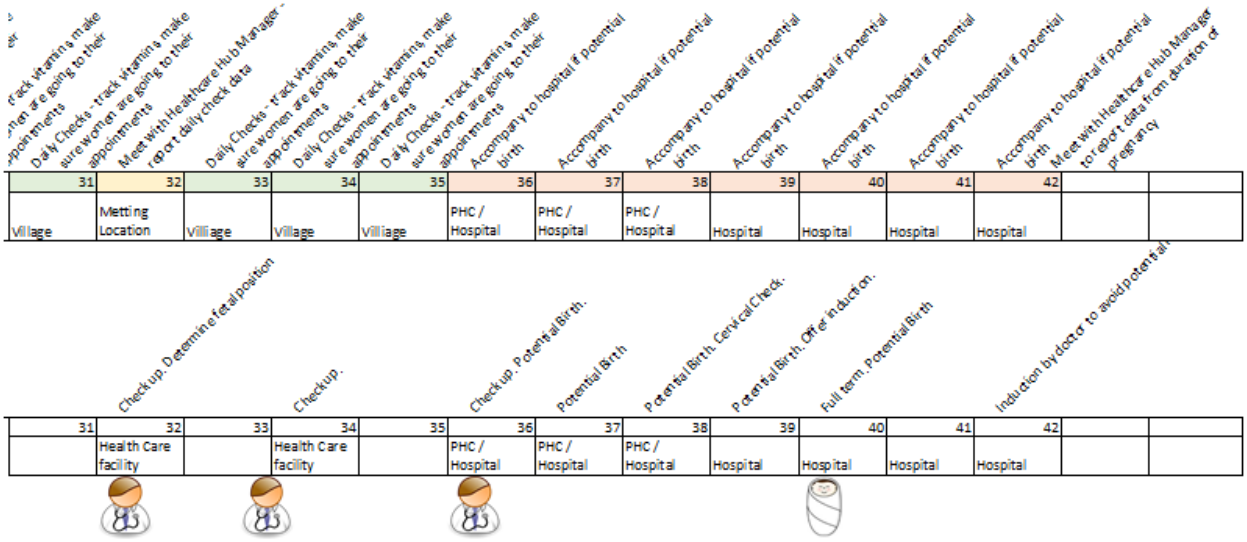
Appendix 3: Pregnancy timeline – pregnancy weeks thru week 16



Appendix 4: Pregnancy timeline – pregnancy weeks 17-30



Appendix 5: Pregnancy Timeline – pregnancy weeks 31-term



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