

NHSRC

REVIEW OF HMRI – 104 SERVICES



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List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ANC	Ante Natal Care
ANM	Auxiliary Nurse Midwife
AP	Andhra Pradesh
APSACS	Andhra Pradesh State AIDS Control Society
ASHA	Accredited Social Health Activist
AWW	Anganwadi Worker
BCC	Behaviour Change Communication
BPL	Below Poverty Line
capex	capital cost
CHNC	Community Health and Nutrition Cluster
DC	District Coordinator
DDC	Deputy District Coordinator
DE	District Epidemiologist
DMHO	District Medical and Health Officer
DPMU	District Programme Management Unit
DPO	District Programme Officer
EDL	Essential Drug List
FAQ	Frequently Asked Questions
FDHS	Fixed Day Health Services
GIS	Geographic Information System
GoAP	Government of Andhra Pradesh
HAO	Health Advisor Officer
HH	households
HIHL	Health Information Help Line
HIV	Human Immunodeficiency Virus
HMRI	Health Management Research Institute
ID	Identity
IEC	Information Education Communication
km	kilometre
LT	Laboratory Technician
MBBS	Bachelor of Medicine and Bachelor of Surgery
MMU	Mobile Medical Unit
MO	Medical Officer
MOU	Memorandum of Understanding
NACO	National AIDS Control Organisation
NCD	Non Communicable Diseases
NDCP	National Disease Control Programmes
NRHM	National Rural Health Mission
OP	Out Patient
opex	operating cost
PHC	Primary Health Centre

PMP	Private Medical Practitioners
PNC	Post Natal Care
PPP	Public Private Partnership
RMP	Registered Medical Practitioners
RO	Registration Officer
Rs	Rupees
SC	Scheduled Cast/Sub Centre
SOE	Statement of Expenditure
ST	Scheduled Tribe

Executive Summary

The Mobile Medical Unit (MMU) approach to reach out to the people in difficult and inaccessible areas is one of the key strategies under NRHM. In the nation as a whole there are around 1787 MMU's that were introduced under NRHM. Their main objective was to reach a minimum package of outreach and clinical services to remote and difficult to reach areas. The HMRI however was a major variant of this theme. This model has also received considerable international and corporate attention as a possible way forward to reorganise delivery of primary health care. HMRI also has projected itself as experimenting or piloting such an alternative approach to the delivery of primary health care. A study of this model is particularly important as it is a major innovation effort that many states have considered for replication.

In 2010, the Government of Andhra Pradesh was rethinking the HMRI approach. Its main concerns were related to the programme outcomes, cost effectiveness and its impact on the public health system. The Government of Andhra Pradesh was initiating a comprehensive reform of primary health care delivery systems around the concept of Community Health and Nutrition Clusters (CHNC's) in all districts. This would require at the CHNC level, integration of the services of FDHS with the CHNC's to increase the access and effectiveness of primary and preventive services in the state. It was in this context that Government of Andhra Pradesh requested the National Health Systems Resource Centre, New Delhi to, undertake a study of the HMRI 104 services to look at both its effectiveness and the best way forward for integration.

The study was designed as a case study of the HMRI which used an analysis of documents, key informant interviews, and a limited sample survey in three districts to describe the programme and comment on the main objectives. The study was done in two stages. In the first stage a description of the programme and its processes using key informant interviews and secondary data was undertaken. In the second stage data collection was carried out from a sample of villages and FDHS vans in three selected districts of Andhra Pradesh (Anathapur, Warangal, and Visakhapatnam). For data collection we used a structured questionnaire for a sample of rural households, for a sample of beneficiaries of FDHS services based on exit interviews, and a sample of 6 different primary providers of health care- PHC Medical Officers, private practitioners, RMPs, ANMs, Anganwadi workers and ASHAs- from the sampled villages where the households had been interviewed. Phase two sample sizes were limited- the findings being used mainly to validate the findings regarding the basic processes and mechanisms of HMRI as described in phase I, and by such an analysis of context and mechanisms arrive at some broad conclusions about possible effectiveness in terms of health outcomes and its impact on public health systems.

The opening question we have in any evaluation of a health programme is - what is the programme theory underlying the programme. What were the intended outcomes, and in this particular context, how are various mechanisms that constitute the mobile medical unit expected to lead to these outcomes. It is only with clarity on this that we can set out to discuss the

findings. What we also know from evaluation theory is that often there could be implicit programme theories co-existing with explicit ones.

- a. The first and simplest programme theory would state: “Mobile Medical Units reach areas where it is difficult to establish fixed facility based services- because doctors and nurses find it difficult to live and stay there or because there are not enough human resources to provide fixed services on a daily basis or because these hamlets are too small to establish fixed services.”
- b. A second programme theory would state that “though basic care is made available by nurses and para-medicals and community health workers- certain dimensions of care requiring more professional skills- of a doctor or specialist- or requiring higher level of diagnostics, cannot be made available except through a monthly visit provided by the MMU.”
- c. A third programme theory posits that primary health care as provided by the sub-center and the PHC does not work. It is bureaucratically burdened, unresponsive to needs with poorly motivated workers providing poor quality of care. An alternative would be to build a business enterprise model – or social enterprise model- where primary health care could be outsourced to a health management agency (like HMRI) which would use MMUs to reach out to the field to provide outreach services. This would need a level below level of care below it – could be provided by a combination of ASHA, ANM and RMP. A specialist and medical level above it could be provided by linkages with available clinics- private or public and in the future-present telemedicine – both visual and telephonic - in the HIHL mode- and electronic medical records would also come in, in a big way to provide access to the specialist. Then this alternative model would be complete. The mobile clinic is not mandatory in these social enterprise models- they are only way of entering into this form of organisation of primary health care.

The programme theory of the FDHS is a curious mix of all three of the above. And this is very likely to be so due to the management having had to respond to changing political visions and expectations of the programme. We could advance a tentative hypothesis- that it began with a vision close the third programme theory, but with problems in financing and changing expectations projected itself as close to the second theory- but in practice finding that difficult to achieve had finally found a niche as a service provider for providing regular follow up care in elderly chronic non communicable disease- and diagnostic services for ante-natal care. This is really a programme theory 1 function- except that sub-centers usually provide only RCH care and miss out completely on non communicable disease- which is the gap HMRI located and has filled.

There is one interesting spin in the HMRI programme theory. This is the notion of satellite villages or as was once known in public health literature of the sixties and early seventies- the twilight zones of PHC care. Long back there was an understanding that the density of care seekers in a given population is roughly inversely proportional to distance from it. Proximity and affordability are thus the advantages that the FDHS offers. It is tempting to read this as validated by the findings that show that most of those coming are living within a km of the service point and because they declare proximity and costs as influencing their decision.

However we must consider alternative explanations and alternative scenarios of how these services could have been provided more cost effectively. For example in minor illness, both RMP and sub-center rate much higher as proximal providers. If the anti-hypertensive drugs and anti-diabetic drugs were available in the sub-center or any trained paramedic, and if screening was done by low cost electronic gadgets, would the mobile unit be unnecessary?

Also there is another problem in seeing FDHS as some form of the first programme theory. In the Agency area¹ (these are the tribal mandals) the population is scattered and there are many small habitations (500-100 people). This population is not covered by FDHS. This is evident from the fact that Visakhapatnam is having the largest population (among the three study districts) but covers the least number of people among the three (see table 6.1). Also there are many difficult to access areas in this region as the terrain is hilly, roads are either very narrow (not wider than a foot path) or there are no roads at all. For reaching some areas one has to walk across hills to reach the village. In such conditions the vans of FDHS cannot reach many areas and hence lots of villages remain uncovered and patients unattended or untreated. The PHC MO of Dumbriguda Block expressed this as a problem which cannot be solved with the existing model of FDHS. The PHC MO opined that there should be a different strategy when plans or policies are made for the Agency area, taking into consideration the geographical and climatic conditions. Perhaps the solution would have been to opt for a different model here, which focuses on reaching the outlying areas- but the one size fits all model has been a problem.

In this context, we suggest that we need to map out two contexts. The first context is the hard to reach areas- the agency areas- -the areas where it is difficult to establish and maintain a fixed facility- sub-center or even PHC. Or at least where it has been difficult to conduct/access a regular VHND due to access issues. And the second context is the area where PHC and CHC and sub-centers are all accessible by road and public transport.

In the first context design the MMU in consistence with programme theory 1- the MMU for the hard to reach areas. Bring the cold chain into the vehicle and use it for delivery of all the services as delivered in a standard VHND. The two ANMs would be stationed at the sub-center – but come to the VHND from there. As a default- considering that they anyway don't stay – we could only insist on their presence in the VHND. Between the two ANMs and the MMU staff there is a VHND for the van on every one of five days of the week- and they cover areas where currently the VHNDs are difficult to reach. Given the ratio between vans and such required VHND sites- one may have to settle for a van visit once in three months also. But these would be a small minority. One may think of more vans, but smaller, more agile and cheaper vans.

¹ The Agency Division consists of the hilly regions covered by the Eastern Ghats. Sankaram Forest block topping with 1615 metres embraces the Mandals of Paderu, G. Madugula, Pedabayalu, Munchingput, Hukumpeta, Dumbriguda, Araku Valley, Ananthagiri, Chinthapalli, G.K. Veedhi, and Koyyuru erstwhile Paderu, Araku Valley and Chinthapalli taluks in entirety.

(Source: <http://visakhapatnam.nic.in/district-profile.html>).

In the second context, the aim should be to provide a referral service with a doctor for those PHCs which are without doctors and diagnostics and therefore poorly functional. Even where the PHC has a doctor, the arrival of a specialist or better trained doctors with better equipment and visibility would help. The ASHAs, ANMs and even RMPs if they are willing, would do preliminary screening or bring in suspected cases of chronic disease as well as non emergency complications in pregnancy and post partum period and in the newborn and sick child, and chronic cases on treatment. The doctor would have a specialist back up with a tele- link. The VHND would be fused with this wherever possible- but it is not necessary. In pregnancy care and the higher level blood tests would also be available. In child nutrition all severe malnutrition would necessarily be seen and followed up till normalisation. Testing for anaemia etc on a much larger scale could be envisaged. Screening for cancers and similar management protocols for mental health or disabilities could be added on.

There are problems with each of these options. The single most important problem for the second context is getting a doctor on to the van. But by allowing a team of doctors- to do once a week duty on the van- and ensuring that they are back in the same villages each month, the public sector could overcome the problem. By a much higher level of training in the first context, the paramedical can provide a higher range and quality of services.

Needless to say, this would mark a big commitment to address at least the four main non communicable diseases – hypertension, diabetes, epilepsy and asthma- as universally as we are doing currently for pregnancy or tuberculosis. Go after the cases, detect everyone, get the tests done, out the follow up in place, ensure the flow of drugs, ensure a new hierarchy of indicators by which we can monitor achieving universal coverage and above all by appropriate differential financing. One of the problems of the FDHS is introducing a wide coverage for four diseases at some intermediate level of the care pyramid without making all the links necessary for ensuring outcomes. We should be able to state that the numbers of cardiovascular related deaths have decreased. Similarly mental health or cancer screening or disability care can be added onto the programme only in a context of opening up comprehensive district level programmes in this area.

This study has not focussed much on the call center. At any rate this is a supplementary service, which is of relatively much less costs. It would be useful to invest in some operational research to find out whether this too has space for optimisation of outcomes.

1. Background and Context

The Mobile Medical Unit (MMU) approach to reach out to the people in difficult and inaccessible areas is one of the key strategies under NRHM. In the nation as a whole there are around 1787 MMU's that were introduced under NRHM. Their main objective was to reach a minimum package of outreach and clinical services to remote and difficult to reach areas. The HMRI however was a major variant of this theme. This model has also received considerable international and corporate attention as a possible way forward to reorganise delivery of primary health care. HMRI also has projected itself as experimenting or piloting such an alternative approach to the delivery of primary health care. A study of this model is particularly important as it is a major innovation effort that many states have considered for replication.

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2. Overview description of HMRI Program

The "104 Services" were initiated in Andhra Pradesh in 2007 as a Public Private Partnership initiative (PPP) with the Satyam Foundation for the operationalisation of Health Information Help Line Services under National Rural Health Mission. Later with problems developing within Satyam Foundation the MOU was restructured as one between Government of Andhra Pradesh and the Health Management Research Institute (HMRI) as a registered society. The main objective of establishment of Health Information Helpline was to assist the people, particularly in rural and interior areas, who are facing difficulties in getting access to a qualified doctor and also getting information on any health problem. The health information helpline gives health advice to callers to bridge the information gaps and provide information on referral service. The "104 Advice" (Health Information Help Line (HIHL) as commonly known is drawn from the UK based model of providing health care advice through telephonic consultation. This strategy of this service was stated as provision of after-hospital-functioning-hours coverage, emergency response and post treatment follow up and enhancing community capacity to self manage by increasing their access to timely and appropriate advice.

The "104 help line" is designed to deliver the following services to the callers

- (1) Clinical Advice based on triage classifying the caller's condition into Critical, Serious or Stable states and to provide appropriate advice to each of these three groups

- (2) Directory Information (information regarding providers, diagnostic services, hospitals etc)
- (3) Counselling Services (HIV/AIDS, suicide prevention, psychological distress)
- (4) Complaint Registry (citizens can register complaints against any public health system/ provider).

In 2008-09 Fixed Day Health Services (FDHS) was introduced as the second component of the 104 services. This was designed as once-a-month fixed day health service delivered through a mobile medical unit that will provide people in rural habitation with a package of services for the identification, diagnosis, monitoring & treatment, record keeping and referral of high risk cases to higher health care facilities. Fixed Day Health Service (FDHS) is a once-a-month fixed day service at the rural habitations anchored around a mobile health unit with 475 vans distributed across 22 districts and 22,501 service points. The FDHS service was initiated as pilot project in 4 districts of Andhra Pradesh (Mahaboobnagar, Srikakulam, Adilabad, and Kadapa) with 100 vans and later expanded to a total of 475 vans. FDHS services were launched based on the premise that PHC's are effectively providing services largely to the village in which they are physically located. All villages which are beyond 3-5 Km of a PHC do not get adequately covered for most clinical services by the PHC. The population in those satellite villages could be, in HMRI estimates, as high as 4 Crores. HMRI further decided to locate service points in only those satellite villages which have a population of more than 1500, for reasons of efficiency. In the programme design, FDHS Mobile Health Units were to be equipped with an ultrasound machine, an extended roof canopy, basic laboratory equipment to perform basic lab tests, a cold chain unit to store vaccines and blood samples and a laptop computer to enable store and forward technologies for improved beneficiary profile tracking. The vehicle was also meant to incorporate a video projection system for public health education. The Mobile Health Unit would visit a service point once a month, and in this visit deliver the pre-determined package of services to care-seekers of an approximate population of 1500 in the 4 hours it would spend there.

The training of RMP's formed the third component of "104 services" and included training for RMPs to provide first contact care and linkage to the "104 Van" and referral system. The programme had been designed, implemented and managed by HMRI and state government supported for capital cost, training content development cost, classroom development cost and operational cost. RMPs practicing in the villages have been the first point of contact for people for their health needs and they have been taking care of most of the minor ailments. Training of RMPs was initiated with an objective to mainstreaming these providers with the existing health system in the state. The training focused on providing basic skills of identifying the syndromic and symptomatic management of illnesses, risk-identification and referral, first-aid and management of chronic ailments. The training was designed as a one-year course and RMP's were to be certified through an examination by the AP Paramedical Board as Community Paramedics. The training was planned by State Para Medical Board (SPMB) comprising of theory classes for 180 hours and distance education of 960 hours. Another 360 hours of learning was planned in hospitals and public health centers in the area where RMPs practice and hands on training in FDHS for 52 hours. A fourth branch of HMRI that was proposed but had not been initiated was based on telemedicine linkages to the HMRI service points and to facilities.

3. Objectives of Study

- To assess the role of HMRI Model in improving access to health services to rural population.
- To analyze the role of HMRI Model in strengthening the public health delivery system in the State.
- To understand community perception on the role of HMRI Model in improving access to health services.

The study also looked into the various mechanisms or processes that constituted HMRI. These included operational and administrative issues with FDHS, level of integration with the PHC's and programs like School Health Program and NDCP, monitoring mechanism of FDHS, data sharing and information with various stake holders, training of FDHS staff, issues related to drug dispensation (in general), and lab testing facilities and community role in planning and implementation.

4. Study Methodology

The study was designed as a case study of the HMRI which used an analysis of documents, key informant interviews, and a limited sample survey in three districts to describe the programme and comment on the main objectives. The study was done in two stages. In the first stage a description of the programme and its processes using key informant interviews and secondary data was undertaken. In the second stage data collection was carried out from a sample of villages and FDHS vans in three selected districts of Andhra Pradesh (Anathapur, Warangal, and Visakhapatnam). For data collection we used a structured questionnaire for a sample of rural households, for a sample of beneficiaries of FDHS services based on exit interviews, and a sample of 6 different primary providers of health care- PHC Medical Officers, private practitioners, RMPs, ANMs, Anganwadi workers and ASHAs- from the sampled villages where the households had been interviewed. Phase two sample sizes were limited- the findings being used mainly to validate the findings regarding the basic processes and mechanisms of HMRI as described in phase I, and by such an analysis of context and mechanisms to arrive at some broad conclusions about possible effectiveness in terms of health outcomes and its impact on public health systems.

The document review of the first phase examined the following key documents – Monthly/ weekly reports of FDHS/ “104 Call Centre”, Audit reports, Expenditure statements of HMRI and HMRI's own publicity/communication brochures and other texts from website and reports. This was done to understand the objectives, processes, utilization, efficiency of operations and management and governance structure. In Phase I a team of four members visited Hyderabad and two study districts viz Warangal and Visakhapatnam for a period of 20 days. During these 20 days the team interacted with the following key informants – Principal Health Secretary of AP state, district officials DM&HO (2), DPMUs (2), DPOs (2), higher officials and field level officials of HMRI (7), FDHS van staff (28), PHC MOs (6), ASHA/ANM/AWWs (6), RMPs and private

practitioners (4) and beneficiaries and non beneficiaries of FDHS (Details of interviews in Annexure -1). This was supplemented with direct observations on the functioning of 104 mobile vans at various service points. Direct observation involved the observation of service delivery mechanism of 104 mobile vans to understand the number and type of patients visiting the service points, process of their registration, recording the measurements, health advice, and recommendations. In this process, the participation of ANM, AWW and ASHA was also assessed. This phase also provided inputs to finalize questionnaires for the second phase. Details of the places where the qualitative study was conducted, are given in Annex-I.

The second stage involved primary data collection in three selected districts from Andhra Pradesh (1) Warangal (2) Ananthapur (3) Visakhapatnam. The State of Andhra Pradesh has three different geographical zones viz. Telangana, Rayalseema and Coastal Andhra or Kosta. One district each from these three geographical zones i.e. Warangal from Telangana, Ananthapur from Rayalseema region and Visakhapatnam from Costal Andhra region .These districts were selected in discussion with the Principal Health Secretary. These three districts were chosen purposively to capture regional variations.

A list of villages available from the districts was obtained and ten villages were selected using the Probability Proportional to Size (population) i.e. PPS sampling technique were selected. Questionnaires were prepared on the basis of issues that came up in the qualitative study. Tools were translated in to Telugu and bilingual questionnaires were prepared (except PHC MO and private practitioner schedules which were only in English language), tested in the field and then finalized. The sample respondents who were administered the questionnaires were as follows, 300 Households (100 per district), 150 Beneficiaries of FDHS services (50 per district), 30 PHC MOs, ASHAs, ANMs and RMPs respectively (10 per district, one each from the 10 villages of each district where the households were sampled) and 15 private practitioners and AWW (5 per district). (Table 4.1)

Table 4.1: Details of all questionnaires administered in three study districts.

District	Ananthapur	Vishakhapatnam	Warangal	Total
1. Household Interview	100	100	100	300
2. Beneficiary Interview	50	50	50	150
3. Stake holders interview (Questionnaire based interviews				
a. PHC MO	10	10	10	30
b. RMP	10	10	10	30
c. Private Provider	5	5	5	15
d. ANM	10	10	10	30
e. ASHA	10	10	10	30
f. AWW	5	5	5	15
Grand Total	200	200	200	600

Household interviews were conducted in the 30 villages (10 per district) which were selected, randomly in proportion to their respective populations, by PPS sampling technique. These

villages were taken as the reference villages for exit interviews and interviews with PHC MOs, ASHA/ANM/AWW, RMPs and private practitioners. These villages fell under different PHC catchment areas and same PHCs were selected for the interviews of PHC MOs. Wherever there was an overlap, like, if two villages came under the same PHC catchment area, the adjacent PHC was selected.

An effort was made to select ASHA, ANM, AWW and RMPs from the same reference villages. In case the village was not covered by FDHS services then the adjacent village was selected. Private practitioners are generally based in urban and semi urban settings in Andhra Pradesh, hence the nearest urban centre was chosen for interviewing private practitioners. Details of the villages and sites where all the interviews were conducted are given in Annex-II.

5. MOU provisions and Deliverables

The partnership arrangement of Government of Andhra Pradesh (GoAP) with Health Management Research Institute (HMRI) is based on five different MoU's for operationalizing the 'Health Information Helpline (HIHL) and Fixed Day Health Services (FDHS).

On 29th December 2006, the GoAP entered into the first MoU with Satyam Foundation for establishing the Health Information Help Line in the state in public private partnership under NRHM. As per the MoU, Satyam Foundation was recognised as the State Level Nodal Agency for operating the HIHL through a call center established under this intervention with a capacity to handle call volume of about 6000 calls per day.

On 5th October 2007, the GoAP entered into the second MoU with Satyam Foundation for expansion of HIHL to handle 12,000 calls per day in view of the increasing calls being received at the call center of HIHL.

On 21st February 2008, a third MoU was signed – now between GoAP and HMRI, with HMRI as the state nodal partner for further expansion of the HIHL. The same MoU also launched Fixed Day Health Services (FDHS) on a pilot basis in the state. According to this MoU, the capacity of HIHL was expanded to handle 50,000 calls per day and it also initiated FDHS services with 100 Mobile Health Units in four districts of Andhra Pradesh.

In February 2009, the Government of Andhra Pradesh entered into two separate MoU's with the HMRI for

- a) The state level nodal partner for scaling up the HIHL and
- b) FDHS scheme in the state in PPP mode under National Rural Health Mission.

These two MoU's were in continuation to the earlier MoU's between the Government of Andhra Pradesh and State Level Nodal Agency (HMRI).

According to the latest MoU, HMRI would be operating and managing the "104 FDHS" – or 475 Mobile Medical Clinics in all districts of Andhra Pradesh with main focus on

- a) Pregnancy monitoring,
- b) Child growth monitoring and
- c) Monitoring of chronic diseases.

According to the MoU, HMRI would be recruiting the required staff on contractual basis, training the staff with required managerial capacities and monitoring their routine work schedule. HMRI would procure the vehicle for FDHS with the prescribed design, equip the Mobile van and also link the van with the HIHL. Along with this the state nodal agency would monitor the scheme through daily online reporting system with respect to drug consumption, accounts and funds received from the government, quarterly utilisation certificates and expenditure statements. The details of obligations of HMRI and State Government along with comment of the study team based on observations are attached in Annexure III. The duration of the MoU was for five years from the date of agreement. A number of amendments and annexure (Annexure-III) elaborate on the main text of the MOU and these too are attached with the MOU.

With regards to the expenditure, capital expenditure for “104 technology” platform and “104 mobile vans” has been provided by the GoAP. The operational expenditure of these operations of “104 mobile vans” and “104 HIHL” was met by GoAP (95%) and HMRI (5%). The Capital expenditure borne by Government of Andhra Pradesh included the expenditure on procurement and fabrication of 475 vehicles and building for supporting the operations. The operational expenditure included the running cost of 475 vehicles, staff salaries, training, drugs and consumables and costs associated with parking places. HMRI was to bear 5% of the operational costs and this was shown as the cost of application software and salaries of a few of the Management Staff. According to the MoU, the non-recurrent (capital) cost borne by the Government of Andhra Pradesh was Rs.152.35 Crores (Rs.150.35 Crores for procuring/equipping Mobile vans and Rs.2 Crores for Building) and recurring costs of Rs.321.69 Crores (estimated for the period from February 2008 to March 2010).

Lately, there had been some problems faced by HMRI (as reported by Shri Balaji, Director of HMRI). As per him, beginning June/July 2010, the funds flow to HMRI started to be erratic. Around the same time, medicines supply also became erratic.

According to the MoU for the Health Information Help Line, the State Nodal Agency would operate and manage the call centre, to handle call volume of 50,000 per day. The duration of the MoU was for one year and the Capital Expenditure and Operational Expenditure would be borne in the same pattern of 104 FDHS as mentioned above. Accordingly the MoU details a budget for financial year 2008-09 of Rs.48.47 lakhs as non recurring expenditure and Rs. 38.80 Lakhs as recurring expenditure

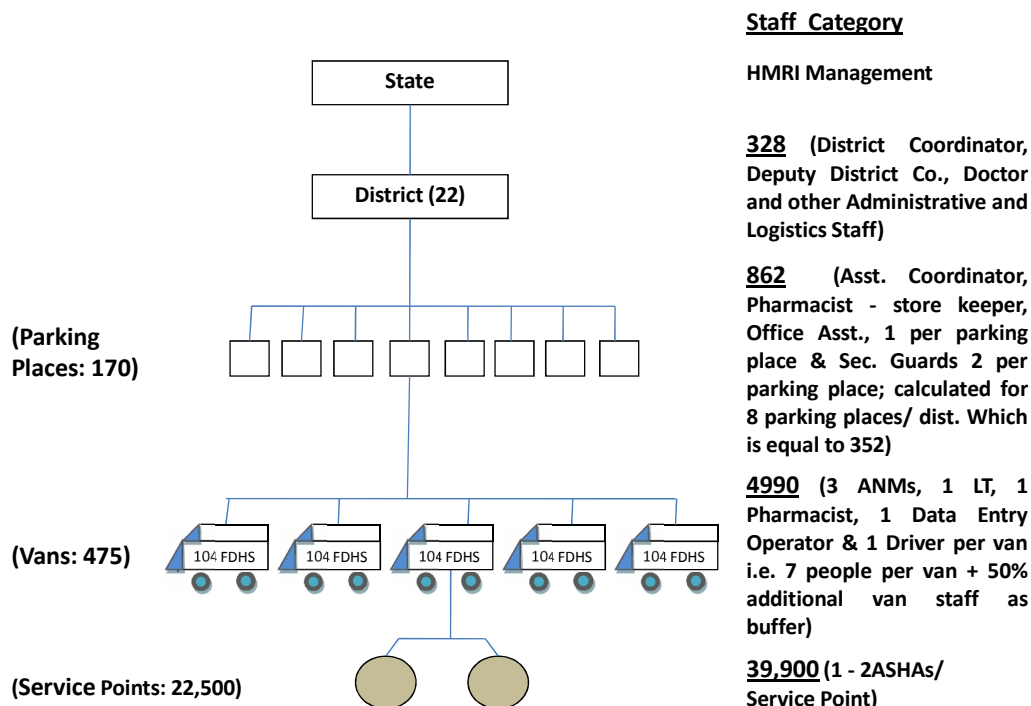
6. Organization of FDHS

6.1 Staff Structure

Each FDHS Mobile Van” consists of 3 ANMs (newly recruited by AP government and deputed to HMRI), one lab technician, one pharmacist, one computer operator and one driver. The three ANM’s are all part of the “Second ANM” provision of the NRHM-but instead of deploying them in sun centres, they are aggregated and placed in the 475 vans. In a day each van is scheduled to cover approximately 3000 populations i.e., two villages of a particular PHC. At the service point level, ASHA, ANM and the FDHS Mobile Van staff are involved in coordinating the FDHS service. ASHA also plays a major role in informing the villagers about the date/time of visit and bringing patients especially the pregnant women to the service points. At the district level, the activities of the FDHS are coordinated by a District Coordinator (DC) who liaisons with heads of departments in the district administration and administer FDHS personnel and manages district budget. There is a regional coordinator for 5 to 6 districts and above them at the state level is Mentor who is also a doctor.

Below the District Coordinator, there is a Deputy District Coordinator one per district who monitors the functioning of the vans. At the district level one Domain Expert who is a medical officer, facilitates the training and monitoring of the van staff. Further down the district level, there are units called the “Parking Places” which are basically places where the FDHS vans are parked and from where the vans cover the designated service points. In a district on an average there will be 7-8 parking placing places. Each parking place is itself a unit of mid-level management and on this unit there is one Assistant District Coordinator per parking space who is responsible for effective service delivery of these vans. He also has to oversee the uploading of the data to HMRI server on a daily basis. At each parking place, there are other administrative staffs including pharmacist/stock manager, office assistants and security personnel. The detailed information about the staff at different levels is given in Figure 1

Figure 1: Management Directory and Staffing of FDHS



6.2 Organisation of Service Delivery

The design of the services- as intended- is described below. The visit schedule is designed to cover all target villages of a particular PHC catchment area once in a month. The visit schedule is shared with village Sarpanch/ community leader, ASHA, AWW and ANM. On the day of the visit of van, ASHA's, ANM & AWW's presence is to be ensured. Active involvement of community leaders is also to be ensured. The service point in a cluster of villages is decided by HMRI and this is informed to the surrounding villages.

At these service points screening and drug dispensing services are to be made available for the following as per the MOU. We quote.

“

1. Pregnant women, mothers (PNC), Neonates, infants and children,
2. Communicable diseases (Malaria and Tuberculosis) and
3. Non-communicable diseases (Hypertension, Diabetes, Asthma, Epilepsy),
4. School health programme (correcting defective vision)”

At the service points of each FDHS van, the delivery of services is organised into six counters. All patients would have to register at the registration counter (counter 1), where a patient ID is to be created along with a biometric marker. All ANC cases are directed to the counter number 2 and 3 where blood pressure, height and weight is measured. Depending on these measurements and their haemoglobin levels (which is done in counter number 5) further

instructions are given to the pregnant ladies at counter number 2 or 3. In these same counters children are screened for skin problems, nutrition status and eye infections. Patients with minor problems like fever, body pains, cough and cold etc, are directed towards counter number 4 which is managed by one of the ANMs or to the last counter ('counter no 6') which is managed by the pharmacist. The counter number 5 is the laboratory technician who tests for the basic lab tests for ANC and chronic diseases.

Patients are screened for high blood pressure and diabetes, epilepsy and asthma and all suspected cases are sent to the PHC for confirmation of diagnosis and prescription of medicines. The medicines required for one month of treatment (till the next visit of the van to the village) is given at the PHC on the designated "PHC referral day" by the stock manager (of HMRI) or the pharmacist in the PHC (if the stockiest is not present on PHC referral day). Subsequent monthly medicines are dispensed at the service point when the patient visits next at the mobile clinic. The medicines - sufficient for a month - are replenished at the pharmacists counter (counter no.6) at the FDHS. The data about all those who visited the service points and also school children examined are uploaded on the same day or early next day at the "parking area."

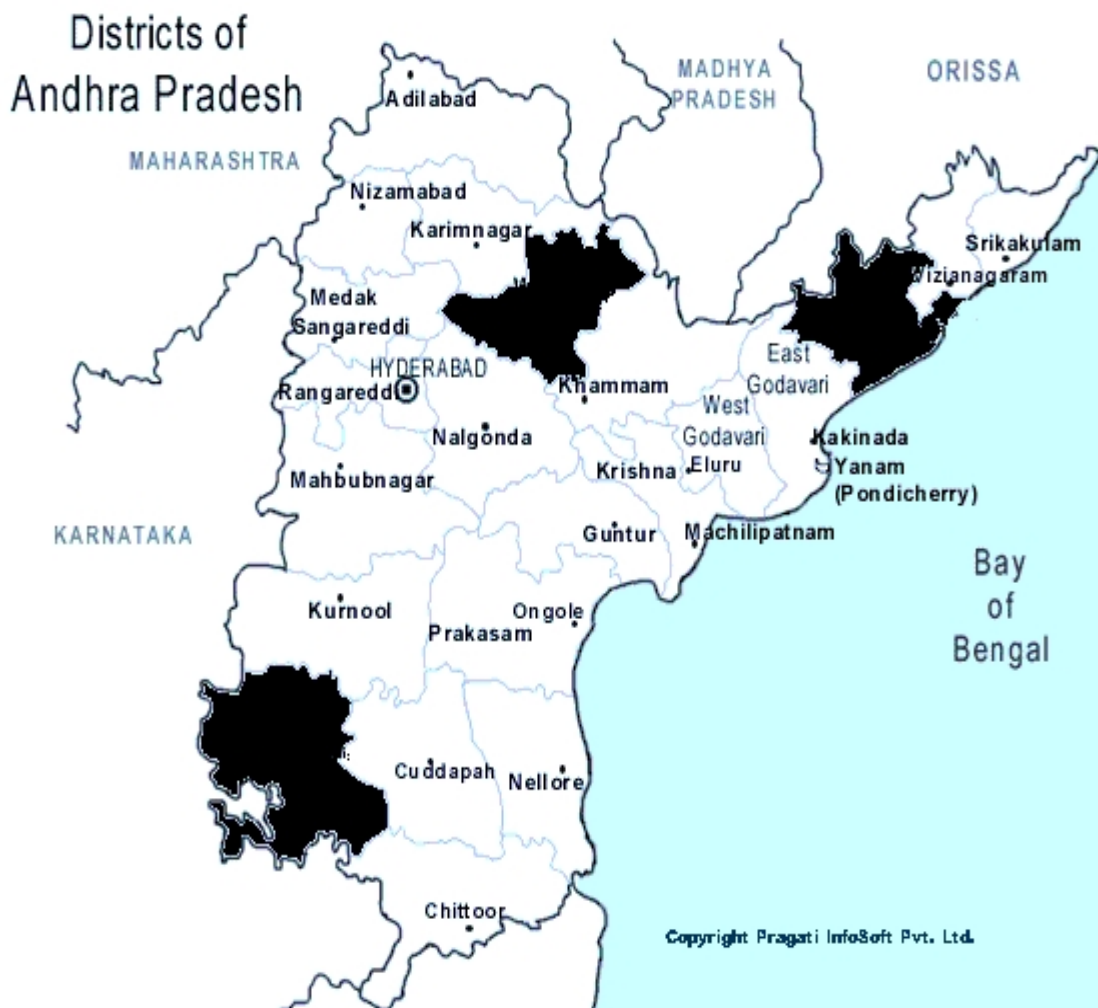
The parking area plays an important organizational function. Each parking area hosts 5 to 8 vans. They depart from these places in the morning and return to the same place in the evening. Staff assembles here every day - morning and evening. There is a set of supervisory and support staff designated "per parking area" and there is also a security guard for the night. Data from the day's visits is uploaded in the evening. Maintenance work of the vans is carried out during this time.

A district would have 4 to 8 such parking areas. The district is another programme management unit with a set of supervisory and technical support staff. Then for every five districts there is a regional office and finally the state level supervision and technical support.

7. Service Provision Overview in the three study districts.

The study districts are shown in the map below. Of these three districts, "104 FDHS" was first initiated in Vishakhapatnam in July 2007, Warangal in February 2009 and Ananthapur in March 2009.

Figure 2: Map showing the study districts



Source: <http://www.googlemaps.co.in>

Table 7.1: Details of Service provision by FDHS in three study districts

	Warangal	Ananathapur	Vishakhapatnam
Population of the District (In Lakhs)	32.4	36.4	38.3
Population Covered By FDHS (In Lakhs)	17.3	19.1	14.9
No: of Mandals Covered	50	63	42
No: of Vans	20	23	20
Population covered per van* (in thousands)	86.50	83.04	74.50

No of Parking Places	6	8	8
No: of PHC's in the service area	69	76	71
No: of Service Points Covered per month	778	1180	912
No: of Service Points Covered- per month per van	39	51	46
Date of initiation of service	14th February 2009	1st March 2009	29th July 2007
Total Visits (Cumulative Till Sep 2010)	917,234	1,151,614	932,360
<i>Average monthly OPD per van*</i>	2,085	2,384	2,742
<i>Average Daily OPD per van(28 Days)</i>	75	85	98
Total Registrations (Till Sep 2010)	455,957	482,321	439,568
Total Revisits (Till Sep 2010)	461,277	669,293	492,792

Source: HMRI Monthly Reports

*Calculated by NHSRC based on the figures reported by HMRI

HMRI projects its FDHS service delivery as having covered 17.3 lakh population (total population 32.4 lakh) in Warangal, 19.1 lakh (total population 36.4 lakh) in Anantpaur and 14.9 lakh (total population 38.3 lakh) in Visakhapatnam. What this means is that the service points that the van visited was intended to provide services to such a population. In real terms as shown in table 6.1 each van would have an average of 75 patients' per day per van in Warangal, 85 per van in Ananathapur and 98 per day in Vishakhapatnam. Further, as per the records of HMRI 40% of patients are new registrations implying one-off consultations and 60% are repeat visits, some of which could even be monthly visits of the same patients. Thus, though as aggregate numbers and when expressed as percentages the numbers look impressive, when analysed on a per day basis, the number of patients they reach as a percentage of all primary health care outpatient visits needs would be modest. One standard expects 3.2 OPD visits per capita per year which would be about 34,000 visits per day for a district like Vishakapatnam and all the FDHS vans in this district together reach about 2,000 per day (6% of expected OP load). The numerical outreach to patients of each van would be comparable to the outreach of a moderately functioning PHC. We note that on many days the van is visiting two service delivery sites for it to achieve this level of coverage, and the time per site would be proportionately lower.

Table 7.2: Details of Public Facilities on three study districts

	Ananthapur	Warangal	Vishakhapatnam
Sub Centre	586	605	584
PHC	80	69	76
CHC	11	12	11
District/Taluk/Area Hospital	8	4	8
Facility Population Ratio			
SC	5,529	6,016	6,558
PHC	40,500	52,753	50,394
CHC	2,94,545	3,03,333	3,48,181

District/ Taluk/ Area Hospital	4,05,000	91,000	4,78,750
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8. Findings of the village surveys:

8.1 Awareness about the HMRI FDHS services

Awareness of service points and dates of visit among rural population forms a major part in effective implementation of the programme. The FDHS service points are located in places which can be easily accessed like Panchayat offices, School premises, Sub Centres, places of worship etc. There are total 22,501 service points spread across the state of AP. The numbers of service points in the three study districts are given in the following table 8.1 below.

Table 8.1: District wise number of FDHS Service Points

Name of District	Number of service points	Average Population Estimated per Service Point
Anantapur	1180	1,619
Warangal	778	2,224
Vishakhapatnam	912	1,634

All the PHC MOs, ASHAs, ANMs, AWWs interviewed are aware of the service points in their respective PHC/SC area. Of the households surveyed 221 out of 300 households were aware of Fixed Day Health Service (table 8.2) and of the schedule and the location of the service points (table 8.3) of FDHS Mobile vans. However only, 7 out of 300 households interviewed were aware of “104 health information help line”.

Table 8.2: Awareness of Households about the services provided by HMRI

	District Name			
	Ananthapur (n ₁ = 100)	Warangal (n ₂ = 100)	Visakhapatnam (n ₃ = 100)	Total (N=300)
Only 104 FDHS	69 (69%)	75 (75%)	77 (77%)	221 (74%)
104 FDHS & HIHL	2 (2%)	3 (3%)	0	5 (2%)
Not aware of 104 FDHS	30 (30%)	21 (21%)	23 (23%)	74 (25%)
Aware of HIHL but not of FDHS	2 (2%)	0	0	2 (1%)

Table 8.3: Awareness of Schedule and Service Points amongst households.

	District Name			Total (N=300)
	Ananthapur (n ₁ = 100)	Warangal (n ₂ = 100)	Visakhapatnam (n ₃ = 100)	
Yes	70 (70%)	78 (78%)	73 (73%)	221 (74%)
No	30 (30%)	22 (22%)	27 (27%)	79 (26%)

Out of the 150 beneficiaries interviewed at the FDHS service points 82 (55%) got the knowledge regarding the date of FDHS van visit through ASHA's, 23 (15%) from FDHS van Staff, and 38 (25%) got the information from other sources. Of the last category, majority came after seeing the van or hearing the siren blown by the FDHS van (table 8.4). We note that in terms of health communication, the ASHA scores well above all other channels of communication.

Table 8.4: Source of information about schedule of FDHS visit.

	District Name			Total (N=150)
	Ananthapur (n ₁ = 50)	Warangal (n ₂ = 50)	Visakhapatnam (n ₃ = 50)	
Through ASHA	26 (52%)	20 (40%)	37 (74%)	82 (55%)
Through ANM	1 (2%)	0	1 (2%)	2 (1%)
Through Sarpanch	4 (8%)	0	1 (2%)	5 (3%)
Through 104 Staff	7 (14%)	5 (10%)	11 (22%)	23 (15%)
Others	12 (24%)	25 (50%)	0	38 (25%)

8.2 Service Provision and Utilisation of Services of FDHS

The household and beneficiary interview also looked into the pattern of utilisation of FDHS services. Of the 300 households interviewed, 126 households (table 8.5) or 42% had utilized the services of FDHS mobile unit, at least once since the inception of FDHS (in 1.5 – 2 years).

Table 8.5: Utilization of FDHS by Households

	District Name			Total (N=300)
	Ananthapur (n ₁ = 100)	Warangal (n ₂ = 100)	Visakhapatnam (n ₃ = 100)	
Yes	41 (41%)	37 (37%)	48 (48%)	126 (42%)
No	59 (59%)	63 (63%)	52 (52%)	174 (58%)

To get a feedback from users, a sample of 150 were drawn, 50 in each district by conducting exit interviews on a scheduled van day., The exit interview revealed that 23 are first time users, 11 had made their previous visit in the preceding month, 100 had made a visit not in the preceding month but within the preceding six months while 16 had used services over six months - occasional users.

Table 8.6: Utilization of FDHS services previously by beneficiaries

Previous Visit	District Name			Total (N=150)
	Ananthapur (n ₁ = 50)	Warangal (n ₂ = 50)	Visakhapatnam (n ₃ = 50)	
Last Month	3 (6%)	8 (16%)	0	11 (7%)
During Last six months but not last month	13 (26%)	38 (76%)	49 (98%)	100 (67%)
Before six months	16 (32%)	0	0	16 (11%)
Never	18 (36%)	4 (8%)	1 (2%)	23 (15%)

Regarding purpose of utilizing FDHS services, the OP sheets of beneficiaries interviewed for exit survey were examined and it was found that 39 out of 143 beneficiaries (27%) came for ANC, 88 (62%) for chronic diseases and 15 (11%) for other health related problems and 1 (1%) for PNC (Table 8.7 & 8.8). Broadly it can be seen that majority of cases are chronic cases and followed by ANC cases and a small minority of acute illness. These figures are surprising as they show that not a single child is seen and if we exclude the pregnant women, the FDHS is largely catering to elderly males. Though this is a small sample and could be overstating the case, all our field visits show that this pattern of utilisation by age and gender is definitely the main trend.

Table 8.7: Age wise categorization of diagnostic categories

Diagnostic category	AGE					TOTAL
	0-12 years	13-19 years	20-39 years	40-55 years	56+ years	
Chronic Disease	0	0	5	21	62	88
ANC	0	1	37	0	1	39
PNC	0	0	1	0	0	1
Other	0	0	2	6	7	15
TOTAL	0	1	45	27	70	143

Table 8.8: Sex wise categorization of Diagnostic categories

Diagnostic category	SEX			TOTAL
	Missing	Female	Male	
ANC	0	39	0	39
CD	6*	32	50	88
Others	1	8	6	15
PNC	0	1	0	1
TOTAL	7	80	56	143

**Missing data is the data that could be read due to poor quality of scanned copy of the op form or due to unavailability of op forms with the patient.*

- Apart from this there were seven patients who did not have either the OP form or the ID card

This is a surprise for children's health is a priority, even by the MOU and the FDHS manages to miss this almost completely. In women's health it seems limited mainly to antenatal care and to a lesser proportion of chronic diseases.

As far as physical accessibility is concerned, the services were certainly easy to access. It was found that 139 (93%) of the 150 beneficiaries surveyed travelled less than 1 km to reach the service points of FDHS. In terms of time taken, 147 (98%) of them took less than half an hour (Table 8.9).

Table 8.9: Distance covered and time taken by the beneficiaries of FDHS for reaching a Service Point

		District Name			Total (N=150)
		Ananthapur (n ₁ = 50)	Warangal (n ₂ = 50)	Visakhapatnam (n ₃ = 50)	
Distance covered for visit	Less than a KM	45 (90%)	45 (90%)	49 (98%)	139 (93%)
	1km to 2 Km	5 (10%)	5 (10%)	0	10 (7%)
	2Km to 3 Km	0	0	1 (2%)	1 (1%)
Time taken to reach the service point	Less than 30 min	47 (96%)	50 (100%)	50 (100%)	147 (98%)
	30 Min to one hr	3 (6%)	0	0	3 (2%)

8.3 Integration Linkages with the public health system

One of the objectives of this study was to understand the level of integration of FDHS with the public health system and the role of health functionaries in facilitating the service. At the service points, ASHA, ANM, and AWW are the key health functionaries involved with the FDHS and at the referral point PHC MO is the main linkage. The ASHA, in the context of FDHS, has an important role to perform. She is required to go to every household in the village, recognize the pregnant women, and refer them to the sub centre or FDHS service point. She has to maintain a register which has all the details of the ANCs and the PNCs in the village. Her work is to make sure that every registered woman for ANC is present on the day of FDHS visit to her village. The ASHA also has instructions to spread awareness and publicize the FDHS scheme. ASHA is paid an incentive of Rs 100 per visit from HMRI, while other incentives are from the government for family planning operations, ANC registration and institutional deliveries.

As per the feedback of 30 ASHA's interviewed 29 were receiving this payment of Rs.100 per FDHS van from HMRI. Of these 29, 16 reported getting it regularly whereas the remaining 13 reported delay in payment. Out of the 13, one got it after a month's delay, 9 got it after a two month delay and one each had a three and four month delay.

As far as the involvement of AWW with FDHS is concerned, it was found that they were not very keen to work with the FDHS and their role in facilitating the service was negligible. During the qualitative interviews with the AWW, they mentioned that they also expect incentive payments as received by ASHA for facilitating the FDHS service. The presence of AWW at the service points was not visible during the field visits in all the three districts.

All the, 30 ANMs interviewed were aware of the service points in their respective PHC/SC area. Further, 29 of the 30 ANMs visit at least one service point in their SC area, and 17 regularly visit

all service points under their SC area. It is the ANM's responsibility to ensure whether the ASHAs are present at the site of FDHS vans on the day of visit and 28 out of 30 ANM s interviewed said that the ASHAs were present at the site on the day of visit of FDHS vans. Almost all the ANM reported that the van always comes on time to their village and does not miss a single day and also is punctual. The ANMs found it useful in antenatal care, but not for immunisation. The FDHS has not become an immunisation site- and has not taken on the role of the Village health and nutrition day- despite this being an obvious opportunity for convergence. The second ANMs under NRHM are deputed to the FDHS and they are working full time with HMRI for this purpose. They have not received any training for this purpose.

The PHC medical officer has a key role in the functioning of FDHS as patients are referred back for further treatment and follow up. All 30 PHC medical officers interviewed reported that cases are referred from FDHS and that most cases referred by FDHS services are suspected cases of diabetes and hypertension (See table 8.10 A). Around 70-80% of patients referred by FDHS, visit the PHC for getting a prescription from the doctor during the scheduled "PHC referral day". The PHC doctor confirms the diagnosis and gives a prescription. Drugs against this prescription are given for one month in a counter at the PHC. For subsequent days they are expected to visit the FDHS van on scheduled days. The rest go to the RMP's and private doctors. With regard to follow up of patient referral, only 13 out of 30 PHC MOs interviewed admitted that they are tracking the patients over a period of time, while 5 were not clear as to who is doing the follow up. According to ASHA's and ANM's at the service point level, majority of patients seek referral from the public institutions, but they were not aware how frequently and properly patients are undertaking follow up visits. The absence of a proper follow up for referral cases from the service points to other institutions is a constraint. Some medical officers mentioned that earlier HMRI used to give details but now they are not getting any information from the FDHS. The system of maintaining separate register for FDHS patients in PHC's was not found to be common and this also constraints proper follow-up of patients especially those with chronic diseases (See table 8.10b).

Table 8.10 (a): Number of PHC MO's who reported receiving referral for following cases

	District Name			
	Ananthapur (n ₁ = 10)	Warangal (n ₂ = 10)	Visakhapatnam (n ₃ = 10)	Total (N=30)
Hypertension	10	10	10	30
Diabetes	10	10	10	30
Asthma	3	4	2	9
Epilepsy	6	5	5	16
Other CD	6	2	2	10
Others	1	2	3	6
ANC	2	0	3	5

(n= Number of PHC MO's interviewed)

Table 8.10 (b): Maintenance of records of FDHS patients in PHC

	District Name			Total (N=30)
	Ananthapur (n ₁ = 10)	Warangal (n ₂ = 10)	Visakhapatnam (n ₃ = 10)	
Yes	8	2	6	16
No	2	8	4	14

The role of FDHS in facilitating routine programmes like Disease control programmes, Immunization and School Health Programmes was covered as part of the study. With regard to the role of FDHS in these programs, 20 out of 30 ANM’s do not feel that FDHS is facilitating in national disease programmes, 28 out of 30 feel that FDHS is not facilitating in immunization, and 15 out of 30 ANMs feel that FDHS does not facilitate in PNC. This correlates with the pattern of referrals and the study team’s observations during the visits. Whether this complete lack of attention to these programs, is by design or by default, and whether it is a problem of the way HMRI perceived or executed it, or the way the department responded and supported it, is open to further discussion. But certainly this represents a lost opportunity.

8.4 MIS and Data Sharing with the Public System

The FDHS scheme was designed to make use of information technology interface for tracking patients and recording treatment details. They have very detailed formats and check lists with regard to the services they offer at the service points. The registration process is designed to be based on a biometric scanner and web camera and all vital statistics of the patients are to be recorded electronically. It was observed that at all of these were non functional at the field level.

At the PHC level 20 out of 30 doctors were not aware of the various data formats collected by FDHS Mobile vans. Moreover the patient details including the drug dispensation data is not shared with the concerned PHC. Regarding sharing of detail of registration of ANC and tracking of the pregnant women, 22 PHC MO opined that no data is shared with the PHC - a view we take with caution to mean that

Figure 3: FDHS Beneficiary Registration System

there is no system of sharing data in place. In some PHC's the concerned FDHS vans used to give the list of ANC cases registered with the FDHS van and test results of laboratory investigations, Blood Pressure and check up details.

At the service point level, it was observed that the ANMs are sharing information related to ANCs with the FDHS van staff but FDHS van staff doesn't seem to be sharing much information with the ANMs.

8.5 Monitoring of the FDHS Scheme

Although the PHC MO's are well aware of the services provided by HMRI but they have no clue about the impact of the services. There exists no system at the PHC level for effective monitoring of services and due to this FDHS functions as a parallel mechanism. It was found that, except in few places, the PHC medical officers are not visiting the service points and are not aware of the presence/absence of ASHA/ANM/AWW workers at the service points. The FDHS maintains a Stakeholder Register which marks the attendance of ASHA/ANM/AWW at the service points. But at the sub centre level also there is lack of clarity as to who is actually overseeing the presence of ASHA/ANM/AWW workers at the service points. It was also observed that there is no review meeting conducted at PHC level or even higher levels to keep a track of what FDHS is doing in the field. With respect to review meetings with FDHS staff, it was found that the level of interaction of the public health staff was very low. Of the 30 PHC MOs interviewed 28 said that no meetings took place between them and the coordinators of FDHS van or district coordinators/ additional coordinators at the service point level.

8.6 Quality and Effectiveness of Care

No mechanism was observed to be in place to review the services provided by FDHS or any from the public health system. In the FDHS, the pharmacist is concerned with drug dispensation and drugs are dispensed by the pharmacist only against receipt of a valid prescription. It has to be authorized by an MBBS doctor, in case of chronic diseases. For minor ailments the pharmacist has the authority to prescribe and provide medicines to the patients. The list of drugs in the FDHS van is given in Annexure IV. As per the list of HMRI, 53 drugs are part of the FDHS and 25 were found to be dispensed as per the OP slips examined during the exit interview of 150 patients.

The principle of “doctor –initiated- drugs” which are then continued by the paramedics in the van is an interesting innovation. One problem with it is when some patients suffering from non-



Vizag: Bheemli (Service Point near Revidi PHC)

communicable diseases (NCD patients) come after a gap of three to four months and still were given the previously prescribed medicines without any inquiry, investigation or further medical advice. These patients could have required a change of dose. Also they develop multiple problems which are often beyond the scope of the team, but there is little clarity about subsequent referrals. For example, at a service point visited by the study team, the drug dispensation register showed that a single patient had been administered medicines for diabetes, hypertension, fever, stomach infection, and a prescription of citreline too. Perhaps they needed it, but then protocols and training for such situations have to be built up.

The van staff was also found to be unaware of all the side effects of medicines dispensed. If people come with complaints like skin rashes and other allergy type symptoms, they were not examined for possible reactions and contraindications. Apart from this, there are also regular problems of stock outs of drugs for chronic diseases. Mostly the diabetes medicines were found to be out of stock. Unwarranted referral to PHCs was also reported from a few PHCs.

Many PHC MOs were not aware of the drug dispensation by the HMRI stockist present in the PHC during the PHC referral day. In most of the places, there is very limited interaction between PHC medical officer and the HMRI pharmacist. At the service points, 15 of the 30 ANM's reported that in their respective Sub centres, they also have medicines that are available with the FDHS van. In one village of Warangal the team observed some RMP's selling the drugs (especially for hypertension) that are supposed to be available only at a government facility or the FDHS van.

8.7 Community Health seeking behaviour as context:

In all the three study districts, the household surveys (100 HH in each district, total 300 HH) sought to understand the health seeking behaviour of the rural population and the pattern of utilization of public and private facilities for minor and major illness and in this context understand where FDHS fits in. The results of household survey showed that 186 (62%) out of the 300 households interviewed had an episode of minor health illness in their family in last three months.

Table 8.11: Households who suffered from Minor health problems in last three months

	District Name			
	Ananthapur (n ₁ = 100)	Warangal (n ₂ = 100)	Visakhapatnam (n ₃ = 100)	Total (N=300)
Yes	64 (64%)	74 (74%)	48 (48%)	186 (62%)
No	36 (36%)	26 (26%)	52 (52%)	114 (38%)

The pattern of health seeking behaviour of the people in relation to minor health problems shows that people utilize private providers more than the public providers. Out of 186 people who suffered from an episode of minor health problem in last three months 44 sought care from a public provider (Sub Centres 14, PHC 14, and CHCs and above 16), while 125 households approached private providers (MBBS doctors 85 and RMPs 40). But it was seen that only 6 households chose FDHS van for seeking health care. In all instances the public health facilities were catering to this need seven times more frequently and even the sub-center which is not seen as a site of curative care is a more frequent provider than the FDHS. This is not surprising since the FDHS is available on only one day in a month - and the other facilities by definition are available on all 30.

Table 8.12 Utilization pattern of households in case of minor health problems

	District Name			Total (N=186)
	Ananthapur (n ₁ = 64)	Warangal (n ₂ = 74)	Visakhapatnam (n ₃ = 48)	
Govt SC	5 (8%)	6 (8%)	3 (6%)	14 (7%)
Govt PHC	5 (8%)	4 (5%)	5 (10%)	14 (7%)
Govt Hospital CHC or above	6 (9%)	2 (2%)	8 (17%)	16 (9%)
Private Clinic/Hospital	42 (66%)	29 (39%)	14 (29%)	85 (46%)
104 Mobile Clinic	1 (1%)	1 (1%)	4 (8%)	6 (3%)
RMP	4 (6%)	30 (40%)	6 (13%)	40 (22%)
Others	1 (1%)	1 (1%)	4 (8%)	6 (3%)
Did not seek treatment	0	1 (1%)	4 (8%)	5 (3%)

As seen in the above table high care seeking from RMPs is evident only in Warangal district which implies that people seeking care from RMPs is not a general phenomenon. When asked for the reason for preferring a specific provider, the reasons were physical proximity (35%), cost factor (12%). Disaggregating, the only reason for choice of a sub-center for primary care was physical proximity. The main reason for choice of a qualified private provider was facility or doctor's reputation – which is a clear reflection of perceived quality of care. In contrast the main reason for going to RMPs was physical proximity- and only very few considered reputation or lower costs as a reason. For PHCs and CHCs the reason was a mix of proximity and lower costs, with reputation playing a role for some. It does appear that people are making rational

choices - and the choice is a balance of reputation/quality, proximity and cost in that order of influence.

In case of minor illness, the role of FDHS is very minimal. Perhaps the trust factor that needs to develop between community and provider and availability at the time of need are important reasons why this is so. Thus though the fixed sub center is not a major site of symptomatic care it clearly is catering much more than the FDHS. However when it comes to chronic illness and that too with regular supply of drugs on a monthly basis, the FDHS has found a niche that is unoccupied and in that sense it has lessons for those who would plan beyond RCH to approach a notion of universal health care. Similarly in antenatal care – it appears to be the investigations that are its USP - testing for anaemia (not even urine) and blood pressure and weight which are its selling points. Somewhere FDHS design had understood this and also planned for ultrasound and other lab tests like HIV, hepatitis, sugar and urine tests- but this was what was operationalised.

Table 8.13: Reason given by households for selection of a facility in case of minor health problem.

ANANTHAPUR (n=100)									
Reason	SC	PHC	CHC/Above	PVT	FDHS	RMP	OT	TOTAL	
Physical Proximity	5	1	1	0	0	4	1	12	
Cost Factor	0	4	4	1	1	0	0	10	
Personal Rapport	0	0	1	2	0	0	0	3	
Doctors Reputation	0	0	0	16	0	0	0	16	
Facility Reputation	0	2	0	25	0	0	0	27	
TOTAL	5	7	6	44	1	4	1	68	

WARANGAL (n=100)									
Reason	SC	PHC	CHC	PVT	FDHS	RMP	OT	TOTAL	
Physical Proximity	4	2	0	0	1	19	0	26	
Cost Factor	2	2	0	0	0	4	0	8	
Personal Rapport	0	0	0	0	0	1	0	1	
Doctors Reputation	0	0	0	7	0	1	0	8	
Facility Reputation	0	0	2	20	0	4	0	26	
Others	0	0	0	1	0	1	3	2	
TOTAL	6	4	2	28	1	30	3	74	

VISA KHAPATNAM (n=100)									
Reason	SC	PHC	CHC	PVT	FDHS	RMP	OT	TOTAL	
Physical Proximity	3	4	6	1	4	5	3	26	
Cost Factor	1	1	2	0	0	0	0	4	
Personal Rapport	0	0	0	2	0	0	0	2	

Doctors Reputation	0	0	0	2	0	1	0	3
Facility Reputation	0	0	0	8	0	0	0	8
Others	0	0	0	1	0	0	0	1
TOTAL	3	5	8	14	4	6	3	44

Subjective Perceptions:

The qualitative and quantitative survey also looked into beneficiary perceptions towards the FDHS vans. As seen in (table 8.14), 139 (46%) households rated the services as a “good” service and 101 (34%) rated it as “excellent”.

Table 8.14: Satisfaction of Households with FDHS service

	District Name			
	Ananthapur (n ₁ = 100)	Warangal (n ₂ = 100)	Visakhapatnam (n ₃ = 100)	Total (N=300)
Can't say	11 (11%)	2 (2%)	0	13 (4%)
Good	51 (51%)	62 (62%)	26 (26%)	139 (46%)
Excellent	29 (29%)	23 (23%)	49 (49%)	101 (34%)
Poor	0	0	1 (1%)	1 (0.33%)
Very poor	1 (1%)	0	0	1 (0.33%)
Not used the service	8 (8%)	13 (13%)	24 (24%)	45 (15%)

The elderly had a highly positive opinion about FDHS services. The elderly, after being diagnosed for diabetes or hypertension, are getting a pack of tablets for one month at their door steps. As far as physical accessibility is concerned, 139 out of 150 (93%) of all the beneficiaries surveyed travelled less than 1 km to reach the service points of FDHS and in terms of time taken this translates to less than half an hour.

Exit interviews also reported better levels of satisfaction. 139 out of 150 (93%) reported that they want to revisit the service and all 150 said that they would recommend the FDHS service to other sick people in the village.

Table 8.15: Willingness of Beneficiaries for revisiting and recommending FDHS to others

		District Name			Total (N=150)
		Ananthapur (n ₁ = 50)	Warangal (n ₂ = 50)	Visakhapatnam (n ₃ = 50)	
Would you like to revisit	Yes	50 (100%)	49 (98%)	40 (80%)	139 (93%)
	No	0	1 (2%)	10 (20%)	11 (7%)
Will you recommend the service to other members	Yes	50 (100%)	50 (100%)	50 (100%)	150 (100%)

With regard to the satisfaction of services 86 people (i.e. 57% of the exit interviews) rated the services as a “good” service, 60 rated it (i.e. 40%) as “excellent”, and only one person rated it as “poor”.

Table 8.16: Satisfaction in Exit interviews of users of FDHS services.

		District Name			Total (N=150)
		Ananthapur (n ₁ = 50)	Warangal (n ₂ = 50)	Visakhapatnam (n ₃ = 50)	
Satisfaction – FDHS services	Poor	0	1 (2%)	0	1 (1%)
	Good	37 (74%)	14 (28%)	35 (70%)	86 (57%)
	Excellent	10 (20%)	35 (70%)	15 (30%)	60 (40%)
	Can't Say	3 (6%)	0	0	3 (2%)
Satisfaction- behaviour of FDHS van staff	Good	37 (74%)	11 (22%)	48 (96%)	96 (64%)
	Excellent	13 (26%)	39 (78%)	2 (4%)	54 (36%)

8.8 Perspective of RMP

RMPs, as they are known locally in the rural and tribal areas of AP, are unqualified and unauthorized practitioners. Many have worked as compounders or non specific assistants in medical facilities in either public or private sector for few years and then have started practicing independently. There is a large presence of RMP's in all the three study districts with particular concentration in villages that are 10-15 km away from the PHC.

The study team interviewed 30 RMP's. There was a large variation in the type of services and fees charged by them. In many of the villages, RMPs provide first-aid, and treat symptoms like cold, cough, fever, malaria, body pains, etc. Though RMPs claim to provide only first aid, many were observed to be prescribing medicines for chronic diseases, administering injectibles and even performing deliveries and minor procedures like putting sutures. In remote hamlets people also prefer going to RMP's for minor illness as they are easily accessible both in terms of availability and affordability. The RMPs charge 30-50 Rupees and are always available. The PHCs or any other public health facility is around 5-10 kilometres away from these villages and going there could mean a loss of day's work and wages. Private qualified doctors are preferred in case of emergency or any serious illness.

The average OP case load seen by RMPs in our sample was in the range of 10-60 patients per day. There exists a referral linkage between first contact RMPs and other RMPs who are much more experienced and from there a second referral to private hospitals especially for emergency and more serious cases. It was found that 12 out of 30 RMPs had referral tie-ups with both private clinics and diagnostic centres and 14 out of 30 had similar referral tie ups with pharmacy shops. Being a market related arrangement, and going by the general perception, there is a high likelihood that these linkages are cemented by different forms of "commission arrangements."

All the RMPs are aware of the FDHS service points around their area and many of them, who were trained by HMRI (50,000 RMPs practicing in 23 district of Andhra Pradesh were enrolled for the training programme), used to visit during the service days. It was found that 15 out of 30 RMPs interviewed, had good interaction with the HMRI staff, especially the additional district coordinators and they also give information to FDHS van staff about the chronic cases, especially, hypertension and diabetes cases. According to them patients seeking treatment from FDHS, are not visiting the RMPs for referral care and are either going to public hospitals or to other private hospitals. All the RMP's interviewed were of the opinion that FDHS vans are beneficial for the rural people and has improved the access to health care services.

Training of RMP's formed the third component of HMRI. The training focused on all the basic skills of identifying the syndromic and symptomatic illnesses, risk-identification and referral and in first-aid and management of chronic ailments. The training was for one year and RMP's were to be certified through an examination by the AP Paramedical Board as Community Paramedics. The training was planned by State Para Medical Board (SPMB) comprises of theory classes for 180 hours and distance education of 960 hours. This theory is imparted by government doctors working in government hospitals. The actual design of the syllabus and the organisation of the classes is by a Another 360 hrs of learning was planned in hospitals and public health centres in the same area where RMP's practice and hands on training in FDHS for 52 hours. As per HMRI estimates, of an estimated 1.25 lakh RMPs in the state about 50,000 (40%) RMPs were enrolled for the training programme.

However, even the first batch of RMPs never completed the training programme and none of them got certified as community paramedics. The training programmes began in 2009 and they

were closed in December 2010. There were many factors behind the closure. What training programmes took place was very varied in quality, with difficulty of even ensuring regular attendance being a problem. Conduct of examinations and readiness to face it was also a problem. The training was a load of work reluctantly taken on by implementers and at the first signs of the programme running down, this component ceased to function. It is worth looking into whether internal contradictions and issues were making this component difficult even without the closure of the programme. It is possible that the main gain of this training was solidarity between the RMPs and the FDHS programme, and though imparting of skills and certification was the stated goal, the latter did not have much chance of success.

8.9 Cost of HMRI FDHS Services

Based on the detailed SOE submitted by HMRI to the department of health (for reimbursement of 104 services, as per the PPP MOU) for the year 2009-10, total cost of HMRI-FDHS (Fixed Day Health Services), i.e. the mobile clinics, was approximately Rs. 88 crores, of which Rs. 86 crores was operating cost and approximately Rs.2 crores were capital cost. This is for 475 vehicles. The detailed break-up of the expenditures of FDHS operations is given in table 8.17 below.

Table 8.17: Break up of FDHS costs (2009-10)

Expenditure Head	Total Expenditure – Annual (Rs. Lakhs)	Per vehicle expenditure – Annual (Rs. Lakhs)	Per vehicle expenditure – Monthly (Rs. Lakhs)
A. Capital cost			
1. Vehicle purchase & refurbishment *	10,035.43	26.76**	---
2. Other capex (parking shades, computers, etc.)	188.86	---	---
(A) Total Capital expenses	10,224.29	26.76	---
B. Operating cost (for 475 vehicles)			
1. Salary & wages	5,780.00	12.17	1.01
2. Drugs & medicines***	0.44	---	---
3. Lab diagnostics & consumables	228.48	0.48	0.04
4. Vehicle fuel & maintenance	786.16	1.66	0.14
5. Training	4.57	0.01	---
6. Other administrative expenses	773.13	1.63	0.14
(B) Total Operating expenses	7572.18	15.95	1.33

Source: SOE submitted by HMRI to GoAP for FDHS (2009-10)

* Based on budgeted amount, as per the FDHS MOU, as it did not figure in the SOE for 2009-10.

** Calculated for 375 vehicles, as 100 vehicles were already operating under FDHS when this MOU came into effect. This being capital (non-recurrent) cost, is not an annualised cost.

*** cost of medicines are not shown as they are provided in kind and difficult to quantify.

As can be seen from the above table, one FDHS vehicle costs around Rs. 27 lakhs. Assuming a 5-year life for the vehicles, it turns out to be Rs. 5.35 lakhs per year (per vehicle). These are all vehicles of the LCV category, Swaraj Mazda- 1.5 tons- and given a larger, higher body than is usually made for an ambulance. Apart from the one time capital cost, the running cost is approximately Rs. 15.95 lakhs per vehicle per year, or Rs. 1.33 lakhs per month (per vehicle). So, in totality, the cost of such mobile vans turns out to be Rs.21.30 lakhs per year, or around Rs.1.07 crores per vehicle for a 5-year project period.

The negligible expenditure on drugs and medicines shown in table 8.17 above is misleading. FDHS dispenses medicines to the patients (both at FDHS sites and also in the PHCs), but these are supplied in-kind by the district health administration to HMRI and so no financial transaction is recorded for the drugs and medicines. Hence, the expenditure shown as incurred by HMRI on consumables almost exclusively covers lab reagents and related consumables. Of the operating cost, almost two-thirds (67%) is accounted for by salary cost, barely one-tenth (10%) is vehicle operating costs (fuel and maintenance). So, FDHS seems to be very human resource intensive scheme.

Considering the annual cost (capex+opex) of Rs.21.30 lakhs per FDHS van per year (as discussed above), the total annual FDHS cost for 475 vehicles turns out to be Rs. 101.17 crores. As shown in table 7.1, the monthly OPD per vehicle in Warangal is 2,085, in Anantpur 2,384 and in Vishakhapatnam it is 2,742. Taking the monthly operating cost per vehicle as Rs.1.33 lakhs (as per table 8.17), the unit cost turns out to be Rs.63.79 per visit in Warangal, Rs.55.79 per visit in Anantpur and Rs.48.50 per visit in Vishakhapatnam. These exclude the cost of drugs as they are supplied in kind by the public health system. One may keep in mind that a monthly supply of anti-hypertensives could average Rs 50 and anti-diabetes could be much higher- as much as Rs 400 per month. It may be noted that these OPD figures are as reported by HMRI and also includes the school health program. Thus actual cost per OPD visit to FDHS (excluding school health) is likely to be higher than what is estimated here.

The Government of Andhra Pradesh's annual expenditure on the primary health care is Rs 2031 crores in 2008-09. The annual expenditure on HMRI is Rs 188 crores- or 9% of the budget- excluding the drugs cost and the second ANM costs of the system. This can be compared to what is the total amount the state spends on drugs at all levels including the tertiary care level. The question is only whether we are getting value in terms of health outcomes for this money spent and whether the savings we make in the form of delivery of services were better spent on more drugs and consumable reached more efficiently to these sections who are the current users of the HMIS-FDHS.

9. Discussions & Conclusions

The opening question we have in any evaluation of a health programme is - what is the programme theory underlying the programme. What were the intended outcomes, and in this particular context, how are various mechanisms that constitute the mobile medical unit expected to lead to these outcomes. It is only with clarity on this that we can set out to discuss the

findings. What we also know from evaluation theory, is that often there could be implicit programme theories co-existing with explicit ones.

- a. The first and simplest programme theory would state: “Mobile Medical Units reach areas where it is difficult to establish fixed facility based services- because doctors and nurses find it difficult to live and stay there or because there are not enough human resources to provide fixed services on a daily basis or because these hamlets are too small to establish fixed services.” In such a theory it is understood that the care provided will have limitations. The two main limitations would be because daily or weekly follow up is not possible, and because immediate availability for both relief from symptoms and for management of serious illness is not available. Still something is better than nothing- and when the MMU reaches, some services like antenatal care and immunisation which can be done in periodic but low frequency visits or monthly drugs in chronic case can be provided. Also chronic illness – not serious enough to force them to lose a day’s wage and travel, but with potential risks, can be detected early and brought under care.
- b. A second programme theory would state that “ though basic care is made available by nurses and para-medicals and community health workers- certain dimensions of care requiring more professional skills- of a doctor or specialist- or requiring higher level of diagnostics, cannot be made available except through a monthly visit provided by the MMU. “ In this theory the MMU provides an important function as referral back up to peripheral workers for all non emergency situations- both in terms of consultation and in terms of diagnostics that is required. In this theory follow up is not a problem, nor even relief from immediate symptoms and treatment for minor illness, or regular drug dispensation, since all of these can be taken care of by the frontline workers. This clearly recognises the main goal as being accessibility to higher order skills/equipment as the critical component being addressed. This theory believes that many of the problems that the poor face are not trivial or to be trivialised and a good arrangement for a visiting referral is valuable.
- c. A third programme theory posits that primary health care as provided by the sub-center and the PHC does not work. It is bureaucratically burdened, unresponsive to needs with poorly motivated workers providing poor quality of care. An alternative would be to build a business enterprise model – or social enterprise model- where primary health care could be outsourced to a health management agency (like HMRI) which would use MMUs to reach out to the field to provide outreach services. This would need a level below level of care below it – could be provided by a combination of ASHA, ANM and RMP. A specialist and medical level above it could be provided by linkages with available clinics- private or public and in the future-present telemedicine – both visual and telephonic - in the HIHL mode- and electronic medical records would also come in, in a big way to provide access to the specialist. Then this alternative model would be complete. The mobile clinic is not mandatory in these social enterprise models- they are only way of entering into this form of organisation of primary health care.

Each of these theories has their proponents, adherents and oppositions. Each have own pros and cons. More important each theory leads to a different design. In the first variant a light

vehicle providing transport for a paramedical team with a strong CHW programme linkage is sought. In the second we need doctors and specialists and heavy diagnostics. In the third we need a different form of linkages altogether and a structure parallel to , rather than convergent with the public health system.

There are very good NGO organised examples of all three of these approaches and even good government run or PPP examples of the first two. But unfortunately, due to a lack of clarity compounded by having to reconcile different perceptions and pressures, state health systems could land up getting an irrational mix of these in the design. Thus typically one could have a large vehicle loaded with the most advanced diagnostics and having to be managed by paramedics with no skills to do so and no connectivity for telemedicine options. A study by IIT Madras² in Tamil Nadu and Orissa also hints at positioning of MMUs in the first programme theory (in terms of coverage and services) but having overlaps with the second programme theory (in terms of staffing and equipment). In both Tamil Nadu and Orissa, the coverage included from far flung areas that are normally not reached by existing health facilities with a team of doctors and other support staff. But the frequency of visit (at a particular site) was once in a month or two months, and lab test facilities were also very limited and they were spending 2-3 hours per site with an average of 3 minutes contact with patients/beneficiaries on an average (85% respondents said doctors were available in the MMU and 95% reported availability of medicines in the MMUs). Thus, these MMUs were trying to provide PHC level care to patients/beneficiaries in the “twilight zone” of existing PHCs but falling short on quality of care (because of high time gap between contact and low follow-up).

Thinking and articulating in terms of “programme theory” of any proposed programme would help avoid these pitfalls. The recommendation that evaluation is planned for at the very outset of any programme is also meant to address this problem.

The programme theory of the FDHS is a curious mix of all three of the above. And this is very likely to be so due to the management having had to respond to changing political visions and expectations of the programme. We could advance a tentative hypothesis- that it began with a vision close the third programme theory, but with problems in financing and changing expectations projected itself as close to the second theory- but in practice finding that difficult to achieve had finally found a niche as a service provider for providing regular follow up care in elderly chronic non communicable disease- and diagnostic services for ante-natal care. This is really a programme theory 1 function- except that sub-centers usually provide only RCH care and miss out completely on non communicable disease- which is the gap HMRI located and has filled.

There is one interesting spin in the HMRI programme theory. This is the notion of satellite villages or as was once known in public health literature of the sixties and early seventies- the twilight zones of PHC care. Long back there was an understanding that the density of care seekers in a given population is roughly inversely proportional to distance from it. This simply

² “Access to health services in under privileged areas: A case study of mobile health units in Tamil Nadu and Orissa” by IIT Madras (under the DFID funded Consortium for Research on Equitable Health Systems), October 2008

means that most of the care-seekers are those who live very close to it. Proximity and affordability are thus the advantages that the FDHS offers. It is tempting to read this as validated by the findings that show that most of those coming are living within a km of the service point and because they declare proximity and costs as influencing their decision. This is also the case in other states, as the IIT Madras study reported MMU users from within one kilometre both in Tamil Nadu and Orissa. However we must consider alternative explanations and alternative scenarios of how these services could have been provided more cost effectively. For example in minor illness, both RMP and sub-center rate much higher as proximal providers. If the anti-hypertensive drugs and anti-diabetic drugs were available in the sub-center or any trained paramedic, and if screening was done by low cost electronic gadgets, would the mobile unit be unnecessary.

Also there is another problem in seeing FDHS as some form of the first programme theory. In the Agency area³ (these are the tribal mandals) the population is scattered and there are many small habitations (500-100 people). This population is not covered by FDHS. This is evident from the fact that Visakhapatnam is having the largest population (among the three study districts) but covers the least number of people among the three (see table 6.1). Also there are many difficult to access areas in this region as the terrain is hilly, roads are either very narrow (not wider than a foot path) or there are no roads at all. For reaching some areas one has to walk across hills to reach the village. In such conditions the vans of FDHS cannot reach many areas and hence lots of villages remain uncovered and patients unattended or untreated. The PHC MO of Dumbriguda Block, expressed this as a problem which cannot be solved with the existing model of FDHS. The PHC MO opined that there should be a different strategy when plans or policies are made for the Agency area, taking into consideration the geographical and climatic conditions. Perhaps the solution would have been to opt for a different model here, which focuses on reaching the outlying areas- but the one size fits all model has been a problem.

Within this understanding of programme theories we proceed to discuss the findings under four headings – (1) Operations and services, (2) Costs, (3) Monitoring and control, and (4) Integrating within district health systems.

9.1 FDHS Operations & Services

1. The FDHS van is providing services to pregnant women. The main service provided is antenatal care. The absence of post natal care is worrying. In antenatal care the USP is the focus on weight, height, BP and blood for anemia measurements. These are currently under-performed in the sub-center and the availability of the lab tests makes for

³ The Agency Division consists of the hilly regions covered by the Eastern Ghats. Sankaram Forest block topping with 1615 metres embraces the Mandals of Paderu, G. Madugula, Pedabayalu, Munchingput, Hukumpeta, Dumbriguda, Araku Valley, Ananthagiri, Chinthapalli, G.K. Veedhi, and Koyyuru erstwhile Paderu, Araku Valley and Chinthapalli taluks in entirety.

(Source: <http://visakhapatnam.nic.in/district-profile.html>).

a difference. If the FDHS had also undertaken testing for VDRL, HIV, blood groups, urine tests for sugar, and proteins and in addition there was an effort to find and manage complicated cases this would put it in line with programme theory 2. But there is no doctor in place, and the diagnostics are not above what is already available in the sub-center. There is thus no supplementation- only substitution of services. Though presence of ANMs often encourages communication between the systems- there is no planned sharing of data, and no decrease in burden of work of the ANM due to this. The trend to be parallel is thus high. The management of complications- especially for severe anemia are weak or nonexistent- and PHCs do not report this to be a focus.

2. The FDHS van is not providing immunisation. Nor is immunisation services and the VHND brought to converge with the FDHS. This is an opportunity lost. The calendars of the two should overlap. There cannot be a distribution of areas between FDHS by MMU and VHNDs by ANM since there is no immunisation. At some point of the design, a cold chain step within the van was envisaged- but not operationalised. What is more worrying is the failure to attract any children for nutrition or anemia problems? These are part of the contract. Or why are no children seen even for minor illness. Does it reach newborns at all. The FDHS sites are children free- how did this happen? This finding may be taken with caution and a larger data set be studied. Infant mortality in rural Andhra Pradesh is a high priority- its levels equal that of many of the EAG states.
3. The FDHS is providing two manners of care for a limited list of four chronic diseases and within this actively for two. Hypertension and diabetes. This is as per the contract. One of two services is an active programme of case detection- using RMPs and ANMs and ASHAs to bring in cases and opportunistic screening of all those who come. The other is after the diagnosis is confirmed by the doctor, a regular supply of drugs dispensed once a month in the service point. It is worth noting that though TB follows the same logic, neither is TB being detected nor even drugs provided in the FDHS. Possibly the existing DOTS provider is a more effective and efficient option. But for hypertension and diabetes- if FDHS does not provide it free of cost, the elderly would have nowhere else to go. This is a useful supplementation of the sub-centers current activity and one must consider why a regular sub-center especially if it has two ANMs cannot undertake this more regularly. FDHS is treating a lot of cases of Epilepsy and Asthma. This list however is small. There are other diseases especially mental health or screening for cancer cervix and breast that could be included in such care provision- but this is where the programme rests.
4. There are two problems with this niche role in the follow up of chronic non communicable disease. Firstly there is no established protocol based active consultation after the first one is made. Even the HIHL is not leveraged adequately for this purpose. Same drugs are prescribed even when blood sugar levels or blood pressure levels are seen to be fluctuating. The electronic back up has not happened. The other problem is that since the drugs are part of the free supply from the government system, there are the usual issues of drug logistics and frequent stock outs of these essential drugs in the mobile van.
5. In the Tamilnadu mobile van experience, the presence of a doctor in the van makes the trip for diagnosis to the PHC before start of treatment for the non communicable disease unnecessary. It also means that the follow up care is provided by the ANM or ASHA, and

if there is any change to be made the doctor in his next visit is available for consultation. This is consistent with programme theory 2. But Andhra FDHS has not visualised this. Andhra visualises RMPs detecting the case, referring it to the MMU and then it getting confirmed here and referred upward to the higher facility- public or private. It has situated the MMU uncomfortably between community level care and primary health center level care and clearly kept it below secondary care. The presence of only paramedical professional in the FDHS vans means that HMRI mobile vans are basically functioning as screening and drug dispensing units with some very basic sub-center level laboratory tests. It also implies that patients necessarily need to visit the PHCs to get the medicines prescribed by a qualified doctor. But, the whole theory of FDHS sites rested on these villages being in a twilight zone with difficult to access PHCs because of distance factor. Not surprisingly there is an increasing demand for a doctor in FDHS from community members as well as the other service providers, especially doctors (government and private).

6. In minor illness and symptomatic care the FDHS is a very low frequency participant- the last and least amongst all available providers of care.

9.2 Cost of FDHS

The unit costs analysis of FDHS (as discussed in section 7.9) shows that it is Rs 72.42 per OP visit in one district, Rs 63.34 in the second and Rs 55.07 in the third district sampled. This is excluding drugs and some degree of under-estimation due to some school health subjects getting included in OP costs. The services provides is a limited package of ANC and screening (and medication) of hypertension and diabetes cases, once a month. This leaves out a lot of health problems that people are faced with. Those missed opportunities might be the real concern if we want to integrate FDHS “cost-effectively” in a CHN cluster.

Also, as the FDHS vans are practically functioning only as primary screening and drug dispensing vehicle, a capital cost of approximately Rs.27 lakhs per vehicle seems to be on the higher side (this is more than an Advanced Life Support ambulance which costs around Rs.25 lakhs). The operating costs of around Rs.1.51 lakhs per month per vehicle, also seems to be on the higher side, especially keeping in mind that it does not include the cost of medicines dispensed, and also that it does not include the provision of a qualified doctor in the van. This is double the operating cost of a well equipped and supplied ambulance (as under EMRI ambulance services, which cost around Rs.1 lakh per month, per ambulance). Other studies on cost of providing outreach services through mobile medical units, especially one conducted by AIIMS⁴, also show the FDHS cost, especially the capex, is on the higher side.

⁴ “Provider and Consumer Cost of the Urban Health Programme” by Department of Community Medicine, AIIMS, New Delhi (2009) estimated that the mobile units run by AIIMS for outreach services in rural and peri-urban Delhi costs Rs. 5.51 lakhs as capital cost of vehicles and 74.24 lakhs per year, or Rs.6.18 lakhs per month per vehicle. This opex includes availability of 4-5 doctors and specialists from AIIMS and full cost of medicines provided through these vehicles.

Regarding the number of staff in FDHS van, it seems that there is no need of seven people looking at the work responsibilities handled by them. The work done by three ANMs can be done by a single ANM. Also there is no requirement of a pharmacist as only drug distribution is done through FDHS. If number of staff members per van is reduced, the differential number can be used in the additional or new vehicles, to keep the operating cost down. Moreover the OP load of FDHS is also not very high, on an average there are 60-100 patients coming to FDHS over a span of 4 hours. In addition to this some more responsibilities can be given to ASHA when she is at the site of FDHS. Since it is once-in-a-month job for the ASHAs it should not overburden their work load.

Looking at the cost composition of the opex, two-thirds of which constitute salary costs, it seems that there is scope of expanding the coverage of FDHS vans and thereby further reducing the unit costs. But, approximately 60% of the salary cost is fixed per van (each van having 7 staff and ASHAs at the sites, costing Rs. 60,520 per month per van, or Rs. 7,26,240 per year per van). This means only 40% of the salary cost is fixed (will not change with increase in number of vehicles). Hence, any increase in number of vehicles for increasing coverage would increase the unit cost. If, as popularly demanded, doctor is also included in the van, the cost will increase further. Hence the “economies of scale” will not apply in this case.

The cost effectiveness of this approach would need to be studied further and compared with other options or ways of organising these services. First we would need to agree on what health outcomes are expected, how these would be measured. And then perhaps by increasing the package of services provided and making it fit into clear gaps in the public health system, generate more value for the money spent. This programme accounts for about 9 to 10% of the total primary health care budget without counting in the drugs costs – whereas in comparison the entire drug budget of the state health department is also about the same- and the latter includes drugs costs at all levels. The question that arises is - are there more efficient ways of reaching the drugs and these services to the current users than the HMRI-FDHS approach?

9.3 FDHS: Monitoring & Contract Management

FDHS is technology enabled service collecting comprehensive information about the patients registering with them including their demographic characteristics, patient history, drug prescription and diagnostics. They also have many data formats for chronic disease patients, ANC's, children, etc.

But not only the gadgets were found to be non-functional, the degree of data sharing was also very low at the PHC and the district level. Consolidated reports are submitted at the district level but no information on the beneficiaries are shared anywhere with the public health system. This weakens the follow up systems especially for the chronic disease patients. Perhaps both sides would feel let down on this aspect. The problem often is of translating such information to a form and content where it is readily usable by the other.

Further, although in formal terms the ownership of data (including patient profiles) lies with AP health department, the database is physically in the possession of HMRI and health officials at state, district or PHC level have not seen the database. HMRI does share the aggregate data (in terms of number of cases seen, by diagnosis) along with monthly SOE and bills for reimbursement. What is shared is in a form that (as reported by the district and state health officials) is too voluminous and could not be properly analysed.

Biometric markers are not functioning at the field level, and it is likely that newly registered cases and follow up cases are confused as prior visit often rests on the patient having and bringing along the earlier OPD slip.

No schedule of monitoring of FDHS scheme at PHC or district level is established. There is a lack of clinical and administrative supervision of the activities of the van staff, especially drug prescription and dispensing practices, and as regards linkages with the RMP's and private doctors etc. Also, the drugs issued by FDHS comes from the central drug store and appropriate checks are needed to verify the drug registers of the FDHS staff and district drug ware house of FDHS.

The situation is further complicated by the fact that payments to HMRI, for FDHS scheme, is done on a reimbursement basis (against the annual budget as agreed upon in the MOU). It is not against any performance benchmark, like minimum number of cases to be seen, or referred to PHC, or to be dispensed medicines, or an indication of the case-mix to be necessarily handled on a monthly basis. There should be some benchmark of outputs for clearing the payments, on a monthly or quarterly basis. It is desirable that at least some proportion (say 20-25%) of the total project cost be paid on outputs basis (i.e. per OPD, or per case referred, etc.).

This is a generic problem of many PPPs. The institutional mechanisms of contract making and monitoring adherence to it, and cost of care and quality of care monitoring is very weak and payments have no relationship to performance. Though HMRI has been a very active service provider, there is no mechanism of ensuring that its outputs are in concordance with the expectations as per the contract.

9.4 Integration with District Health System

The Government of Andhra Pradesh had conceived Community Health and Nutrition Clusters (CHNCs), which will integrate the Sub Centres and PHCs, in a two or three mandals as a cluster (Block equivalent in the state). This provides an opportunity to rethink the FDHS scheme and integrate this scheme better with the rest of the district health system.

The duplications of service provision are:

- a) Antenatal services.
- b) FDHS and VHND: ASHA and ANM are doing thier routine activities and, after the introduction of FDHS scheme, they are attending and facilitating this also without reducing the same facilitation and service deliveyr work in a separate VHND.

Non provision of services due to poor integration is in areas like

- c) The elderly not in twilight villages and not in service points would not get access to the monthly drugs- since such a provision is not available in the PHC/CHC.
- d) Immunisation and child care and adolescent care not reaching the FDHS sites.

Issues addressed weakly by both systems are

- a) School health programme,
- b) PNC tracking is weak.
- c) Management of complications – in pregnancy or in chronic disease.

The problems of integration of information and data sharing have already been described.

10. Developments in HMRI.

Even as data collection was nearing completion, the workers of HMRI went on strike demanding regularisation. The dissatisfaction about the programme amongst different sections also mounted. In this context, with one order the entire HMRI was taken over by the government of Andhra Pradesh as a direct operation on 6th of December ,2010. By further GOs, all MOUs with HMRI became redundant with effect from September 1st, 2011. In terms of this study it did not change our mandate. At any rate, as a 95% government financed programme, HMRI was essentially a government programme outsourced with a management contract, not a partnership. It neither had a reasonable share of the investment or of the risk or stakes in the outcomes. What Satyam/HMRI did bring in was a vision and a management experience. This vision was expressed in the design of the programme.

The government of Andhra Pradesh had already decided to re-structure the HMRI. The key question is – in what way to do so. Now that it was directly consensus on change would be in some ways easier to achieve- but change on the ground would be more difficult. Yet there are 475 vans out there, and considerable manpower in place and a large expectation. How does the state move forward?

11. Recommendations:

1. Map out two contexts. The first context is the hard to reach areas- the agency areas – the areas where it is difficult to establish and maintain a fixed facility- sub-center or even PHC. Or at least where it has been difficult to conduct/access a regular VHND due to access issues. And the second context is the area where PHC and CHC and sub-centers are all accessible by road and public transport.
2. In the first context design the MMU in consistence with programme theory 1- the MMU for the hard to reach areas. Bring the cold chain into the vehicle and use it for delivery of all the services as delivered in a standard VHND. The two ANMs would be stationed at the sub-center – but come to the VHND from there. As a default- considering that they

anyway don't stay – we could only insist on their presence in the VHND. Between the two ANMs and the MMU staff there is a VHND for the van on every one of five days of the week- and they cover areas where currently the VHNDs are difficult to reach. Given the ratio between vans and such required VHND sites- one may have to settle for a van visit once in three months also. But these would be a small minority. One may think of more vans, but smaller, more agile and cheaper vans.

3. In the second context, the aim should be to provide a referral service with a doctor for those PHCs which are without doctors and diagnostics and therefore poorly functional. Even where the PHC has a doctor, the arrival of a specialist or a better trained doctor with better equipment and visibility would help. The ASHAs, ANMs and even RMPs if they are willing, would do preliminary screening or bring in suspected cases of chronic disease as well as non emergency complications in pregnancy and post partum period and in the newborn and sick child, and chronic cases on treatment. The doctor would have a specialist back up with a tele-link. The VHND would be fused with this wherever possible - but it is not necessary. In pregnancy care higher level blood tests would also be available. In child nutrition all severe malnutrition would necessarily be seen and followed up till normalisation. Testing for anaemia etc. on a much larger scale could be envisaged. Screening for cancers and similar management protocols for mental health or disabilities could be added on.
4. The administrative and financial control of both FDHS and the regular system- the parking space control so to speak would be with the block officer – the CHNC officer in charge. The data from the systems would merge there and the state must go in for a HMIS system with assured interoperability so that these systems can talk to each other- and even the same patient record, not to speak of aggregate numbers, can be shared between the providers in the two systems.
5. There are problems with each of these options. The single most important problem for the second context is getting a doctor on to the van. But by allowing a team of doctors- to do once a week duty on the van- and ensuring that they are back in the same villages each month, the public sector could overcome the problem. By a much higher level of training in the first context, the paramedical can provide a higher range and quality of services.
6. Needless to say, this would mark a big commitment to address at least the four main non communicable diseases – hypertension, diabetes, epilepsy and asthma- as universally as we are doing currently for pregnancy or tuberculosis. Go after the cases, detect everyone, get the tests done, put the follow up in place, ensure the flow of drugs, ensure a new hierarchy of indicators by which we can monitor achieving universal coverage and above all by appropriate differential financing. One of the problems of the FDHS is introducing a wide coverage for four diseases at some intermediate level of the care pyramid without making all the links necessary for ensuring outcomes. We should be able to state that the numbers of cardiovascular related deaths have decreased. Similarly mental health or cancer screening or disability care can be added onto the programme only in a context of opening up comprehensive district level programmes in this area.

7. This study has not focussed much on the call center. At any rate this is a supplementary service, which is of relatively much less costs. It would be useful to invest in some operational research to find out whether this too has space for optimisation of outcomes.

12. Annexure:

Annexure: I - Details of Field Visit for the Qualitative Study

DATE	WARANGAL
Friday, October 8, 2010	· DMHO office (Warangal)
	<i>Meeting with Mr Srinivas Reddy DPMU-Warangal</i>
	· HMRI – District Office (Warangal)
	<i>Meeting with the DC, DDC and DE.</i>
Saturday, October 9, 2010	· Parking Place: Hanamkonda
	<i>Service Point 1: Madhapuram</i>
	<i>Service Point 2: Pedha thanda</i>
Sunday, October 10, 2010	· Parking Place: Pasra
	<i>Service Point 1: Rajupeta</i>
	<i>Service Point 2: Ramachandranipeta</i>
Monday, October 11, 2010	· PHC – Inavole
	<i>Meeting with Dr Ramakrishna Reddy (MO)</i>
	· PHC – Wardhanapet
	<i>Meeting with Dr Wanaja (MO)</i>
Monday, October 12, 2010	· PHC – Parvathagiri
	<i>Meeting with Dr Narrothama (MO)</i>
	· HMRI District Office
	<i>Meeting with DDC and DE</i>
	VISAKHAPATNAM
Tuesday, October 13, 2010	· HMRI District Office
	<i>Meeting with the RC, DC, DDC and DE.</i>
	· DMHO Office
	<i>Meeting with Mr Jagdish Nanaji (DPMU Vizag)</i>
Wednesday, October 14, 2010	· PHC – Thalepalem
	<i>Meeting with Dr Lousy (MO)</i>
	<i>Interviews with ASHA/ANM/Pharmacist/LT</i>
	· PHC – Kasimkoda
	<i>Meeting with Dr Shirisha (MO)</i>
	<i>Interviews with ASHA/ANM/Pharmacist/LT</i>
Thursday, October 15, 2010	· Visit to SC – Theeda
	· PHC Revidi
	<i>Meeting with Dr Nirmala (MO)</i>
	· Two Service Point and one SC visited

Annexure: II-Details of Study Area for the Quantitative (Household) Survey

ANANTHAPUR										
Mandals	Village	ASHA	ANM	AWW	PHC M O	R M P	Pvt Provid er	House hold	HH Req.	Exit Intervi ew
Nalpalla	Ganganapalli							5	5	
B K Samudram	Rotarypuram				1			5	3	
Kambadur	Thimmapur	1	1	1		1		19	17	
	Piipionsapalli			1						
	Rampuram		1							
	Kambadur				1					
Kalayandurg	East Kodapalli							13	11	
	Kurlapalli		1							
	Muddinarayanipalli				1					
	Mallikarjunapalli					1				
Tadipatri	Chukkaluru Colony		1			1	1	18	19	
	Ganagadevipalli	1	1							
	Gangadevipalli									15
	Iguduru									5
	Chinnapolamedu									10
Hindupur	Muluguru	2	1	1		1		17	15	
Lepakshi	kaluru	2	1	3				15	13	
	Lepakshi				1	1				
Agali	Madudhi	1	1	1				11	9	
Madaksera	Gavadanahalli	1	1	1				9	7	
	Madaksera					2	1			
	Darapapalem	1								
	V Rangapuram	1								
	G V Pallem		1	1						
	Kallumari				1					
	Rolla UPHC				1					
Parigi	Danapuram	1								
	Kadiganahalli		1							
	Parigi				1	2				
	Sewamandir					1				
Uravakonda	Indravati								1	
Kuderu	Nagireddypallae									10
Dharmavaram	Chigichmarla									10
Narpala					1		2			
Beluguppa	Belluguppa (E. Kodipalli)				1					
Raphtadu	Raphtadu				1		1			
	TOTAL	11	11	9	10	10	5	112	100	50

Warangal										
Mandal	Village	ASHA	ANM	AWW	PHC MO	RMP	Pvt Provider	Household	HH Req.	Exit Interview
Duggondi	Venkatpura							3	3	
	Thogarrai		1							
	RFWC*				1					
Mangapet	Rajupeta	1	1					5	5	
Chityal	Vodthala							7	7	
	Jadalapeta	1	1	1		1				
	Odithala				1					
	Bavusingapalli					1				
Kuravi	Upparagudem	1	1			1		9	9	
Nellikudur	Narasimhulagudem	1				1		11	11	
	Nellikudur				1					
Maripeda	Chinnagudur	1	1	1		1	1	13	13	
	RFWC* (Maripeda)				1					
Narmetta	Veldanda	1	1	1				15	15	
Hasanparthy	Vangapahad			1		1		17	17	
	Vogapani	1	1							
	Seethampeta									10
	Birampalli					1				
	UPHC# (Hasanparthy)				1					
Kuravi	kuravi	1	1			1		19	19	
	Balapala				1					
Govindaraopet	Machchapur	1	1	1	1			1	1	
Narsampeta	Rajupeta	1	1			1				
	Banojipeta				1					
	Narsampeta					1				
Kothaguda	Gunedu									4
	Pegadapally									6
Mogulapallae	Rangapur									10
Dornakal	Mulakalapally									10
Devarupulla	Singarajupally									10
Jangaon	RFWC (Jangaon)				1		1			
Maddur	Ladnur				1					
Warangal							1			
Mehboobabad							2			
TOTAL		10	10	5	10	10	5	100	100	50

Viishakhapattanam										
Mandal	Village	ASHA	ANM	AWW	PHC MO	RMP	Pvt Provider	House hold	HH Req.	Exit Interview
Chintapallae	Buddidapadu							0	0	
	Krishnapuram	1								
	Kondavanchala		1							
	Bunyubayalu									10
	Gameli				1					
	Lambasinga				1					
G. Madugula	Pedalocheli	1	1					2	2	
Cheedikada	Vintipalem				1			5	5	
	Tunivalsa	1	1	1						
	Virahapuram					1				
Dhumriguda	Dhaturu		1		1	1		7	7	
	Gumpisaru	1		1						
Nakapallae	Nayampudi	1	1					9	9	
	Nakapallae					1				
	Godicherla				1					
Sabbavarm	Bangarammapalem	1	1	1			1	11	11	
	Aripaka					1				
	Gotivada					1				
	UPHC				1					
Anakapalli	Dibbapalem	1	1			1		14	13	
	kottavooru						1			
	Thummapala				1					
Chodavaram	Lakshmipuram	1	1	1		1	1	15	15	
	Chodavaram					1				
	Gavaravaram				1					
Nakapallae	Pedateernala	1	1	1		1		22	18	
Pendurthi	Chinnamushidiwada				1		1	20	20	
	Chintala Agraharam	1	1							
	Pendurthi					1	1			
S Rayavaram	Geddapalem									10
Devarapalli	Thanarappa									9
	Nagaiahpeta									1
Buchaiahpeta	Rajambhimavaram									10
Mungapakka	T Sirsapally									10
Payakaraopeta	Sreereampuram				1					
Total		10	10	5	10	10	5	105	100	50

Annex III: Check list of activities to be done through “HMRI FDHS” according to the MoU signed between HMRI and Government of Andhra Pradesh.

Services or Deliverables as per MoU	Functional Status as observed	Remarks
Pregnancy monitoring	√	ANC checkups are going on but PNC follow up is not happening
Child health monitoring	X	Activities like height and weight measurement to calculate BMI and comment on the nutritional status of the children were supposed to happen as reported by the DC of Warangal. But it is not happening as ANMs are not trained. Children are being screened for eye infections and skin diseases, which was reported but not observed during visits to service points.
Chronic Disease (CD) monitoring	√/X	Only screening of patients and dispensing of drugs is happening, but there is no follow up of CD cases.
Ensure universal immunization, and	X	Immunization is not done through FDHS.
Depute ANMs to FDHS van	√	3 ANMs per van are deputed to all the vehicles.
Depute ASHAs for supporting the work of FDHS	√	ASHAs are regularly visiting service points
Wide publicity of FDHS	√	
FDHS should provide		
<ul style="list-style-type: none"> • Medicines 	√	
<ul style="list-style-type: none"> • Vitamins 	X	No distribution of vitamins was observed
	X	No distribution of

<ul style="list-style-type: none"> Nutritional supplements Other medical supplies 		nutritional supplements was observed
	√	
Patient registration using biometric scanner and web camera to make a unique ID card with ID number and prepare a data base of CD patients and ANC cases in the entire state of AP	X	Annexure of MoUs shows that biometric scanners and web cameras have been procured. None of the biometric scanners or web cameras were working at place where the team visited.
Use of Television screen in the FDHS van for public health education and creating awareness among the rural population about public health related issues.	X	Annexure of MoUs shows that Televisions have been procured. Television use was only observed at one service point where the team visited with the DDC of Warangal district, in rest of the places use of TV was not observed.
Maintain register and records pertaining to <ul style="list-style-type: none"> 104-FDHS in general Users Activities Accounts 		
	√	
	√	
	√	
Generate monthly reports of <ul style="list-style-type: none"> Stock Consumption and balance of medicines Consumption and balance of Vitamins Consumption and balance of Other nutritional supplements Any medical supplies received from the GOAP and other Government sources 	√	
	√	
	X	
	X	
	√	
Data obtained is the sole property of GoAP and HMRI can be given the data only for the purpose of analysis.	-	Data is with the state Head Quarters of HMRI
Link the MMU with the 104 – Advise HIHL	X	
Wide publicity of “104 HIHL”	-	According to the data of household interviews

		conducted as a part of quantitative data collection; Only 3 out of 300 households were knowing about the “104 HIHL”
Make “104” free for callers	√	
Training RMPs	–	Training was started but not completed in any district (As reported by DC Warangal).

Annexure: IV - List of Drugs and consumable in “104-FDHS” van.

SL.No	List of Drugs
1	1% Gamma benzene Hexa Chloride lotion
2	Acetylsalicylic acid tab
3	Albendazole syrup
4	Albendazole tab
5	Alluminium Hydroxide Tablet
6	Amlodipine Tablet
7	Amoxicillin 250mg+28.5mg Clavulinic acid syrup 30ml bottle
8	Amoxyciline
9	Atenolol Tablet
10	Benzyl Benzoate Solution
11	Bisacodyle(Dulcolax) Tablet
12	Calcium lactate 300mg+ Vit D3 250 IU tab
13	Carbamazepinetab
14	Cetirizine Dihydrochloride
15	Ciprofloxacin
16	Ciprofloxacin Eye/Ear drops
17	Co-Trimaxazole(Pead) + (Trimethoprim sulphamethoxazole)-Syrup
18	Dicyclomine Hydrochloride tab
19	Domperidone tab
20	Doxicycline
21	Enalapril maleate Tablet
22	Erithromycine stearate Tab
23	Erythromycin
24	Ferrous sulphate 200mg+Folic acid 0.5mg
25	Framycetin Sulphate
26	Frusemide tablet
27	Furazolidin suspension
28	Gentamicin Eye/Ear Drops
29	Glimepiride
30	Glybenclamide Tablet
31	Glybenclamide Tablet
32	Iron + Folic acid Cap/Tab Carbonyl
33	Losartan
34	Metformin Tablet
35	Metronidazole Tablet
36	Multivitamin drops (Vit A,VitD,Vit B1,Vit B2,Vit B3,VitB5,VitB6 drops)
37	Oral Rehydration Salts Sachettes
38	Pantaprazone 40mg Substitute drug for Aluminium Hydroxide
39	Paracetamol Syrup 5ml

- 40 Paracetamol Tablet
- 41 Phenytoin sodium Tablet
- 42 Povidine Iodine Lotion
- 43 Pre & probiotic Capsules
- 44 Prednisilone Tab
- 45 salbutamol syrup
- 46 Salbutamol Tablet
- 47 Sodium Valproate Tablet
- 48 Theophylline 23mg+ Etophyline 77mg tab
- 49 Theophylline Tablet
- 50 Tinidazole Tab(film coated)
- 51 VIT B-Complex Tablet
- 52 Vitamin A& D Cap therapeutic
- 53 Whitfield Ointment

SL.No	List of Consumables
1	Sterile Blood Lancets Ethelene Oxide
2	Bio-Hazard Disposable Bags
3	Blood Collection Bottles Sterile With Red Cap
4	Urine Test Strips for Sugar (DIASTIX)
5	Blood Sugar Strips for Glucometer
6	N/10 HCL 500ml Bottles
7	Sodium Hydrochloride 500ml
8	Disposable Surgical Gloves 7" Latex 25 pairs
9	Pregnancy Test Kit, 25 Tests
10	Disposable Syringes
11	Surgical Spirit BP
12	Cotton
13	Urine Test Strips for Sugar & Protein (URISTIX)
14	Urine containers
15	Glass slides
16	face masks
17	Disposable Surgical Gloves 6" Latex 25 pairs
18	Talquist test

Source: HMRI

This report is based on a study undertaken by NHSRC at the request of the department of Health Government of Andhra Pradesh in October- December 2010. NHSRC is a technical support institution under the National Rural Health Mission with a mandate to respond to the technical assistance needs of states. The findings and views expressed in this report are of NHSRC and may not be construed as opinion of the department of health either at the state level or central level.