

Study to identify the issues on Supply Chain Management of Medical / Diagnostic Items and to propose a strategic framework

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Abstract

Introduction Sri Lanka is a country which provides the health service, with medicine / medical items needed for patient care service to both inward and outward patients for diagnosis and treatment, free of charge at the point of service in the public sector. These medicines / medical items and diagnostic items are provided to all the government hospitals through a centralized supply chain management process and the central organization - Medical Supplies Division (MSD). The medical items purchased by the State Pharmaceutical Corporation (SPC) - government owned corporation and the procurement entity on behalf of MSD are distributed to directly or periodically to large networks of curative care institutions (1050 institutions) and preventive care centres (340 MOH units) through central or provincial distribution mechanisms. There are long felt issues in medical supply management which hinder the quality of patient care management.

Objective To study and identify the issues on Supply Chain Management of Medical / Diagnostic Items and to propose strategic a framework

Methods This descriptive cross sectional study with both qualitative and quantitative components study was done by desk reviews with the secondary data of past few years also with Focus Group Interviews and Key Informant Interviews to study to identify the issues on Supply Chain Management of Medical / Diagnostic Items and to propose strategic framework. Effectiveness was assessed on criteria of Availability, Affordability, Accessibility, Coverage, and Quality.

Results Affordability was assured by free health and free medicine policy and out of pocket expenditure has been reduced by providing cardiac stents, eye lenses, expensive antibiotics and anti-cancer drugs freely without limits as well as all investigation free of charge and only through the hospital not by private labs. Public sector curative health care institutions are readily accessible for the patients through good health institutional network, which is well connected by good island wide road network. Island wide coverage has been achieved with availability of free western type of government health care service within 4.8 Km from patient home. But, still availability and quality were unsatisfactory due to various issues in Medical Supply Management.

Conclusion Despite the measures being taken, challenges still exist in Medical Supply Management. A comprehensive strategic framework with all possible strategies is proposed to be implemented and monitored with shared responsibilities among stakeholders which will provide evidence based sustainable solutions to issues in Medical Supply Management.

Key words: Medical Supply Chain Management, Strategies for improvement

Introduction

Sri Lanka is a country which provides comprehensive health care service, to both inward and out patients for diagnosis and treatment, free of charge at the point of service in the public sector. Free health and free medicine / medical and diagnostic items supplied to the patients including eye lenses, stents, cochlear implants, whole course of expensive anticancer drugs and antibiotics, as per government policy is one reason for the success.

Background

Medicines / medical items and diagnostic items are provided to the government hospitals through a centralized supply chain management process. It means that estimation to supply for end users is managed by a central organization – Medical Supplies Division (MSD). State Pharmaceutical Corporation (SPC) – a government owned corporation is the procurement entity on behalf of MSD.

MSD is responsible for supplying of 19,281 items including 1309 pharmaceutical items (920 in formulary), 10,508 surgical items (4348 in formulary) and 7464 diagnostic items (3768 in the formulary) as well as radioactive items, dangerous narcotic drugs and printed materials etc.

This whole process has been managed through an IT database- Medical Supply Management Information System (MSMIS) from 2015 connecting all stakeholders including even Divisional Hospitals and MOH offices

Having identified the role of MSD as "equitable timely distribution of supplies procured based on MSD estimates through efficient delivery schedules". All the items procured through SPC are supplied to health facilities by MSD both directly to central ministry institutions and to provincial hospitals through Regional Medical Supplies Divisions (RMSDs). Machine specific laboratory items are directly purchased by individual hospitals as per the given authority. Despite all the measures taken by stakeholders, still there are issues affecting effectiveness of Medical Supply Management and hindering effective patient care management.

Objective

To study and identify the issues on Supply Chain Management of Medical / Diagnostic Items and to propose strategic a framework

Methods

A descriptive cross sectional study was done by the authors with both qualitative and quantitative components based on the information gathered through the IT based (MSMIS) system and by desk reviews as well as with FGDs and KPIs. The objective was to study to identify the issues on Supply Chain Management of Medical / Diagnostic Items and to propose strategic framework the criteria selected to describe effectiveness of Supply Chain Management (SCM) were, Availability, Affordability, Accessibility, Coverage, and Quality. Objectives of Medical Supply Management - 6R "right item in right quantity with right quality to right person in right place at right time with minimal waste" is covered by above criteria. The objective was "To assess the effectiveness of Central Level Supply Chain Management of Medical and Diagnostic Items and suggestions for improvement".

Results

According to the figure 1, the total health budget has increased almost double from Rs. 95,190 million to Rs 188,182 million. Allocation to MSD gradually increased from Rs. 35,000 million to 45,496 million.

According to figure 2, total number of estimated item for 2016 was 12,732. Out of these items, estimated surgical, Laboratory and Drugs items were 4348, 7464 and 920 respectively. The total estimated budget was Rs. 38.26 billion and estimation for Drugs, Lab items and surgical items were Rs. 22.9 billion, Rs. 1.57 billion and 13.8 billion.

According to figure 3, total numbers of estimated items for 2019 were 13,998. Out of these items, estimated surgical, Laboratory and Drugs items were 3520, 9178 and 1300 respectively. The total estimated budget was Rs. 131.696 billion and estimation for Drugs, Lab items and surgical items were Rs. 70.38 billion, Rs. 9.22 billion and 52.09 billion.

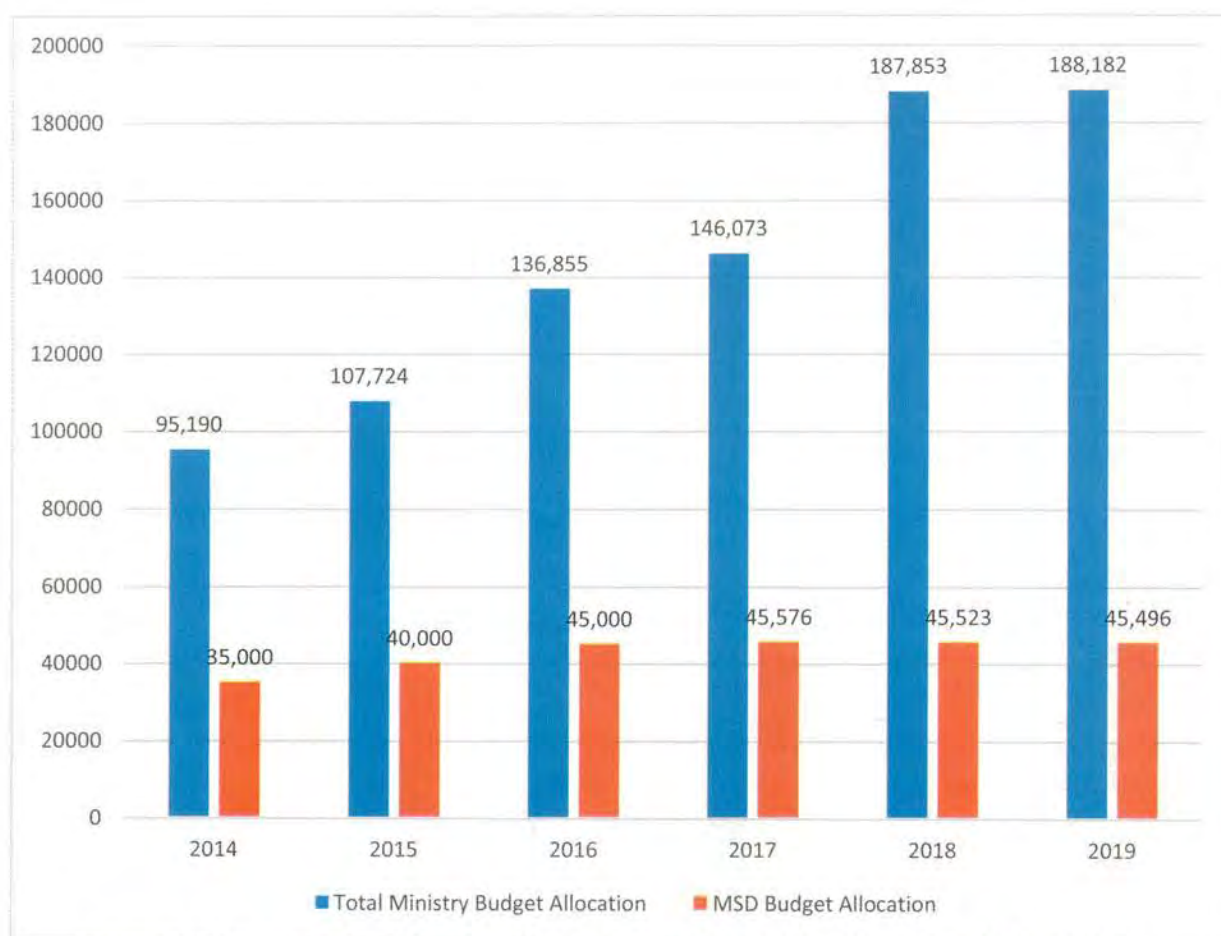


Figure 1: Comparison of total health budget and MSD allocation from 2014 to 2019

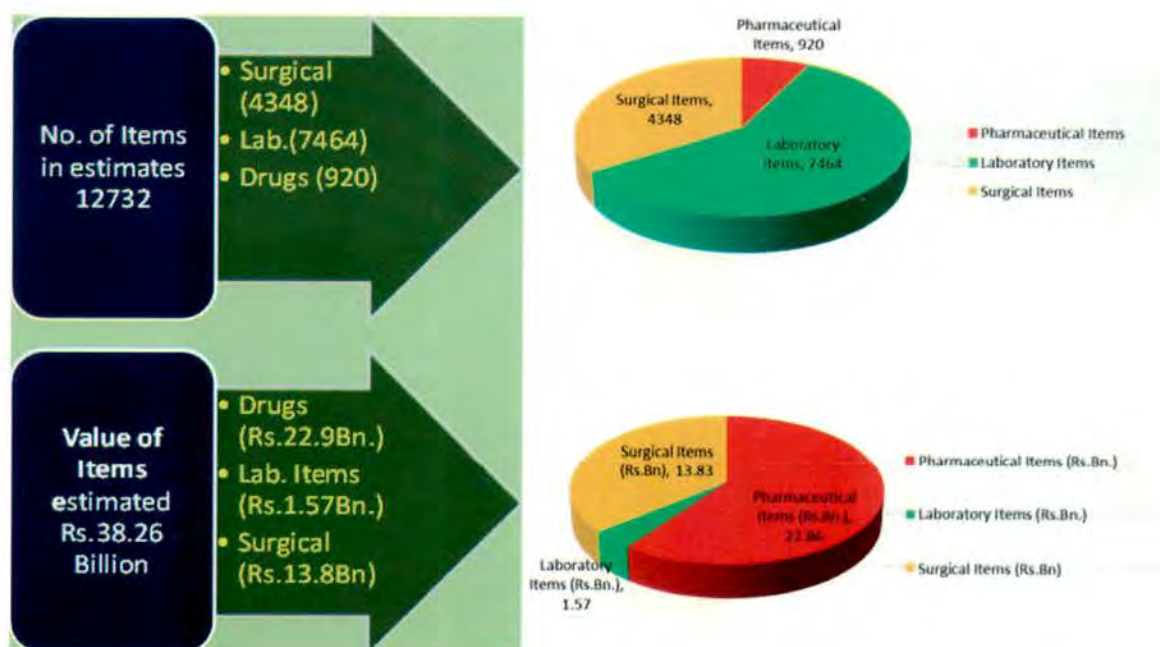


Figure 2: Proportions in number of items in each category and financial allocation (2016)

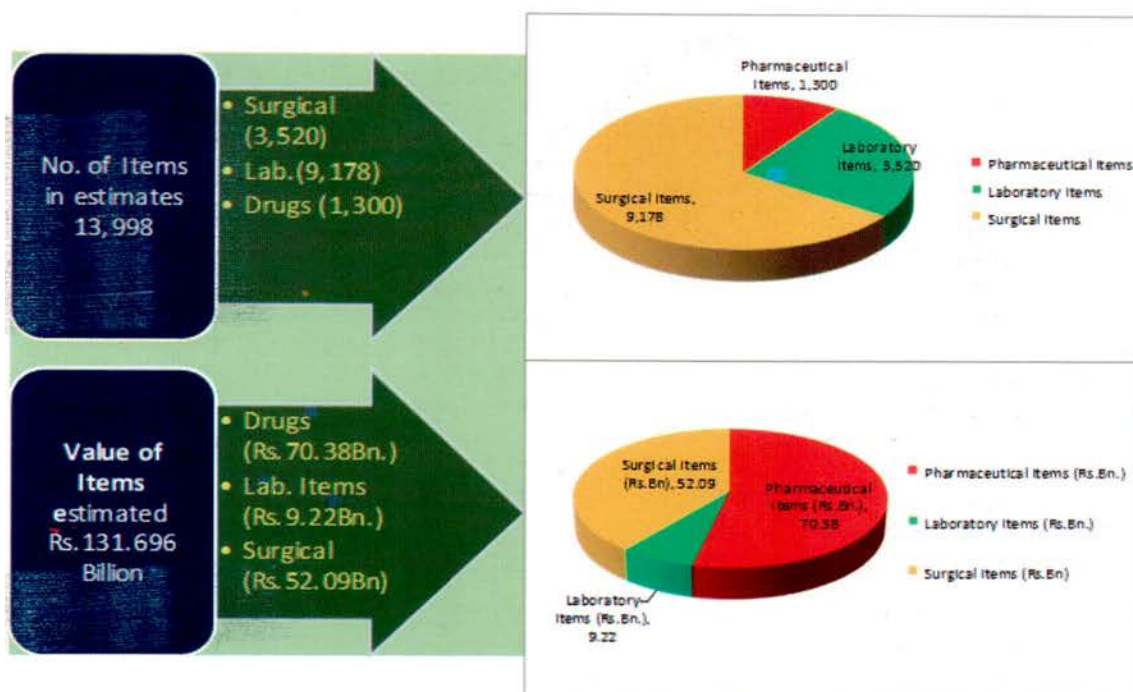


Figure 3: Proportions in item number in each category and financial allocation (2019)

Discussion

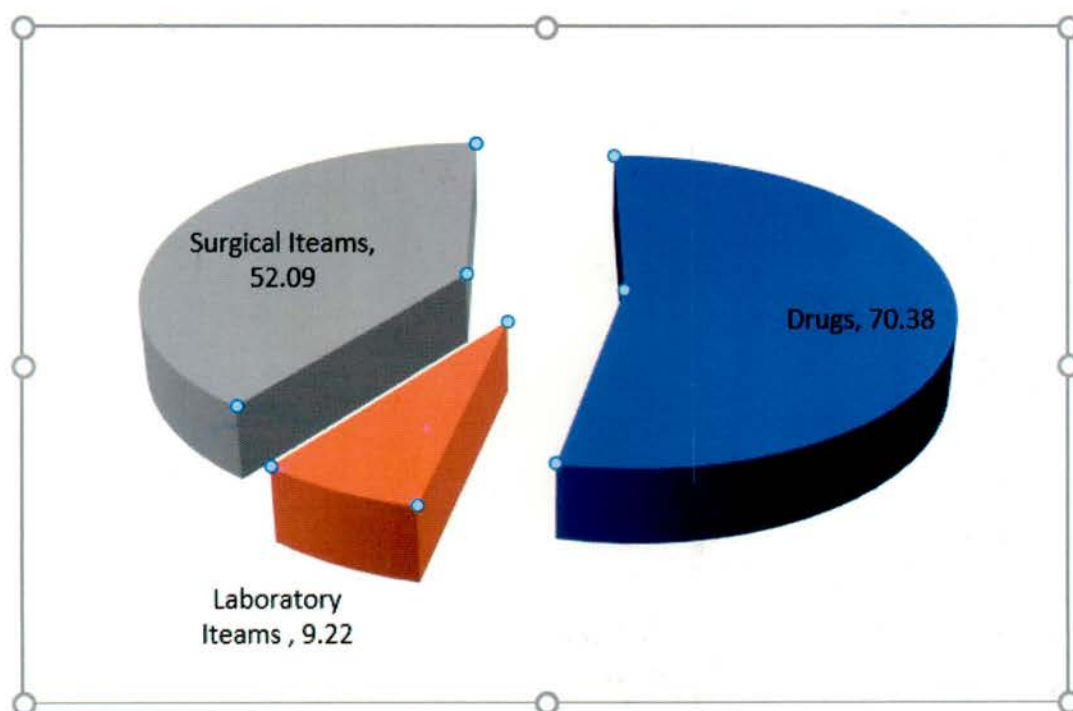


Figure 4: Estimated annual requirement of medical supplies – Year 2019

Affordability

The treasury has allocated a recurrent budget of 45 billion rupees (figure 1) to medical supplies management of MSD and it is exactly 33% of the total recurrent health budget of Ministry of Health. Statistics revealed that total receipts and issues have enhanced with 5-fold rise within past 10 years. Affordability was assured by free health and free medicine policy and out of pocket expenditure has been reduced by providing cardiac stents, eye lenses, expensive antibiotics and anti-cancer drugs freely without limits as well as all investigation free of charge and only through the hospital not by private labs. Even the 40% outdoor care patients seeking private sector service have been benefited by improving affordability through price controlling of medicines in the private sector pharmacies.

Accessibility

There are many public sector curative and preventive health care institutions and they elaborated in table 1 are readily accessible for the patients through good health institutional network which is well connected by good island wide road network and placed in convenient locations. This is proven by providing more than 90% of indoor care by public sector health institutions though 40% of outdoor care has been obtained from private sector by patients on their will.

National formulary for government hospitals is revised every 3 years to update the list taking in to consideration of latest trends in the usage, evidence based selection criteria, new epidemiological pattern, cost effectiveness / cost benefit of the drugs in the formulary and proposed items. This definitely improves accessibility of patients to new drugs.

Coverage

Achieving of coverage by good network of curative and preventive health institutions is described in Annual Health Bulletin 2015 as "Any type health care unit could be found on an average not more than 1.4 km from any home". Free western type of government health care service could be found within 4.8 Km from patient home and institutions are elaborated in table 1. Coverage of supply of medical and diagnostics items has been achieved by direct supply to central ministry institutions by MSD and to provincial ministry institutions through 26 RMSDs.

Availability

Availability is described by number of out of stock items per month, local purchase per month, no of items supplied with scheduled

quantity and time (delayed supplies). Long lead time and delayed supply of first stock of most of orders by the suppliers were identified in most instances by desk review. Hence, availability is highly unsatisfactory due to various delays of supplies.

Quality

Level of quality (Quality, Safety and Efficacy) is described by number of quality failure items / batches per year due to manufactures faults and transportation faults up to MSD. Quality was maintained by various processes at MSD and Institutional level.

Effectiveness of measures taken to overcome issues

Several steps have been taken for process intervention for the effectiveness in SCM of Medical and diagnostic items and they are as follows:

- Regular formulary revision to review specification and formulary list at institutional levels promotes proper selection of needed items which are ordered with proper forecasting,
- Estimation and ordering with buffer stocks are placed in time with adequate lead time,
- Proper selection of quality drugs is ensured by strict registration process at NMRA
- Procurement mechanism with international competitive bidding supported by proper technical evaluation,
- Regular and frequent monitoring of supplies through weekly or twice a week review meeting with procurement entity by MSD
- Rational prescribing practices in generic form are promoted through hospital therapeutic committees,
- Therapeutic committees are empowered to carry out clinical audits on the prescribing, medication errors and usage of medicine.
- Regularize the practices and enforcement of therapeutic guidelines and Standard Treatment Guidelines, via policy decisions made by the National and Provincial therapeutic committees.

Table 1 – Distribution of Health Care Institutions in Sri Lanka

Level of Care	Institution	Number
Curative institutions		
Primary Care Institutions	Divisional Hospitals Type I	46
	Divisional Hospitals Type II	134
	Divisional Hospitals Type III	300
	Divisional Hospitals CD & MH	09
	Central Dispensaries (CD)	441
Secondary Care Institutions	Base Hospitals Type A	30
	Base Hospitals Type B	50
Tertiary Care Institutions	Teaching Hospitals,	17
	Provincial General Hospitals	2
	District General Hospitals	19
	Special Hospitals	8
Total curative institutions		1056
Preventive Care Service	MOH Offices	338
	Specialized Public Health Programmes	09
Total preventive institutions		347
Total health care institutions		1403

Discussion

Ministry of Health allocate one third of the recurrent budget to medical supply. This will help to reduce out of pocket expenditure to patients and also improves the affordability.

WHO guidelines, updated National Medicinal Policy & Essential Medicines List (EML), defining the usage at institution level of the formulary items. Policy centric categorization of the formulary items under the regular, complementary and named patient basis help rationalize the prescribing, usage and availability of medical supplies at the government medical institutions. It has been applied in the annual requirement estimation process that was done through a computerized system, which is connected to all the state sector institutions.

In procurement process, based on TEC recommendation, procurement committee always approve NMRA registered products or at least with no objection from NMRA. Quality, safety and efficacy of the essential medicines

imported and marketed in the country has been assured by reliable and strict evaluation criteria used in the registration system by the NMRA, adhering to protocols and guidelines with quality testing the registration samples as well as by examining the GMP (Good Manufacturing Process) and reviewing product dossiers and clinical trials, performance in using in other countries. Testing of pre shipment samples are requested for new product or suppliers. Quality Assurance Lab facility for checking samples for TECs and pre delivery sample checking and post-delivery surveillance as well as to maintain good pharmaco -vigilance which is not adequate at present,

Availability of key essential drugs was over 90% in teaching hospitals but 72 - 79% in lower level facilities (Medicine in Health Care Delivery in Sri Lanka, Situational Analysis, 2015). The main reason for out of stock situations is the delay of main supplies (non-compliance of supplies to the ordered delivery schedule and quantities) which leads to use of 3 months buffer stock. Inadequate storage capacities, wastages / damages of pharmaceuticals and spoilage of the vaccines and other medical

items are other main reasons for out of stock situations. Transports of medical items are somewhat satisfactory but delays of cool items yet to be improved.

Proper estimation of medical items with demand based advance requirement forecasting system is done through this MSMIS system by gathering annual requirement of each institution at the National and the peripheral levels. Regular monitoring through MSMIS, mobilizing stocks among institutions has reduced the out of stock situations, improving the availability. Proposed Emergency Reserve Store is supposed to give a permanent solution to out of stock issue and improve the availability and the coverage.

Frequent communication is maintained for the collaboration of all the stakeholders through medical supplies review meetings which is essential to prevent out of stock situations. Regular Drug & Therapeutic Committee meetings are conducted at the institutional level to improve the communication and help improve the availability of medical supplies.

A new policy of promoting local manufacturing through state sector (State Pharmaceutical Manufacturing Corporation) and private sector companies has been implemented to improve not only the availability but also to improve the quality, efficacy and ready access to medicines within the country and to contribute to global drug availability.

Procurement reforms which offer a high level of transparency, accountability and value for money in the application of a procurement budget have been proposed with expectations to enhance availability of medicine and to minimize the lead time by tri party agreement, supplier registration with centrally fixed price as well as fast track procurement system through international procurement agents such as crown agents and UNOPS. Patient accessibility to rarely used noncommercial drugs and orphan drugs will be increased by introducing such a fast track procurement system.

Despite of all the measures being taken, the following challenges still exist in Medical Supply Management

- To prevent frequent out of stock situations
- To prevent frequent quality failure situations
- To minimize waste and expiry items
- To improve central and institutional store capacities

- To improve transport capacity at MSD and at RMSDD / institutions
- To improve capacity of MSD staff with exposure to modern technologies
- To expand the MSMIS to provincial hospitals even

Conclusions and Recommendations

Affordability was assured by free health and free medicine policy and out of pocket expenditure has been reduced by providing cardiac stents, eye lenses, expensive antibiotics and anti-cancer drugs freely without limits. Public sector curative health care institutions are readily accessible for the patients through good health institutional network, which is well connected by good island wide road network. Island wide coverage has been achieved with availability of free western type of government health care service within 4.8 Km from patient home. But, still availability and quality were unsatisfactory due to various issues in Medical Supply Management.

Despite the measures being taken, challenges were still exist in Medical Supply Management. A comprehensive strategic framework with all possible strategies is recommended to be implemented and monitored with shared responsibilities among stakeholders which will provide evidence based sustainable solutions to issues in Medical Supply Management. The proposed strategic framework is as follows.

Table 2 : Strategic Framework with strategic objectives and main strategies
1. Strategies to improve availability to essential medicines
1.1 Reviewing the Essential Medicines List according to the morbidity pattern 1.2 Harmonizing National Essential Medicinal List with MSD Procurement list 1.3 Improving the Medicinal registration process 1.4 Restructuring the procurement procedure 1.5 Encouraging the local manufactures through purchase preference policy and tax incentives 1.6 Strengthening and streamlining the estimation process 1.7 Strengthening the Monitoring process 1.8 Strengthening the storing and distribution process 1.9 Promoting Rational use
2. Strategies to improve accessibility & coverage to essential medicine
2.1. Effective financial management for medical procurement 2.2. Promoting physical accessibility to the institutions 2.3. Improve the communication
3 Strategies to ensure the quality / safety and efficacy of medical items
3.1. Ensure the quality and standards of the process 3.2. Improve the Quality and Safety of the medical product 3.3. Ensure the quality storage facilities and transport mechanism at national and regional levels. 3.4 Strengthen the capacity of national/regional regulatory authorities 3.5 Strengthen Quality Assurance Lab service
4 Strategies to ensure the minimization of effects to the health service from falsified and substandard drugs
4.1 Prevention, detection and response of the substandard and falsified medicinal items

4.2 Improve medication safety and pharmaco vigilance
4.3 Improve public awareness and education
5 Strategies to improve the affordability to medical products
5.1 Price regulation
5.2 Reduce the out of pocket expenditure
6 Strategies to enhancing the evidence based management
6.1. Improve research activities
7. Strategies to improve the international collaboration
7.1. Promote shared understanding among member states regarding price, quality and supply of medicinal products