D2-29 Support to improving Management and Safe use of Medical Equipment
MPTF OFFICE GENERIC FINALPROGRAMME NARRATIVE REPORT
REPORTING PERIOD: 1 JANUARY TO 31December 2012

Programme Title & Project Number

Programme Title: **Support to improving Management and Safe use of Medical Equipment**

- Programme Number :D2-29
- MPTF Office Project Reference Number: 74325

Country, Locality(s), Priority Area(s) / Strategic Results

Iraq: 6 Governorates (Anbar, Kerbala, Qadissyah, Salah Al-Din, Sulaymaniyah and Thi-Qar)

Priority area/ Strategic results: Essential Services: Health and Nutrition

Participating Organization(s)

WHO

Implementing Partners

Ministry of Health and relevant Departments of Health.

Programme/Project Cost (US$)

USD 2,540,683

Agency Contribution
Core funding: USD55,000

Government Contribution *(if applicable)*

Other Contributions (donors) *(if applicable)*

TOTAL: USD 2,595,683

Programme Duration

Overall Duration *(34months)*
Start Date *(02 March 2010)*

Original End Date *(02 March 2012)*

Actual End date *(31December2012)*

Expected Financial Closure date: 31December 2013

Programme Assessment/Review/Mid-Term Eval.

Evaluation Completed
☐ Yes ■ No Date: *dd.mm.yyyy*
Evaluation Report - Attached
☐ Yes ■ No Date: *dd.mm.yyyy*

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EXECUTIVE SUMMARY

Health Technologies (HT) and in particular medical devices have become an important component of modern health services. HT are defined as application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives. HT are considered indispensable tools for effective and efficient prevention, diagnosis, treatment and rehabilitation and attainment of internationally agreed health-related development goals, including those contained in the Millennium Development Goals (MDGs).

This programme has greatly contributed to supporting the Government of Iraq in improving to some extend the quality of life of the population through improving health and better use and management of medical equipment, particularly in the governorates that were targeted through this project.

Since 2003, the international community and Iraq's Ministry of Health (MoH) have been heavily investing in improving the quality of health care and patient safety by providing medical equipment and medical supplies worth of 100s of millions of dollars in support to different health programmes. Yet, whilst efforts have been aimed at securing the availability of medical equipment and medical supplies, many aspects in regard to the management of these medical devices were not addressed in a more structured manner. The project has helped to support putting in place such process will is already making an impact in initiating this vital improvement and increasing access to quality health care services by addressing the economic and technical challenges of deployment of medical equipment as well as addressing patient safety.

This was achieved through establishing static and mobile workshops where biomedical equipment can be regularly brought for maintenance and repair by technicians who have been trained through the project funding. In this context, over ten (10) national training workshops were conducted inside the country to improve practical skills for 216 maintenance and repair personnel. Similarly, WHO organized two-week training course on Medical Equipment Management. The training was organized in Malaysia and provided opportunity for senior health professionals from DOHs of Diwaniyah, Kerbala, Anbar, Salah Al-Din, Sulaymaniyah and Thi-Qar to discuss with Malaysian counterparts the system used in biomedical equipment management An advanced training course on corrective and preventive maintenance of endoscope system (flexible and video endoscopes) for 8 technicians has been conducted in China. The programme provided also an opportunity for 5 staff to attend an overseas training for the first time ever, challenging their skills and abilities and provide them with an opportunity for a comprehensive review of all the repairs, operations, disassembly and replacement parts of endoscope.

By doing so, the MoH has fulfilled its initial goal to promote the area of management of medical equipment, as a priority in restoring health care services. The consideration of good management of medical devices is beyond the content of routine maintenance and repair procedures and involves having a proper system in place to manage all aspects of the life cycle of medical devices that will support and advance patient care. All medical equipment devices carry a certain degree of risk that has to be managed. The complex interactions involving patient, devices, users, health professional, facilities and the environment require a systems approach to medical device safety and the programme was instrumental in bringing this notion into practice in Iraq.

I. Purpose

The project aims at providing assistance to the Iraq Ministry of Health (MoH) to promote sustainable changes and improvements of health care services and enhances the quality of health interventions by focusing on building a coherent medical equipment management system guided by sound policies and good management practices as well as improving institutional skills and capabilities. The outcome of the project was to promote and improve systems approach to management and safe use of medical equipment in the six targeted governorates.
The project was implemented by MOH at central level and with full involvement of the six targeted governorates DoHs in Anbar, Qadissyah, Kerbala, Salah Al-Din, Sulaymaniyah and Thi-Qar and technical support from WHO.

The project covered six governorates[1] in Iraq with aim of providing assistance to the MoH to promote sustainable changes and improvements of health care services and enhances the quality of health interventions by focusing on building a coherent medical equipment management system guided by sound policies and good management practices as well as improving institutional and individual skills, competence and capabilities. The project has helped initiating a vital improvement process in addressing the economic and technical challenges of deployment of medical equipment as well as addressing patient safety and increased access to quality health care services.

Everywhere in the world, health care systems face the challenge of meeting the "STEEEP test" which means being **S**afe, **T**imely, **E**ffective, **E**fficient, **E**quitable and **P**atient-centered. Meeting these challenges to improve health care content and delivery implied the use of increasingly sophisticated medical equipment for diagnosis and treatment as well as ensuring patient and medical staff safety. Health Technologies (HT) and in particular medical devices have become an important component of modern health services and are considered indispensable tools for effective and efficient prevention, diagnosis, treatment and rehabilitation and attainment of internationally agreed health-related development goals.

Any medical equipment carries a certain degree of risk that has to be managed in their day to day operation. The complex interactions involving patient, devices, users, health professionals, facilities and the environment require a systems approach to medical device safety. The Medical Equipment Management System - which defines processes through which Biomedical Engineering Divisions provide safe, efficient and effective use of medical equipment in all healthcare facilities - is achieved through the establishment of policies, standards and best practices that aim at maintaining a high level of equipment performance, as well as promoting quality patient care and safety. This programme has contributed to this process even if the remaining challenges are still many and will take time to overcome.

The two main outputs that contributed to achieving the outcome are:

Output 1: MoH has an improved Medical Equipment Management System in six target governorates
Output 2: MoH has an improved capacity to formulate policies and national standards on quality, safety and management of medical equipment in line with international standards.

In this respect, the programme has assisted in putting in place a system in the following areas of intervention:
(1) Data collection, verification and updated information on medical devices as a support to the DOH prioritization of needs and allocation of resources;
(2) Medical equipment management systems, including inventory, maintenance, training, procurement of test instruments, and physical rehabilitation of central biomedical repair shops;

[1] Project coverage: Anbar, Diwaniyah, Kerbala, Salah Al-Din, Suleimaniyah and Thi-Qar

(3) Action plans and interventions aiming at formulating appropriate policies and national standards for the assessment, planning and management of medical devices in line with the international standards

The programme contributed to addressing UN Millennium Development Goals related to health such as MDGs 4, 5, 6, and 7, through institutional support to the health system in developing policies, building capacities, and providing resources to the medical equipment program. It has helped to develop strategic direction for Essential Health Technologies (EHTs) programme in Iraq. This EHT program aims at improving health and reducing morbidity and mortality through the safety, availability, and appropriate use of essential health technologies within health systems. The EHT programme once rolled out to the whole country is expected to contribute to the support of policies and guidelines operationalization, the capacity building of management teams at all levels as well as increasing patient safety by ensuring access to safe and effective medical equipment as addressed in this proposed project.

The two outputs contribute to the UNDAF priority for increased access to quality essential services, particularly in health where they contributed to improving a health system that supports primary care model which is aiming at ensuring basic services that meet the needs of the individuals and the society

II. Assessment of Programme Results

i) Narrative reporting on results

With regard to the first output which was fully achieved, the following is a brief assessment of activities that contributed to the success:

- The fact finding and needs assessment of the medical equipment program which was conducted targeting the six governorates (Anbar, Kerbala, Qadissiya, Salah Al-Din, Sulaymaniyah and Thi-Qar) allowed the development of a plan of action which has been endorsed by the project steering committee

- The medical equipment inventories at health institutions in targeted governorates have been finalized. The equipment inventory is an essential part of an effective medical equipment management. In order to be effective in assisting with various medical equipment management activities, the inventory is to be updated continually so that it provides at any given moment a correct look at the status of medical equipment within the health-care facility

- A series of capacity building activities helped to improve and enhance skills of 234 medical equipment engineers and technicians (179 male and 50 female) through international and national training courses5 in the area of medical equipment management as well as maintenance (corrective and preventive) of a broad range of medical equipment. During 2010 and 2011; 338 professionals were trained, whereas initially the plan was to train 285 staff. The target was surpassed as the assessment revealed the need to invest more in upgrading the skills and abilities of staff to run the medical equipment program more effectively and efficiently. These courses provided the necessary balance: (a) to update the technical skills and abilities of engineers and technicians for operation and maintenance, (b) explain principles of planning and operation of the medical equipment, (c) exercise preventive maintenance session, (d) explain schematic diagrams for repair and maintenance, and (e) exchange information and experience. Additional 13 national training workshops were conducted inside the country to improve practical skills for 157 maintenance and repair personnel.

- Three sets of biomedical test/calibration instruments have been delivered to the six targeted end users. The test instruments are tools to ensure accurate measurements and functioning of medical equipment at healthcare facilities

- One middle-scale biomedical equipment maintenance workshop and two small-scale constructions were constructed and equipped with appropriate scientific equipment, office equipment, including informatics.

- Subscription to educational publications and monthly delivery of Healthcare Engineering Journal is ongoing.

Concerning the second outputs: MoH has been able to gain an improved capacity to formulate policies and national standards on quality, safety and management of medical equipment in line with international standards.

- This was partially achieved through supporting ongoing technical work in the area of developing/adopting strategy, standards and guidelines for medical equipment management. Also, the process of reviewing and updating strategy and procedures for managing medical equipment has been initiated, and some of the needed capacity building activities have been conducted. Guidelines on medical equipment assessment, planning and monitoring and evaluation have been developed. These guidelines are now being used as an input in the process of updating the strategy and standards in place.

- Throughout this process, efforts were made to build the capacity of national staff on assessment methodology as well as planning process. Also a link to international networks and access to a web-based management tool that provides relevant information and data on management and monitoring of medical equipment has been established.

- This tool helped in (1) preparing generic technical specifications for a wide range of medical equipment needed to be procured; (2) identifying resources needed for proper selection, use, maintenance and management of healthcare technology; and (3) providing access to a monthly medical device Journal on the latest and vital issues regarding patient safety and equipment management

The main counterparts for the implementation of the project is the MoH represented by different directorates; the Directorate of Technical Affairs and in particular the Biomedical Equipment Department and Needs assessment Department the Directorate of Projects and Engineering Services, central maintenance repair shop in Kimadia/Baghdad as well as Baghdad University/College of Biomedical Engineering. The partnership provided a forum through which members are now able to combine their strengths and implement solutions that no one partner could achieve alone. The partnership supports national training programmes; management and standard issues, and data information system. In addition, the MoH and DoH personnel continue to be fully engaged in all implementation stages so as to ensure the continuity of the programme by the targeted stakeholders once the project is completed.

ii) Indicators Based Performance Assessment:

	Performance Indicators	Indicator Baselines	Planned Indicator Targets	Achieved Indicator Targets	Reasons for Variance (if any)	Source of Verification	Comments (if any)
Outcome 1: Systems approach to management and safe use of medical equipment in the six target governorates have promoted and improved							
Output 1.1 MoH has an improved Medical Equipment Management System in six target governorates	Indicator 1.1.1 Number of targeted repair shops constructed / rehabilitated	**0**	**6**	**3**	Only 3 repair shops were constructed for DoHs of Kerbala, Thi-Qar and Anbar. Due to prohibitive costs the shops for DoH Diwaniyah and Salah Al-Din have been removed and DoH Suleimaniyah is constructing using its own funds	Project Progress Report	
	Indicator 1.1.2 Number of staff trained on the maintenance of medical equipment.	**0**	**285**	**234 (82%)**	Assessment revealed the need to invest more in upgrading skills and abilities of staff in order to run the medical equipment service activities more effectively and efficiently.	Training reports and certificates	
Output 1.2 MoH has an improved capacity to formulate policies and national standards on quality, safety and management of medical equipment in line with international standards	Indicator 1.2.1 Number of regulations, standards developed and adopted.	**0**	**4**	The process for adopting standards or laws has been very slow	Drafted guidelines on medical equipment assessment, planning and monitoring and evaluation.	Guidelines available	Throughout this process efforts were made to build the capacity of national staff on assessment methodology as well as planning process
	Indicator 1.2.2 Medical Equipment Committee formulated	**0**	**1**	**1 (committee has been formed)**		MOH letter forming the committee	

iii) Evaluation, Best Practices and Lessons Learned

There have been several elements affecting the timely implementation of the project among which two are important:

- Absence of a single entity handling the activities of medical equipment management led to more efforts and time to bring all players to a common understanding in adapting policies and standards pertaining to medical equipment.

- Improved communication link between Amman office and targeted stakeholders in Anbar, Qadissyah, Kerbala, Salah Al-Din, Sulaymaniyah and Thi-Qar played an important role in maintaining good coordination and regular consultations, despite the remote management of the programme.

As for lessons learnt:

i. Utilization and management of medical equipment is a multi-phase task which requires a multi-disciplinary team from different Directorates at MoH.

ii. It is necessary to adapt national policies and standards on what constitutes good practice in medical equipment management.

iii. Successful development of medical equipment maintenance services depend on critical factors including political will and financial support. Investment in healthcare technology should be maintained and set as priority in achieving quality healthcare services.

iv. The life cycle approach to medical equipment management provides a more effective system, requiring that maintenance supervisors be taught management skills.

v. Setting a priority to train a large number of staff to maintain essential medical equipment is urgent in view of the rapid deployment of medical equipment in health institutions.

vi. Human and financial resources need to be included in planning to assure that continuous training is provided to health professionals to ensure accepted levels of technical abilities.
vii. Through this programme, the MoH has fully realized the important of containing the growing costs of medical equipment by establishing priorities in the selection, acquisition and management of these technologies.

III. Abbreviations and Acronyms

DG: Director General

DoH: Department of Health

Kimadia: State company for Drugs and Medical Supplies and responsible for maintenance of equipment for whole Iraq.

EHT: Essential Health Technology

IHR: International Health Regulations

MDG: Millennium Development Goals

MoH: Ministry of Health

MOU: Memorandum of Understanding

NDS: National Development Strategy

PSC: Project Steering Committee

TOT: Training of Trainers

WHO: World Health Organization

Annex 1 **Data of Capacity building during the reporting period**

	Total Number of			
	No. of Courses	Participants	Female	Male
Overseas training courses	**4**	**8**	**0**	**8**
National Training Activities	**17**	**226**	**50**	**176**
Total	**21**	**234**	**50**	**184**

Annex 2 **Photos of overseas training courses and national training activities**

Local workshop courses on the use and application of a broad range of medical equipment (X-Ray, Laboratory, Life Saving Equipment, & etc…)

Test Instrument Training Course in Malaysia