Innovation of Programme within NHM-
Revamped 104 Mobile Medical Unit (MMU) Services (Andhra Pradesh)

Background

The paper has been prepared as response to letter from Joint Secretary, Government of India, Ministry of Health and Family Welfare, letter no. V-11011/3/2021-NHMII dated 13th December 2021 by which call has been made to upload innovation within NHM on specified portal towards 8th National Summit on Good and Replicable Practices and Innovation in Public Health Care System in India.

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1. Introduction

Anantagiri a remote mandal/village in Visakhapatnam District of Andhra Pradesh has 1,522 population (as per 2011 census). One MMU is assigned to this mandal which covers 18 Village secretariats (A village secretariate = 1 village with around 3,000 population or 2 - 3 smaller villages) . There are no motorable roads to many villages from mandal headquarter. Mobile Medical Units (MMUs) ensures its services at the doorstep in true sense by reaching the households where the MMU vehicle cannot reach even if it demands walk for a mile.

Andhra Pradesh (AP) is the 7th largest state in terms of area and 10th largest in terms of population with its more than five crore population. Approximately 60% of its population reside in rural areas and 10% in the tribal areas. Healthcare accessibility and availability have been a challenge for significant proportion of rural and tribal population as they are in remote/forest/hilly geographical topography.

The state government has taken major initiatives for providing last mile access of health care to all the people of the state especially in the rural, tribal, vulnerable and under-served areas.

Mobile Medical Unit (MMU) services, an initiative under National Health Mission, is a unique beneficiary outreach programme aimed at providing free primary health care services through MMUs at the doorstep of beneficiaries especially in hard-to-reach areas through a fixed day route schedule.

2. Rationale to expand MMU services

Before July 2020, 292 MMUs were in operation to cover 3.2 crore rural and tribal population of the state, which was considerably less in number. These MMUs were allotted to AP after bifurcation of AP and Telangana in the year 2014. Based on the state population in the year 2007, 292 MMUs were allocated to 13 Districts of AP.

In the year 2020, Government of AP has come up with new initiative called revamped 104 MMU services and came up with the proposal of introducing new 656 MMUs to have one

MMU per mandal. It resulted into lower population coverage target per MMUs for better effectiveness, one MMU is catering to 48,000 population, clubbed with overall wider population coverage by significantly increasing number of MMUs.

The rationale to expand the services are appended below.

1. Significant population of remote/forest/hilly/hard-to-reach area were not able to be covered due to lesser number of MMUs
2. Significant corners of remote/forest/hilly/hard-to-reach areas were not getting covered by MMUs because of lack of motorable roads
3. More opportunity for mobilization given the presence of the ASHAs/ANMs in even very remote villages/hamlets, saving the MMU team's much time and energy in reaching those in need.
4. Increase in number of functional MMUs, allowing more opportunities for in-time referral to facilities at shorter distances.

3. Description of the expanded MMU services – 104

3.1. Objective of MMU services:

Improving equitable access and coverage with a set of preventive, promotive and curative health care services.

1) Improved access to inaccessible villages with better route planning of MMUs.
2) Improved awareness of NCDs and health seeking behavior.
3) Expanding the service package to include more comprehensives set of Health Care Services.
4) Improved referral services to the nearest PHC / CHC / Network Hospital.

3.2. Increase in MMU fleet size for better coverage

The revamped 104 MMU services started in the year of 2020 on 1st July with the overall objective of equitable access of primary health care services by introducing fleet of 656 MMUs @ 1 MMU per Mandal to address accessibility issue to the population residing at hard-to-reach area.

3.3. IT infrastructure of MMU

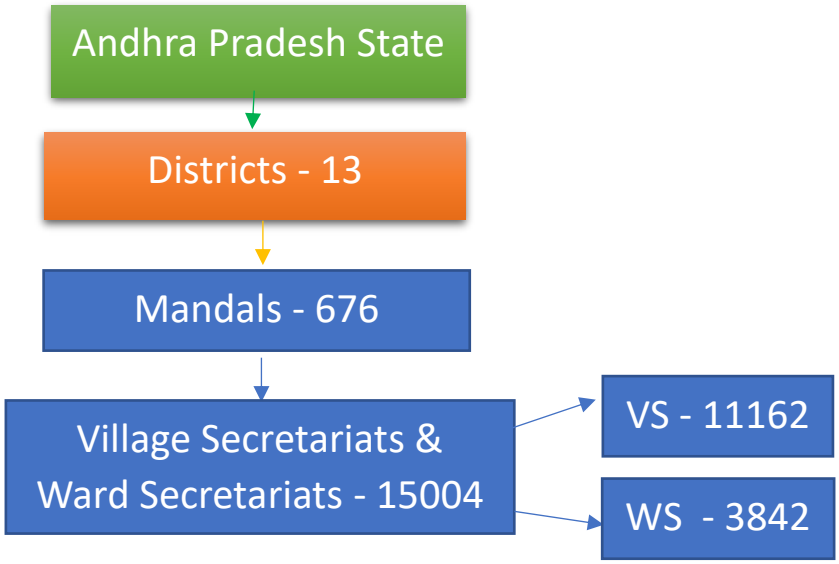
Each MMU is equipped with:

- Laptop, Dongle & Mobile Phone for Data entry purpose & uploading to the database.
- GPS for live tracking of the vehicle movement.

- Aadhar enabled biometric device for monitoring the MMU staff

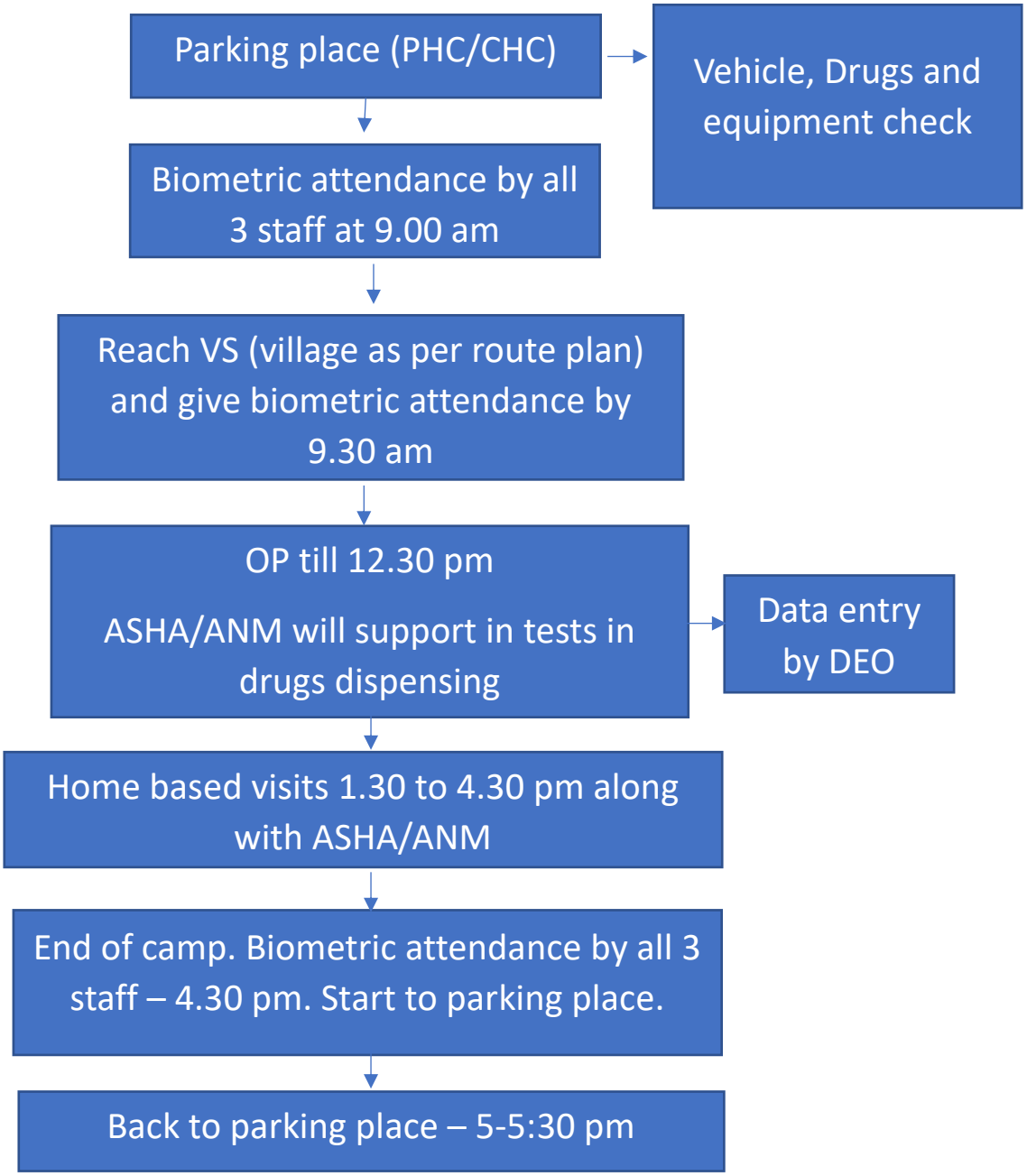
3.4. Coverage by MMUs

- The State of AP has 676 Mandals across 13 districts
- The average population of a Mandal is 60,000
- Each Mandal is further divided into village & Ward secretariats
- Each Mandal has a minimum of 2 PHCs or either a PHC and a CHC.
- A total of 15,004 secretariats are present (11,162 – Village Secretariats & 3,842 – Ward Secretariats)
- Each secretariat has a population of 3000 approximately

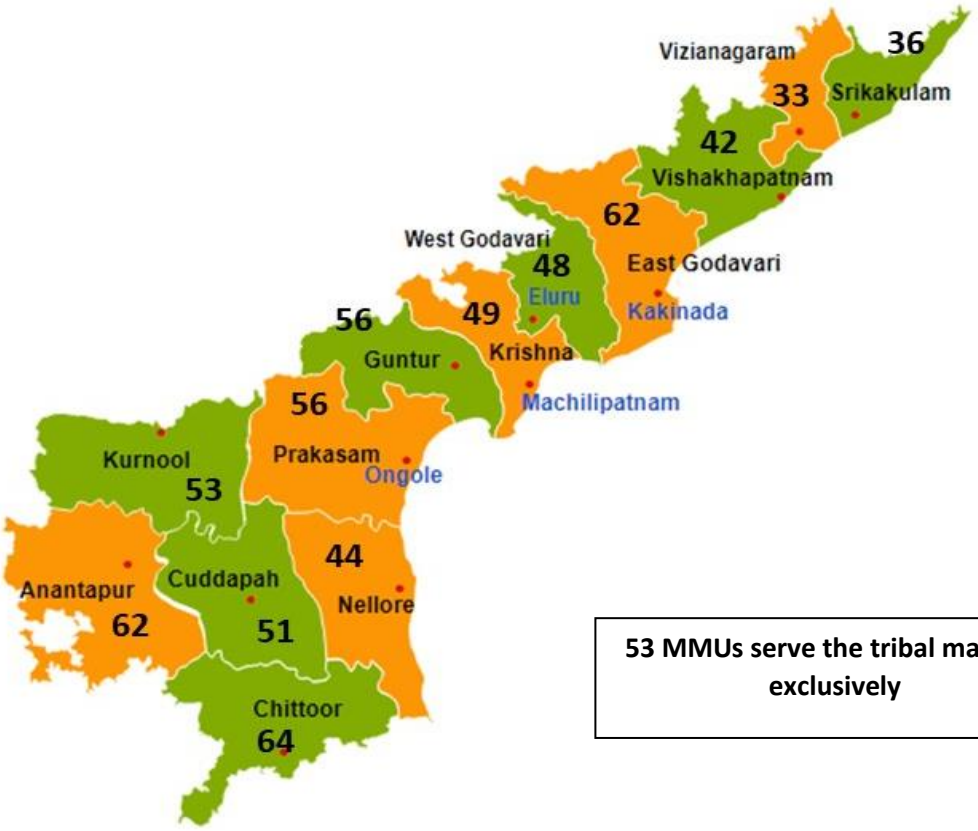


- All the 656 rural Mandals have been provided with MMUs
- All the Rural Village Secretariats are included in the plan
- PHC & Rural CHC containing Village Secretariats were excluded from the mapping
- A total of 9,906 Village Secretariats were covered with the existing 656 MMUs in 26 service days of a month

3.5. 104 MMU - Workflow



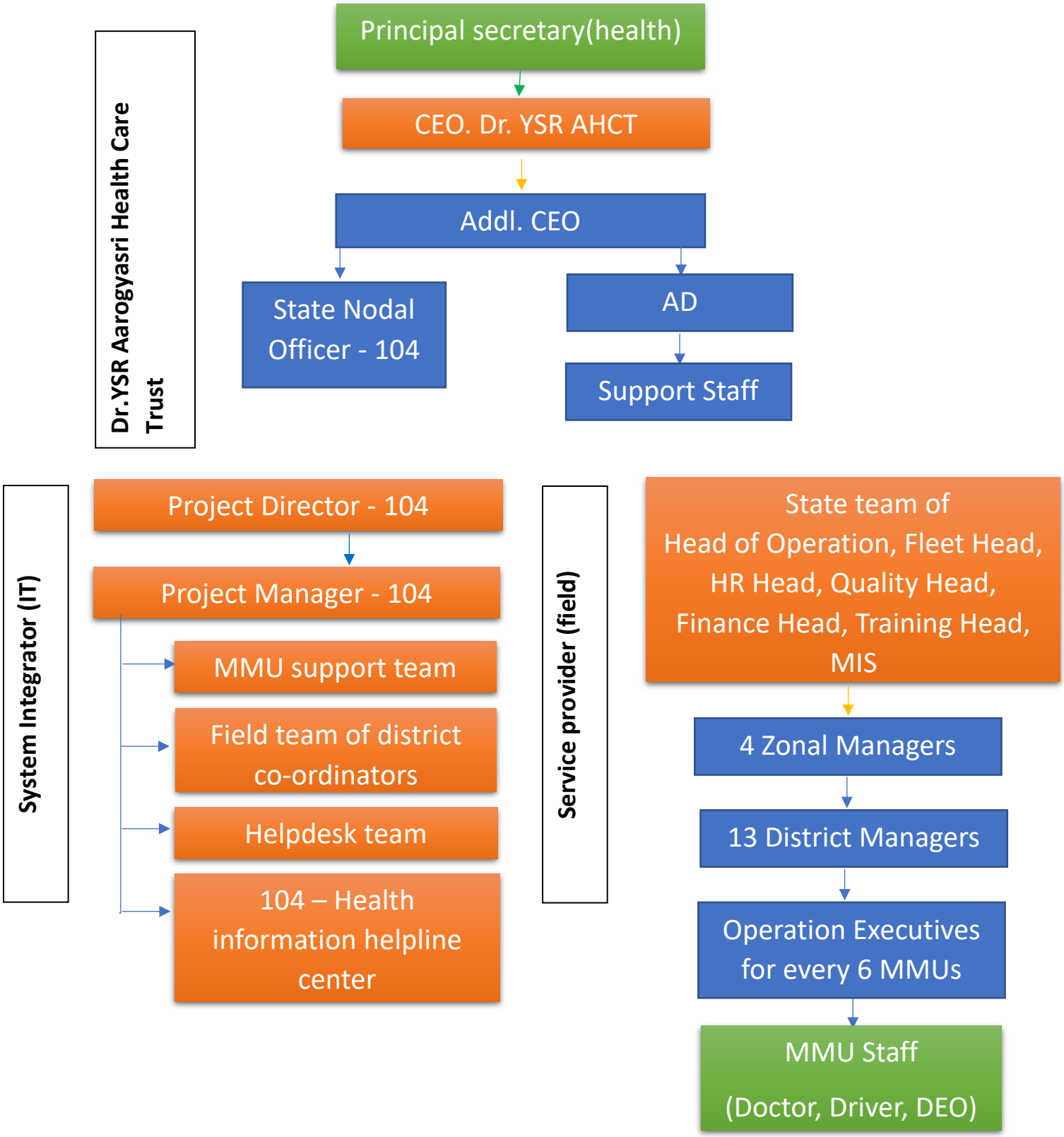
3.6. District-wise allotment of 104 MMUs:



53 MMUs serve the tribal mandals exclusively

4. Human Resources

104 MMU Services are being monitored by Dr. YSR Aarogyasri health care trust. M/S Aurobindo Emergency Medical Services is the service provider for managing the field activities. M/S Akshara is the system integrator for managing the IT related aspects.


Dr.YSR Aarogyasri Health Care Trust
Principal secretary(health)
CEO. Dr. YSR AHCT
Addl. CEO
State Nodal Officer - 104
AD
Support Staff
System Integrator (IT)
Project Director - 104
Project Manager - 104
MMU support team
Field team of district co-ordinators
Helpdesk team
104 – Health information helpline center
Service provider (field)
State team of Head of Operation, Fleet Head, HR Head, Quality Head, Finance Head, Training Head, MIS
4 Zonal Managers
13 District Managers
Operation Executives for every 6 MMUs
MMU Staff (Doctor, Driver, DEO)

5. Capacity building

Doctors:

- District level trainings for the doctors were provided by the DM&HOs and their team on various national health programmes being implemented by the state. (2 days induction training)
- Refresher trainings: 7 days training was given to all the doctors on the recent developments in the health programmes including Covid-19.
- More than 1000 doctors were given training in various training modules (Management of Covid -19 patients during medical camps, Management of NCD and CD patients, Management of ANC and PNC patients)

Data Entry Operators:

- Induction training on the IT application, Drugs and medical equipment for 2 days at District level
- 2 days On Job Training in MMU
- Refresher trainings monthly on the recent developments in the IT application.
- Over 700 DEOs have undergone induction and refresher training in the past one and half years.

Drivers:

- 4 days induction on 104 MMU program, Vehicle maintenance, safe driving skills, Preventive maintenance and records/documentation
- 2 days/annum refresher training on the fixed day schedules on developments in the program, vehicles maintenance, importance of MMC cleanliness and safe driving skills
- Over 700 Drivers have undergone induction and refresher training in the past one and half years

6. Evidence of effectiveness

S. No	Parameter	Naadu (Before)	Nedu (Present scenario)
1	**No. of Vehicles**	292	656@ 1 Per Mandal (All New)
2	**Coverage**	1 MMU per 81,381 population	1 MMU per 44,452 population
3	**Service delivery**	Hypertension, Diabetes and General OP only	20 Types of Services including all NCD & CD screening with 29 types of equipment including ECG.
4	**Drugs**	52	74
5	**Availability of Doctors**	Huge deficit	100% Availability with a buffer of 10%.
6	**DEO**	No Data Entry Operator	DEO available.
7	**Schedule**	▪ Per day two villages were scheduled to visit. ▪ Only 2 Hrs available per village ▪ No home-based visits & treatment ▪ No visits to Anganwadis and schools	▪ One Village secretariat/day ▪ Complete day availability ▪ Home based visits & treatment ▪ Visit to Anganwadis and schools
8	**Integration**	▪ No integration and coordination with the PHC	▪ Forward / backward linkages with PHC, Network Hospitals and Referrals
9	**Performance**	▪ 292 MMUs served ▪ 20,000 patients/ day, ▪ 6 Lakh patients/Month ▪ 72 Lakh patients /year	▪ 656 MMUs serving ▪ 40,560 patients per day ▪ 12.1 Lakh per/Month ▪ 1.45 Cr patients/ year

- Reach – maximum coverage approximately 88% village secretariates covered
- Care – continuous follow up and drugs distribution to NCD/ANC/CD patients
- Analysis has been done on the available one and half year data. Following are few observations:

- Beneficiaries till 26th Dec 21 – 1,06,69,817
- Average 33,000 beneficiaries (OP) everyday @50/MMC/day – as on date
- ANC patients – 3%
    a) Identification of high-risk pregnancies – 1,758
- Hypertensive patients – 25%
    a) Newly identified hypertension patients - 65239
- Diabetes patients – 20%
    a) Newly identified Diabetes patients – 36,164
- Patient referral – 20% of the OP was referred for further management

6.1. Performance of MMU:

Number of Mobile Medical units: 656 (@ One Per Mandal)

Performance till date:

a) Number of patients served	:	106,69,817 (1st July'20 – 26th Dec '21)
b) Average Number of patients	:	40 served per day per MMC
c) Investigations conducted	:	45,05,444
d) Total quantity of drugs dispensed	:	43,06,71,721
e) Home based Visits	:	8,75,270
f) New Hypertension cases diagnosed	:	65,239
g) New diabetes cases diagnosed	:	36,164
h) ANC cases seen	:	2,80,888
f) Tribal OP	:	7,52,034 (53 MMUs serve the Tribal Population Exclusively)

6.2. Types of Investigations:

District	Blood Smear for Malaria-RDT	ECG	Haemoglobin Test	Random Blood Sugar Test	Urine Pregnancy Test	Urine-Albumin & Sugar test	Water Chlorination	Grand Total
Grand Total	**86333**	**307011**	**969608**	**2940032**	**11304**	**163334**	**24975**	**4505444**

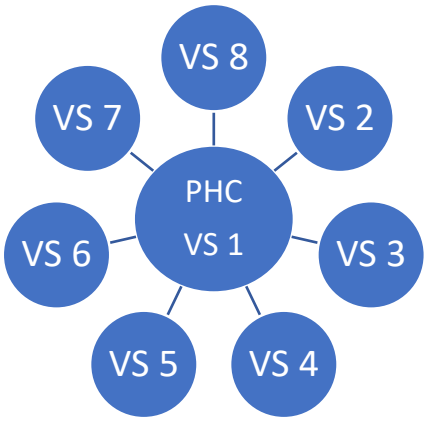
6.3. Next level of 104 MMU services as per plan

- Plan to cover each Village secretariat twice a month
- Increasing the fleet to 1108 MMUs by purchasing another 452 MMUs for effective implementation of family physician concept.

Scenario	Total No.of VS Covered / Month	No . of Village secretariats with				
		1 Visit / Month	2 Visits / Month	3 Visits / Month	4 Visits / Month	5 And More Visits / Month
Existing	9906	4577	3935	1110	288	0
Fully Implemented	10478	0	4175	5289	990	24

6.3.1. Family Physician Concept:

- A fixed Government doctor for every rural household.
- Village Secretariat is taken as the fundamental unit for planning. Prescheduled fixed day visits by the Mobile Medical Units (MMUs).
- In every rural Mandal, the PHCs and the Village Secretariats were mapped for coordinated action.



- PHC containing Village Secretariat – 1 excluded from mapping
- Village Secretariat – 2,3,4: allotted to MO 1
- Village Secretariat – 5,6,7,8: allotted to MO 2

Mandal containing 1 PHC (2 Doctors) & 1 MMU

- Each medical officer will visit his or her allotted village secretariats and render their services
- In this way continuum of care can be ensured

6.4. Success Stories:

Referred patient Sethamma, with Hb < 6 g/dl, for better medical care by instant shifting from 104 to 108

Anti-malaria - IEC activity

East Godavari, Talleruvu mandal, 104 Medical Officer, Dr. Apoorva attended one Emergency Delivery case during her regular MMU home based visit. Mother successfully delivered a baby girl

Lactation week – IEC activity

7. Cost

- CAPEX: An amount of 108 Crores was spent on purchasing 656 MMUs (Including the Fabrication & Equipment)
- OPEX: 178 Crores was paid by the trust to the Service provider for Operational Cost till date (~30 Crores per month).
- 32.5 Crores was allotted for Drugs for the year 2021-22.

8. Summary of lessons learnt and challenges

Lessons learnt:

- 100% ASHA/ANM presence is very important and crucial to perform investigations and drug distribution.
- Moderate ECG machine utilization is must in all ANC and Hypertensive cases in order to find high risk cases and the patients with disorders.
- Quality data will definitely be useful in taking important decisions for the improvement of the program.

Challenges:

- Poor road conditions/no roads in remote/tribal places.
- Poor data network/no data network areas in tribal/remote places to capture data real time and capture attendance.
- Unable to pull patients in the age group 30 – 50 years as the camp timings are from 9.30 am till 4.30 pm and during that period, the age group people go out for work/livelihood. Majorly elderly people are availing the services. Since these are fixed day services, it is recommended that the information on health camp is given to the above aged group and ask them to avail the services on that day. Preference will be given to them so that they can leave to their work after checkup.
- ANC patients turnup is less than 10%. – Awareness and motivation to ANC is a challenge.
- Only 2.7% rural and tribal population are utilizing MMC services in a month

9. Potential of scale

The model has demonstrated that benefits of investment in this model has manifold benefits, like, delivering primary healthcare available at doorstep of those who cannot access due to remoteness/hard to reach area, timely referrals and follow-up reducing morbidity and helping poor from financial catastrophe.

Combining it with Family Physician concept certainly will get far better outcomes. Sustainability may be assured when one of the Medical Officer of the concerned PHC is attached with MMUs on rotation basis which would result into – better coverage of population, reduced OP load at PHC resulting improvement of quality of care at PHC and data integration for better follow-up of patients who had visited PHC but follow-up was challenge from patient side.

Overall, meticulously planned investment and integration with PHC is scalable model for better coverage of population for primary care aligned with intent of Universal Health Coverage, improved accessibility, availability, quality of health services with better protection against financial catastrophe as timely availability of primary care, referrals and follow-ups.

10. Partners involved in implementation

The model consists of shared partnership were in the management of program is outsourced to a private service provider who will be responsible providing staff, run the operations as per schedule maintain the MMU / Equipment and integrating patients with PHC for follow-up while the vehicles are owned by the government. The private service provider responsible for field activities is M/s Aurobindo emergency medical services (Knowledge partner being SCAS – South central ambulance services operating for NHS UK) while the system integrator is M/s Akshara enterprises.