

Assured IFA Supply Mechanism through Drug Delivery Personnel (DDP) in line with AVD

Scale up in all 51 districts of the State of Madhya Pradesh

Background:

Anemia in MP remains high at 68.9% in children aged 6-59 months, 54.6% in pregnant women, and 52.4% in women in the reproductive age group¹¹ despite continued efforts. The reduction in anemia has only been ~3.3% in the past 10 years for pregnant women¹². Given the high anemia burden, the national government has also taken up eliminating anemia as priority, with the launch of the national level 'Anemia Mukht Bharat' strategy. While solving the problem of anemia, the Madhya Pradesh government realized that ready accessibility to iron folic acid (IFA) tablets has compounding effect for reduction in anemia. Clinical research indicates that consumption of IFA plays a significant role in reducing anemia. However, with only 23.6% mothers consuming IFA when they were pregnant, the consumption of IFA remains low.

While there are continued efforts in improving the uptake by the beneficiaries via working closely with the front-line workers and the community, establishing sophisticated supply chain system remains an ongoing challenge for the State. To achieve the goal of eliminating anemia, improving nutrition outcomes and address these supply side barriers, a systemic approach (Assured Last Mile Supply of IFA Commodities) that is cost efficient and replicable across the state, has been adopted by the government of Madhya Pradesh. The approach leverages the distribution channel defined for immunization to ensure effective, on-time delivery of IFA stock and tackles both the upstream and the downstream supply chain challenges as follows: -

1. Upstream Process:-

Before making the necessary changes the procurement trends for 24 months (May '15 – April '17) were analyzed to understand the effectiveness of the current norms and based on the findings key opportunities have been identified to ensure that adequate stock is procured and distributed till the CHC/ PHC level through the district stores. The upstream strategy involves following changes and has been implemented in the entire state in all 51 districts from December 2017 onwards:-

- **Procurement by the districts**

- a) Procurement orders are being placed by district stores with a consistent cycle of 6 months.
- b) Minimum inventory of 2 months is being maintained by the district stores (1.5 months as lead time stock + 0.5 months as safety stock).
- c) Consumption and morbidity-based approach is being leveraged to forecast demand by the district stores. Forecasting has been streamlined by implementing a forecasting tool.
- d) To ensure uptake of the forecasting tool and adherence to procurement cycle, quarterly deviation reports are being developed and analyzed.

- **Distribution to CHC/PHCs and Villages (AWCs and Schools)**

- a) Indents are being raised every 2 months by the CHC/PHCs.
- b) Minimum inventory of 7 days (0.2Months) shall be maintained by the CHC/PHCs.
- c) The Rollout of the forecasting tool has been initiated from December '17 in the entire state.
- d) The distribution flow of commodities from district store to CHC/PHC to AWCs & schools is explained in detail under downstream process in the section below.

Financing: No additional funding would be required for streamlining the upstream solution.

2. Downstream Process: -

After evaluating all available options of strengthening the supply chain, The State of Madhya Pradesh has found the DDP network to be the most effective option in terms of: -

- a) Cost**
- b) Storage**
- c) Accountability and success of the DDP network in ensuring vaccines delivery.**

The Assured Last Mile Supply of IFA Commodities plan leverages the 958 vaccines focal points (Cold Chain Points in CHCs, PHCs and SHCs) and transport systems (Vaccine trucks and Drug Delivery Person-DDP) to distribute IFA from District to Block (CHC, PHC and SHC) to Villages (AWCs and Schools) in a structured and systematic manner. The IFA strategy does not have any impact on the vaccine supply chain infrastructure as vaccine truck and DDP capacity outside of the vaccine system has been utilized. The tenets of the flow of distribution would be (numbers denoting averages for a district):-

- **District Drug Store to Focal Point CHC/ PHC**

It has been analyzed that every District Drug Store (CMHO) will cater to 19 CHC/PHC/SHC and each CHC/PHC/SHC can cater to 58 villages mapped to it. In this manner ~1100 villages will be supplied IFA commodities from the district. Vaccine van will deliver IFA stock worth 2 months to 10 CHC/PHC/SHC (50% of those mapped to a district) in the first month, and will deliver IFA stock worth 2 months to the remaining 9 CHC/PHC/SHC in the next month. IFA shall thus be delivered to all CHC/PHC/SHC mapped to a district once in every two months.

- **Warehouse Focal Point CHC/ PHC to Non – Focal CHC/PHC**

Every block will have 1 warehouse focal point CHC/PHC where quarter's IFA stock for remaining non focal point CHC/PHCs will be delivered via vaccine van, which will be furthered delivered to the relevant non focal point CHC/PHC via the DDP system. There are 601 non focal point CHC/PHCs in Madhya Pradesh. On an average 6 Warehouse Focal Point CHC/ PHC and 12 Non – Focal CHC/PHC will be linked to 1 District.

- **Focal Point CHC/ PHC to Villages (School & AWC)**

For villages, each focal point PHC/CHC/SHC will supply a quarter's worth of IFA stock to 20 villages (each AWC and school) every month using the DDP system already setup (DDP System has been named as DDP System to at these CHC/PHC/SHC which are also Cold Chain Points. Hence, in a phased manner over 3 months via leveraging the existing vaccine DDP system all 58 villages will receive a quarter's worth of IFA stock. Each village will receive the next quarter's worth of its IFA stock before three months are over from the last delivery.

The above-mentioned downstream approach was piloted in 2 districts, Vidisha and Hoshangabad, from March - May 2018. The overall pilot results have been very encouraging in both the districts and showed 80% increase in adequacy of IFA procurement, 85-90% reduction in stock-outs at AWCs & Schools and 85% districts maintaining minimum inventory. The initiative has also been selected for best practice award

in 5th National Summit on Good and Replicable Practices and Innovations in Public Healthcare system in India, Kaziranga, Asam. Seeing such encouraging results, the scale up of IFA downstream mechanism was escalated in 13 districts of Bhopal and Sagar division in the first phase and proposed in 24 districts (16 HPD + District's of Bhopal and Sagar Division) in FY 2019-20.

• **Criteria for selection of divisions: -**

- a) Prevalence of anemia IFA , b) Stock situation and indenting patterns. C) DDP presence. D) Stakeholder willingness and leadership e)Feasibility of implementation f)No. of villages in a district (based on a representative no. of avg. villages in the State)

District profile for scale up in 24 districts of Madhya Pradesh in FY 2019-20											
SN	Total	No of Block	No of Vill.	Focal Point CHC/PHC	Non Focal point CHC/PHC	Total CHC/PHC	No of DDPs Req.	No of DDP days Req. per month	No. of Villages per DDP	No. of AWCs per DDP	No. of Schools per DDP
1	Betul	10	1,447	20	25	45	20	7	72	2346	3114
2	Bhopal	2	561	20	3	23	20	3	28	1870	1293
3	Chhatarpur	8	1,184	26	22	48	26	4	46	2058	2836
4	Damoh	7	1,236	15	7	22	15	7	82	1742	2206
5	Harda	3	571	7	4	11	7	7	82	692	904
6	H'bad	7	862	16	10	26	16	5	54	1771	1840
7	Panna	5	1,015	8	12	20	16	11	63	1492	2466
8	Raisen	7	1,617	13	17	30	26	11	62	1826	2678
9	Rajgarh	6	1,796	13	23	36	26	12	69	2456	2855
10	Sagar	11	2,074	16	27	43	32	11	65	2632	3407
11	Sehore	5	1,181	22	4	26	22	5	54	1413	2236
12	Tikamgarh	6	1,104	16	12	28	16	6	69	1772	2573
13	Vidisha	7	1,709	17	17	34	34	9	50	2371	2871
14	Dindori	7	1,020	10	19	29	20	9	51	1913	1940
15	Satna	8	2,042	27	27	54	27	7	76	3030	3855
16	Shahdol	5	885	13	25	38	13	6	68	1599	2292
17	Singrouli	3	780	11	9	20	11	6	71	1535	2147
18	Barwani	7	748	33	7	40	33	2	23	2555	3143
19	Sidhi	5	1,106	14	18	32	14	7	79	1903	2494
20	Jhabua	6	841	20	5	25	20	4	42	2686	2533
21	Alirajpur	7	568	16	4	20	16	3	36	2173	2398
22	Mandla	10	1,409	21	19	40	21	6	67	2301	2898
23	Ashoknagar	4	1,027	11	4	15	11	8	93	1089	1578
24	Sheopur	3	668	7	6	13	7	8	95	1226	1222
Total		149	27,451	392	326	718	469	164	1497	46451	57779

• **Cost Influencers:**

- a) DDP shall deliver IFA on non VHND days (2 days a week, 7-8 days a month) to minimum 3 villages and maximum 4 villages per day thereby covering approximately 20-24 villages in a month. Hence, over 3 months, more than 60 villages will receive one quarter supply of IFA stock and each village shall receive subsequent stock within 3 months of last delivery.
- b) Approximate weight to be carried by DDP personnel on the first trip for 3 villages will be approximately 42kgs for which 1 specifically designed bag shall be required for equity of weight distribution (~14kg per bag). In the subsequent trips, based on the consumption pattern, DDP shall need to carry ~30kg weighted IFA stock. The DDP bag cost has been calculated as per the total number of DDP's required quarterly supply of IFA stock.
- c) The incentive has been proposed as per the Alternate Vaccine Delivery guideline which is @ ` 90/- per village for 85% of the villages with <30Km distance. It has been assumed that each DDP per day shall carry IFA stock (all commodities) for 3 months for minimum 4 villages. Similarly, the incentive of 200/-per village for 15% of the villages with >30 Km distance have been proposed based on the assumption that each DDP per day shall carry IFA stock (all commodities) for 3 months for minimum 3 villages.
- d) Additional incentive has been proposed @ Rs. 132/- per DDP for delivering of logistics from focal point to non focal point CHC / PHC for IFA stock (all commodities).
- e) POL for vaccine vans for transport of IFA stock-All commodities up to focal point CHC/PHC has been proposed in terms of total distance, total no of deliveries across the year @ ` 9.63/- per km.
- f) District level training has been proposed @ Rs. 400/- per person for 11 districts. State level training along with district trainings has been completed in FY 18-19 in 13 Districts of Sagar and Bhopal division.
- g) DDP Reporting Tool for reporting of IFA supplies and DDP bag for carrying IFA commodities has been proposed @ Rs. 85/- per Booklet and Rs.1600/- per DDP respectively for 11 districts. Reporting formats and DDP bags has also been distributed in 13 Districts of Bhopal and Sagar division.

Evidence of Cost effectiveness through IFA Supply Chain Delivery Mechanism

In the absence of this supply chain system, there is no defined mechanism for delivery, with the ad-hoc approach of ANM/ASHA delivering inadequate and untimely stock. The unintended consequences of this approach lead to situations such as:

- ☐ Stock-outs at various nodes, and hence poor access of drugs to the beneficiaries, or
- ☐ Excessive wastage and expiration of stock, in cases of delivery of more than the required quantity.

The downstream delivery strategy leverages the existing supply chain infrastructure, with no additional purchase cost for vehicles and other infrastructural requirements, and only includes minimal incentive for delivery by the DDP. Additionally, the upstream strategy can be implemented in the entire state at zero cost, except for the cost of training the district stakeholders.

Efficient drug logistics provide tangible social costs. According to WHO, iron deficiency is the single most important nutritional risk factor in India, accounting for more than 3% of all disability-adjusted life years (DALYs) lost. A dedicated supply chain system also leads to savings in terms of time and effort for the health care workers, who can then be solely focused on healthcare service delivery, instead of also working on drug delivery logistics. This also improves healthcare worker's credibility in the community by ensuring that drugs are readily available. Given the supply chain model, DDPs visit each AWC and school every 3 months and hence this becomes an effective mechanism and feedback loop to record stock data at AWCs and schools and analyze consumption trends. The DDB also ensures that he delivers stock after taking the current stock present at facility into account, hence minimizing wastage of stock and leading to cost effectiveness.

In 2019-20, the pilot intervention has enabled assured delivery of IFA commodities at the platforms of 57,779 Govt. schools, and 46,451 AWCs, of 24 districts and also strengthened reverse indent generation and actual consumption tracking by intended beneficiaries. Detailed evaluation report of the scale up is awaited. Meanwhile the State has taken policy decision to scale up the above integrated logistic supply chain model in entire 51 districts in FY 2020-21. A total of Rs. 338,92,438/- for the scale up of integrated logistic supply chain model for assured IFA commodities through DDPs in entire State. (budget includes training cost, incentives to DDPs, DDP Bags production and distribution and reporting tool cost)

Cost Type	Category	Description	Cost	%age Cost	Assumptions behind the calculations	
					24 Districts (13 Districts of Bhopal & Sagar Division + 11 HPD districts)	Rest 27 District
One Time	Training	Training at District Level (Only for 27 new districts)	₹ 14,75,500	4.4%	Completed in 13 districts and budget allocated for 11 HPD districts	Venue + other cost @ 3500/- per batch & 50 person in a batch Persons involves in training 1. District officials (7) - CMHO, DPM, DCM, DIO, DM&E, District CMHO Storekeeper, DEO Store @ 300/- per person 2. Block officials (3) - BMO, BPM, BCM @ 400/- per person 3. Focal Point CHC/PHC (4) - Drug Storekeeper, DEO, 2 AVD @ 400/- per person
Recurring	Transport	DDP Incentive for Village Delivery <30 Km for 85% villages @ INR 90 per village	₹ 161,15,796	47.5%	Budget for 4 DDP delivery cycle	Budget for 4 DDP delivery cycle

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					24 Districts (13 Districts of Bhopal & Sagar Division + 11 HPD districts)	Rest 27 District
Recurring	Transport	DDP Incentive for Village Delivery >30 Km for 15% villages @ INR 200 per village	₹ 63,19,920	18.6%	Budget for 4 DDP delivery cycle	Budget for 4 DDP delivery cycle
Recurring	Transport	DDP Incentive to Non Focal Point CHC/PHC @132 per non focal CHC/PHC	₹ 2,81,952	0.8%	Budget for 3 DDP delivery cycle	Budget for 3 DDP delivery cycle
Recurring	Transport	Vaccine Van (with 25% buffer included)	₹ 81,82,050	24.1%	Budget for 6 cycle of drug distribution using vaccine vans	Budget for 6 cycle of drug distribution using vaccine vans
One Time	Supplies	DDP Bag (Only for 27 new districts)	₹ 11,66,000	3.4%	Distributed in 13 districts and budget allocated for 11 HPD districts	1 DDP bag for each focal point
Recurring	Reporting	Reporting Tool Cost	₹ 3,51,220	1.0%	Budget for 4 DDP delivery cycle	Budget for 4 DDP delivery cycle
	Total Cost (INR)		₹ 338,92,438			