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Improving Availability and Accessibility of Medicines: A Tool for Increasing Healthcare Coverage

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Abstract

India has made tremendous progress in the pharmaceutical sector and medical tourism but faces mindboggling shortfalls in healthcare delivery to its population. Poor access and mortality due to non-availability of medicines is among the highest in the world. Access to essential medicines remains limited and inequitable. In a move towards Universal Health Coverage (UHC), the National Health Assurance Mission (NHAM) has been announced by the Central government for providing assurance to make 50 priority essential medicines available at all times at all levels to the citizens of India living below poverty line. This paper reviews, assesses and compares the strategies adopted by various Indian States for improving availability and access to medicines. The strengths and weaknesses of the two most challenging functions i.e., procurement and supply chain management are discussed in the paper. Centralized procurement of carefully selected priority essential medicines along with Supply Chain Management (SCM) by an outsourced agency appears promising under given constraints. Alternatively, SCM can be continued to be managed by states themselves but with adequate utilization of digital technology. Access to essential medicines as part of the right to the highest attainable standard of health ("the right to health") is not only a social right but is also well-founded in country's constitution and health policy. It is, therefore, the responsibility of the government to ensure that this initiative is taken forward. Limited resources should not hold back this very important social commitment. Providing medicines to all, being an essential component of health care, should be implemented immediately to reduce out- of- pocket expenses for medicines.

Keywords: Access, availability of essential medicines, pooled procurement, supply chain management, Universal Health Coverage

Introduction

India lags behind in providing healthcare services to its people despite being a signatory to the “Health for All by 2000” initiative. Providing 'Quality Healthcare for All' has been a key challenge for the Government in recent times. Under the Constitution of India both the Central and States Governments have concurrent duties for drug control, safety, quality and efficacy. The main objective of health policy is to achieve an acceptable standard of good health and ensure availability of quality medicines at a reasonable cost to the society and to promote development of domestic pharmaceutical industry. On the contrary, existing public health infrastructure is far from satisfactory and availability of essential drugs is minimal and capacity of the facilities is grossly inadequate. India’s health policy is perceived primarily as an industrial policy rather than a health policy. India has made a tremendous progress in the pharmaceutics and has a vibrant pharmaceutical industry. The Indian pharmaceutical sector is the third-largest producer in the world in terms of volume and 14th in terms of value [1]. The sector registered a growth of compounded annual growth rate of 15%, comparable to the sectoral growth rate of other developing nations such as China, Mexico and Brazil.

Also its skilled medical professionals and technically-advanced hospitals have made it one among the world's top five medical tourists destinations, where more than 6 million overseas patients arrive each year seeking high-quality, low-cost treatment and care [2]. Yet, it faces mindboggling shortfalls in healthcare delivery to its population, forcing millions to seek treatment in the private sector and providing adequate access to medicines is one of the most challenging issues facing society today.

India ranks high in the list of countries with highest Out-of-Pocket (OOP) expenditure on health in the South-East Asia region [3-5]. Although share of private OOP expenditure as to the total expenditure on health although has declined from 80% to 60% over the last decade but still is high compared to Nepal's OOP health expenditure which stands at 49%, Sri Lanka (44%), Indonesia (41%), Maldives (28%), Thailand (15%) and Bhutan (13%) in 2009 [3-5]. Expenditure on medicine accounts for the largest component of OOP in both public and private facilities. Expenditure on medicines accounts for 72% of OOP spending [6,7]. One-third of new annual poverty is healthcare related. Median availability of select generic medicines in public health facilities has been reported to be as low as 20.5% [8]. This is worrisome given the fact that more than two-thirds of the country's population is already either poor or living at subsistence level. Underprivileged population, often living in remote rural areas, depend largely on public facilities and sometimes these public health facilities remain the only channel of access to essential medicines. If health outcomes are to be improved, cashless access to health services, at all delivery points would be required. However, on the contrary, public expenditure on medicines has generally remained low (20%) compared to Nepal's (45%), Maldives (44.4%), Sri Lanka (42%), Indonesia (38%), Myanmar (16%). India is among the low spenders with total health spending 4% of GDP in 2012, less than half the OECD average of 9.3% [8-10]. Out of it the government spends just 1.16% compared to China (2.9%) and Brazil (4.1%)[8-10]. Health spending as a share of GDP among OECD countries is highest in the United States, which spent 16.9% of its GDP on health in 2012 [8-10]. With a view to raise government expenditure on health as a proportion of GDP from 0.9% to a target of 2-3% by 2012, the government launched the National Rural Health Mission (NRHM) in 2005. NRHM has improved primary maternal and child health services, but does not yet provide necessary primary and secondary care and the public expenditure on health also remained at 1.19% in 2011 although 12th Five Year Plan has targeted to increase the public spending on core health for Centre and States together to 1.87% of GDP by the end of 12th Plan [11].

The declining investment and expenditure in the public health domain have created a scenario where people, especially the poor, have moved away from the public health system because the latter cannot meet their needs and they often have had to face denial of healthcare in public health institutions. Lack of medicines can block the operation of the health care system. Credibility, effectiveness and attendance at health facilities, depend to a large extent on patient being able to obtain relevant medicines at the right time. A good diagnosis is not much use if the patient cannot obtain the necessary treatment. The availability and accessibility of medicines at public health facilities thus becomes a determinant of the quality of health care and could be used as a tool for increasing healthcare coverage.

While the pharmaceutical industry has witnessed tremendous transformation since the 1950s and today India is not only self reliant but also exporting to around 200 countries in the world but, at the same time huge numbers of irrational, non-essential and hazardous drugs have flooded the market. Irrational prescription of medicines and prescription of costly branded medicines, expenses for which need to be borne out-of-pocket, continues to rise in parallel. Inappropriate use and over-use of medicines besides wastage of meagre resources also results in significant patient harm in terms of poor patient outcomes and avoidable impoverishment of the patient. As the gap between demand and supply is widened, loss of social protection entitled to the poor by public expenditure on drugs and supplies occurs.

Free provision of essential drugs to all patients accessing public health facilities, while not costing so much to the government, would bring huge savings to the patients, and is the easiest and quickest option to reduce out-of-pocket expenses for the poor. The programme to ensure global accessibility to quality assured and affordable medicines, particularly for the poorest, was initiated by the World Health Organization (WHO) in 1977 but in spite of advocacy and evidence of the clear benefits of the essential drugs concept, India was slow to adopt and initiate a comprehensive essential drugs programme or have a clear approach to promoting rational drug use [12]. Delhi and Tamil Nadu proactively recognized the gravity of the problem of shortage of drugs and introduced interventions to address the problem. In 1994 several trendsetter initiatives ensuring centralized pooled procurement of medicine thus helping the poor to obtain the medicines they needed were introduced such as comprehensive rational drug policy in Delhi, Tamil Nadu Medical Services Corporation Limited (TNMSC) in Tamil Nadu and the modified Central Purchase Committee (CPC) in Kerala. The Delhi policy indicated the commitment of the State Government to address the pharmaceutical situation proceeding from the essential drugs concept, giving priority to the government health care system. The policy specified the list of activities to be carried out for its achievement. The programme immediately after introduction started showing positive results with minimal additional resources utilizing managerial interventions. Pooled procurement of selected essential medicines together with rational use of medicines resulted in significant savings which were in turn were used for procurement of more drugs in larger quantities. More than 90% of patients started getting the quality medicines prescribed to them in public hospitals [13]. The so called Delhi model not only attracted national attention but was also internationally emulated by other neighboring states and countries because of uniqueness of the programme which mainly consisted of realignment of the existing systems by rationalizing the systems without any major investment.

Building on the experiences of developing and implementing the Essential Medicines Programme in Delhi and other states this paper reviews, assesses, and compares models/strategies for improving availability and access to essential medicines. This paper also identifies common inefficiencies in the system and

suggests strategies for its strengthening (**Table 1**). It is expected to shorten the learning curve of those embarking on such programme on improving availability and access to medicines. These lessons are particularly important in view of the National Health Assurance Mission (NHAM) recently announced by the Central government in moving a step towards Universal Health Coverage (UHC). NHAM provides assurance of providing 50 priority Essential medicines available at all times at all levels of health care to the citizens of India below poverty line. The strengths and weaknesses of the two most challenging functions i.e., procurement and supply chain management are discussed.

Procurement and supply chain management issues

In India, health being the state subject, each state has own list of medicines, procurement system and supply chain management. For uninterrupted availability of medicines robust, objective and transparent procurement system is needed whereas capacity of the states is limited and frequent disruptions and difficulties lead to non-availability of medicines at the lowest level. Undue delays in finalizing the tenders compromise the availability of these medicines and erode the image and trust of the patient. Inordinate delays in procurement result from unclear procedures, poor specifications, absence of reliable quantification, supplier uncertainty and under utilization of the technology. Some states like Delhi, Tamil Nadu, Kerala, Himachal Pradesh, and Rajasthan have a reasonably well running drug procurement and distribution systems. While Kerala and Rajasthan have successfully adapted the Tamil Nadu model by adding innovations, attempts at emulation of these systems in other states such as Odisha, Bihar has had dismal results as they did not factor-in the local context and building up of the processes. Moreover, each state is unique with its own set of challenges making them very different from each other i.e., in terms of unreliable mode of transport, lack of dedicated transport, multiplicity of medicines supply channels from different sources, and poor coordination between distributor, SCM and programme managers. One of the important success factors of the TNMSC is the autonomy, coupled with able leadership that is able to step aside bureaucratic hassles and make decisions promptly and independently [14].

A centralized system of drug procurement needs trained personnel, streamlined processes, infrastructure and IT enablement in order to procure, store and distribute large quantities of drugs to user institutions with minimal delays. In some states/organizations, purchase manual is either unavailable or when available is obsolete. Deployment of procurement staffs that have no training or education further jeopardizes the procurement system. Staff becomes vulnerable to audit and vigilance issues leading to defensive office procedures. In many places, there are not even qualified pharmacists to handle stores and purchase section.

A centralized procurement system can overcome procurement hurdles mentioned above but supply chain management and distribution of the medicines to the intended users at the health facility level is a greater challenge for a huge country like India. Various options for supply chain arrangement for improving delivery to the last mile using existing infrastructure are described in **Table 2**.

Considering the volume of work, time and attention required, Ministry directly handling the procurement can be ruled out. Moreover, the institutional arrangements for making procurement of medicines and supplying them to all facilities right up to the sub health centers is a stupendous task. If procurement handling by the states is to continue as per the current arrangement, it would be ineffectual in the absence of a robust procurement mechanism. Thus states, which do not have robust agency specialized in procurement in place would require constitution of an independent Centralized Procurement Body (CPB) (Corporation/Company/ agency/Society etc.). Alternatively responsibility of procurement could be transferred to other state procurement agencies that have, over a period of time, built up competence and have an independent CPB in place. Transferring responsibility of procurement to state procurement agencies though would create ownership of the programme by the State and their accountability, and additional financial support from centre can further strengthen state mechanisms for procurement, distribution etc. but would result in wide variation in prices besides challenges/difficulties in the States' capacity, infrastructure, delays, loss/lack of communication at each level etc. Also it is established that putting more money into inefficient system would go waste. Moreover, central government has a limited role in defining state mechanisms for procurement and distribution such as setting up of a corporation/company/society in a given time frame or adopting a Logistics Management Information System (LMIS). Besides above, inherent systemic problems of governance, poor political support, ineffective leadership and constant reshuffling in the key positions when trying to push for reforms could continue to hamper the process.

Considering these, outsourcing procurement function to an independent agency at the center and Ministry of Health, Government of India overseeing the work of the agency sounds most promising (**Table 3**). The selection of the outside agency carefully selected based on their proven track record, would be most crucial for its success. The outside agency could be either set up on the Tamil Nadu model or specialized agency could be engaged for this purpose. However, for either of the model suitable adaptation and certain safe guards (autonomy, oversight mechanisms, and timely payments) are needed to be built into the system for its success since the experience of outsourcing procurement function to an agency (UNOPS, RITES etc.), as for national programmes also has not been very good. The reasons include bureaucratic hurdles, poor over-sight by the government. Another critical element is the vendor contract management (or supplier contract) which should be designed so as to increase product availability, better coordination, reduce supply chain costs, and induce performance improvement for the supplier. Also it is a sizeable task for any one of the agencies to handle this large volume of procurement right from inviting tenders to delivery of medicines to the last mile. Considering that delivery of medicines has to be made across the country, it is imperative to have more than one supplier for each of the medicines. Lastly in a national programme where medicines are being distributed free, it becomes all the more obligatory on the part of the

Table 1 Common areas of inefficiencies observed in the public medicine management programmes, interventions to improve medication management, and key activities which determine the success of the programme.

Common areas of inefficiency	Intervention strategy Principle	Structural requirement	Key activity which determine success of the activity/programme/areas where system fray
Selection of Essential Medicines and Use			
• Poor selection • No policy framework • Lack of implementation of Standard Treatment Guidelines (STGs) • Lack of transparency in selection of medicines • Inadequate human capacity	Careful selection of limited number of cost-effective medicines to meet the priority needs of the population based on sound and adequate data on efficacy & safety	• Multidisciplinary Gazette notified EML committee representing different levels of health care • Reliable morbidity and mortality data • Mechanisms for feedback from users and prescription audit	• Regular up-dation of the List (once every 2 year) • Formulary changes (rationale for retaining or deleting an agent) especially o Non-formulary drug use review o Therapeutic class review o New product evaluation • Link between EML with STGs • Surveys to ensure prescribing conforms to EML and STGs
Procurement			
• Poor specifications • Unclear procedures • No reliable quantification of drug needs • Supplier uncertainty • Under utilization of the technology.	Bulk procurement of generic medicines with robust, objective and transparent procurement system with pre-qualification of suppliers	• Corporation/Society • A dedicated cell in the MoHFW • Outsourcing procurement	• Procurement restricted to medicines on EML and by generic names • Transparency and objectivity in the procurement process • Timely completion of the procurement cycle • Supplier rating • Timely payment to suppliers • Use of technology – e-procurement
Quality assurance			
	Inbuilt multipronged approach: i. prequalification of tenderers to make a realistic assessment of manufacturers' ability to manufacture the product including • minimum threshold annual turnover • sourcing from manufacturers • black listing for non-performance or poor quality drugs) ii. Independent GMP inspections of the manufacturing units iii. Sample Testing to ensure targeted quality standards are met.	• Resources and budget for quality assurance. • Independent GMP inspection of the manufacturing houses • Empanelled experts to carry out GMP inspection • Independent empanelled accredited laboratories for quality testing • System for drawing coded samples for testing at NABL accredited laboratories.	• Rigid prequalification criteria and adherence to the criteria. • Black listing of suppliers for sub-standard/spurious medicines • Training of the staff handling quality assurance function in coding and decoding of samples • Budget and human resources required for GMP inspection • Samples testing at delivery points and along the supply chain by independent accredited laboratories. • Random selection of samples by software.
Supply chain management			
• Unclear procedures, • Unreliable/lack of transport • Multiplicity of medicines supply channels from different sources • Poor coordination between distributor, SCM and program managers.	The barometer of effective SCM is the availability of the right medicine, in the right quantity, for the right patient, at the right time, in the right condition and at the right price.	• Logistics management information system (LMIS) • Last mile connectivity for real time data • Use of digital technology	• Real time data used for decision making • Good coordination between distributor, SCM and programme managers especially multiple supply lines.

Inventory management systems			
• Lack of systems • Lack of human capacity • Lack of tools for monitoring inventory • Unreliable data on consumption/utilization	The goal is to maintain the most cost-effective balance between service levels and inventory costs.	Management Information System (MIS) data for real time updation of stock status and forecasting of medicines needs.	• Hard to compile data manually and compute statistics. • Real time information on stocks data rarely utilized in decision making and service level projections.
Quantification			
• Unreliable consumption data • Unreliable morbidity and mortality data • Irrational adjustment to budgetary constraints, irrational ineffective prescribing, suppression or distortion of demand • Quantification exercise inherently imprecise because of variable: • Availability of medicines, • prescriber behaviour & practice, consumer numbers, preferences etc.	Scientific calculation of drug requirement adjusting for stock-outs, programme growth, wastages etc.	LMIS for providing reliable real time data on consumption and speeds up the process	• Consumption/morbidity data is not utilized for o Estimating physical requirements for ordering, or the annual budget requirements o Management information for making supply decisions and monitoring performance. • Limited human resources
Monitoring and evaluation			
Monitoring to track availability rarely undertaken or no such system in place.	• Monitoring and evaluation of the programme integrated into the programme • Regular surveys to be undertaken to track availability of medicines	• Monitoring cell • Budget requirement	• Performance level with standards or norms not defined • Reasons for the deviation not ascertained • Necessary corrective actions are not implemented.

government to ensure that all medicines supplied meet the twin major objectives of safety and efficacy. If these two objectives are not met, the programme becomes a waste of scarce resources. Therefore, in-built quality measures secured at every stage in the process beginning with the selection of medicines by restricting supply from suppliers who have rigid quality standards are essentials of the programme.

Utilization and strengthening of existing supply chain vs. Centralized Outsourcing of supply chain function

Another major reason for poor availability is frequent supply chain interruptions because of long supply chain across diverse geographical dimensions ranging from plains to difficult-to-access hilly terrains. Under the existing distribution system for national programmes medicines are supplied up to the state level by the manufacturer whereas medicines are supplied up to the district level by the manufacturer in case of state procurement and distribution further on to the lowest level is undertaken by the State government. Frequent disruptions are mainly responsible for non-availability of medicines to the last mile.

One of the critical success factors of Tamil Nadu model is utilization of robust IT system. While continuing the existing system of distribution the state government may be offered 2-3 operational packages utilizing efficient IT/Digital technology chosen from the good systems and states could follow cafeteria approach and select one or combination of these as per their suitability. These packages/local innovations include courier/post office/GPS system/SMS/mobile phone etc. Healthcare vans/bikes and boats as Mobile Health Units (MHU) visiting villages on certain days for delivery to rural population as per delivery schedule could also be utilized. These key innovations would allow health workers to report stock levels via a weekly SMS text message on a simple phone (as opposed to a smart phone), where landlines and internet connections are weak or nonexistent. Weekly updates could be compiled from all health workers into a database, presenting customized information on the management dashboard highlighting the health facilities across the country that are in need of new supplies. Thus SMS

Table 2 Framework for handling procurement function and improving delivery to the last mile along with its merits and demerits.

Procurement		
Proposed Strategy	**Merits**	**Demerits**
The Ministry of Health (MoH) directly handling the procurement function and centrally supervising the delivery	• Unified robust procurement system can be established	• Considering the volume of work, time and attention required, this arrangement can be ruled out.
States to handle procurement under the existing arrangement and additional funds on sharing basis provided to the state	• State ownership • Utilization of existing infrastructure • No duplication of supplies	• Limited capacity of the states to handle procurement function. • Each state has its own challenges. • Limited role of the centre in defining state mechanisms.
For states which do not have robust procurement system - transferring responsibility of procurement to state procurement agencies where they have the necessary wherewithal and competence built over a period i.e., Constitution of Centralized Procurement Body (CPB) (Corporation/Company/ agency/ Society etc.) Additional funds for procurement of 50 priority essential medicines provided by the Center on sharing basis.	• Strengthening of State mechanisms for procurement, distribution etc. • Ownership of the programme by the State and their accountability • State gets additional financial support	• Health is a state subject. Centre has a limited role in defining state mechanisms for procurement & distribution or bureaucratic hurdles in setting up of a corporation /Company/society in a given time frame or adopting a LMIS besides inherent challenges/difficulties in the States' capacity, infrastructure, delays, loss/lack of communication at each level etc. • Wide variations in prices and integration of data can again pose more problems.
Outsourcing procurement function on regional basis (say, five or six marked regions)	• Easy and effective management of supply chain according to regions	• Difficulty in identifying adequate number of agencies having special competence in working in all or some regions. • Disparity in prices between regions. • The disadvantages of multi agencies, as mentioned above, will apply here.
Centralized rate contracts and orders placed by the State and supply of medicines made directly by the manufacturers to the States and then further distribution to various health facilities managed by the States themselves using the existing network for distribution.	• Adequate utilization of the state infrastructure. • No duplication of efforts, or requirement for parallel infrastructure/network	• Delays in finalizing tenders. • Inherent challenges of States' capacity, infrastructure, delays, loss/lack of communication at each level etc., therefore, the objective of reaching medicines to the last mile will not be realized.
MoH outsourcing the procurement and distribution function to an outside agency and overseeing the work of the agency. Selection of an agency on their proven track record and capacity to handle large volume of procurement right from inviting tenders to delivery of medicines to the last mile.	• Unified procurement system with rigorous procurement system and with a good oversight of the process and performance. • Supply chain surplus can be generated through centralization of critical supply chain factors, such as capacity, inventory, transportation, warehousing, procurement, information, receivables, relationship etc.	• Any undue delay in the procurement at the centre can result in the catastrophic nationwide shortage of these medicines. • Oversight by MoH would be critical for effective and efficient operations. • Loss of control on process, higher costs from lack of coordination, reduced supplier contact, loss of internal capability (lower bargaining power), information/know-how security, ineffective contractual terms etc. • Alternatively outsourcing procurement functions to more than one agency can lead to disparity in prices between agencies and duplication of supply lines and distribution. Lastly would require integration of the data of all agencies at one point.

Table 3 Role of Ministry of Health and Family Welfare envisaged with process of procurement outsourced.

Ministry's Role	
With the process of procurement outsourced, the role of the Ministry is envisaged as under:	
i)	Oversight
ii)	Selection of drugs
iii)	Drawing up standard tender documents
iv)	Defining the manner of procurement
v)	Enforcing quality
vi)	Monitoring
The purpose of monitoring unit would be to bring together relevant procurement data on a central level to assess among other things:	
i.	Procurement actions are undertaken as planned
ii.	Supplier performance complies to contract provisions
iii.	Procurement actions are transparent
iv.	Distribution systems are efficient and reliable
v.	Assess the responses of the industry to public tenders
vi.	Assess the performance of procurement agencies
vii.	Estimation of collection of marketing data on availability of medicines, quality constraints in supplies
viii.	Timely payment of claims by the agencies
ix.	Develop system to keep a watch on the results of quality testing and take appropriate action as may be required as per the terms of the contract.

through mobiles, relatively a simple tool, can eliminate medicine stock outs at the remote health facility level.

Another innovative strategy could be considered in case medicines under the scheme are not available, medicines can be dispensed free of cost by local pharmacy against the voucher issued to the patient by the doctor of the public health facility based on the Standard Treatment Guidelines. The local pharmacy can be reimbursed the money by the state authorities. Detailed procedure can be worked out together by the center and state government.

Under the existing transportation mechanisms, medicines from District Drug Warehouse are collected by vehicle owned by Primary health care facility or vehicle from district warehouse distributes medicines on fixed days to the health facilities. To overcome difficulty with transportation, the existing transportation mechanisms from District Drug Warehouse to Primary health care facilities needs strengthening with flexibility given to health facilities to hire vehicle in case of non-availability of vehicle/driver/…. etc. or pooling in for transportation by two or more facilities of a particular area of the district. Payment modalities for transport and distribution can be designed as per the district specific needs by the state government.

Once current consumption level and related budget for the States are defined, they can be offered a fixed amount for the actual procurement and a flexi amount to manage the system of distribution at the state level.

Centralized supply chain management by outsourcing the Supply Chain Management (Distribution) functions to an outside agency

Alternatively the distribution function can be outsourced and the Ministry of Health can oversee the work of the agency using suitable indicators for measuring effectiveness and efficiency of the distribution. The outside agency can be selected based on their proven track record, pan India presence, capacity, experience etc. The biggest advantage would be unified distribution system with extensive supply chain system.

Following broad process for distribution can be adopted:

- NHAM can enter into a rate contracts with the pharmaceutical manufactures for supply of medicines identified under the mission.
- Orders placed to manufacturers on fortnightly or monthly basis as per the yearly rate contracts.
- Manufacturers deliver medicines directly to central distribution centres (CDCs) in each State or Union Territory and sends invoice directly to NHAM.
- Manufactures submit two copies of invoice at CDC along with consignment. The distribution agency then certifies and returns one copy of invoice to the manufacturer and also issues acknowledgement for receipt of goods.
- Within 48 hours of receipt of goods from the manufacturer, the distribution agency will send goods receipt confirmation to NHAM. The goods receipt confirmation format can include reference of order (number), invoice number, name of supplier, drug name, product name, batch numbers, date of manufacturing, quantity, expiry date etc. however, the confirmation receipt formats can be adopted after discussion.
- All goods supplied at the Distribution agency's CDC under NHAM mission belong to Government of India and distribution agency would only be a custodian of the drugs.

Pharmaceutical Drug Distribution Process

Distribution involves storage, inventory management, transport and delivery of drugs up to the PHCs (last mile).

- The Distribution agency to distribute drugs directly to PHCs in respective state/UT from its Central Distribution Centre (CDC) in each State and Union Territory (UT).
- Based on the demand and consumption patterns, re-order level (ROL) and re-order quantity (ROQ) at each

health facility, the distribution agency to ensure minimum 2 deliveries to maximum 8-10 deliveries per months depending on the location of PHCs.

- The distribution agency to prepare three copies of delivery receipts for proof of delivery and the health facility to certify the same. One receipt is retained at the health facility level and two receipts are returned to the distribution agency with due signature of the PHC authorized signatory. One copy to be forwarded to NHAM for payment.
- Each individual PHC to be linked to the Distribution agency's CDC/DC in that state.
- Wherever internet facility is available at the health facility, the Distribution agency can help in integrating the health facility with CDC for placing online orders, monitoring inventory levels etc. with existing software at the health facility. If no software exists at the health facility the Distribution agency can suggest and recommend appropriate software. Then the Distribution agency can integrate its own inventory management system software with the existing or software to be installed at the health facility.
- The Distribution agency can help in training people to operate the hardware and software system.
- Where internet facility is not available at the health facility, the Distribution agency could setup a dedicated helpline number at CDC (in respective states/UT) for taking orders from the authorized persons of the respective PHC with relevant control for authentication of such orders. However, the process of setting of hardware and software system would remain outside the scope of the Distribution agency.

Whichever, system is adopted PUSH distribution system depending on their needs should be introduced in the states for scheduled supply to the health facilities by introducing value or volume based Pass-book system. This pass book, which is maintained manually at present, however, should be computerized and linked to the LMIS for real time up-dation of the stocks. Minimum, maximum and reorder levels and buffer stock for each of the essential medicine should be predefined for each level of health facility to avoid stock outs at the health facility level.

Monitoring and Evaluation (M&E)

Timely procurement and un-interrupted supply chain management is crucial in the provision of quality essential medicines for all. It would guarantee the timely supply of required quantity of essential medicines to all the health facilities located in the remotest part of the country. Invariably it is presumed that the targeted population are being benefited when such programme are initiated and implemented. However, it has been observed that often systems are not effectively functioning causing problems like stock-outs or over supply thus leading to shortage of medicines or accumulation of medicines well past their expiry date. This results in not only loss of much needed finances but failure to provide much needed essential medicines to all who urgently need them. Monitoring and evaluation, an essential management tool, should be integrated into the programme. Regular surveys should be undertaken to track availability of medicines. There is enough evidence that essential medicines are often used indiscriminately and irrationally thus the very purpose of making available essential medicines would be lost, therefore, improving use of medicines by health professionals (using Standard Treatment Guidelines) and general population is critical for efficient use of scarce resources and containing drug expenditure.

Financial Implications

At this stage while it is difficult to estimate the financial implication of providing good quality 50 priority essential medicines to population below the poverty line. Estimates prepared by 12th Five Year Programme make it clear that this figure is within reach. The reasons why funds should be provided for this very important initiative are: a programme of rational use of medicines with an up-to-date Essential Medicines List would reduce unnecessary waste of scarce resources. Secondly, India has the capacity of producing generic drugs as it is already a leading generic drug manufacturer and supplying low cost generics to around 200 countries. Lastly has the necessary human resources and in-country experience in this field even if it is not always positive experiences but has learnt from these experiences. Even if the entire NHAM cannot be implemented today for paucity of funds, this component of providing medicines could be implemented immediately by mobilizing new sources of funding such as Corporate Social Responsibility (CSR) both in the government sector and in the private sector.

Conclusion

Efficient drug supply management ensures sustainable access and availability of essential medicines in public sector. The performance of each component of the cycle (selection of essential medicines, procurement, distribution and use of essential medicines) is linked with the performance of others. If one component is not managed efficiently, other components are bound to get influenced. Centralized procurement along with SCM by an outsourced agency or states managing distribution using existing network but with adequate utilization of digital technology appear promising under given constraints. Also along with developing systems for procurement and distribution of appropriate medicines and equipments, use of essential and generic drugs and rational diagnostic, prescriptive and therapeutic practices also need to be popularized. This is doable and resources can be mobilized and human resources can be trained rapidly from the experiences already gained in country. This will make a tremendous difference and provide medicines which the poor people cannot afford and at the same time reduce the out-of-pocket expenditure and catastrophic expenditure on health will not be heard of.

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