FOREWORD

The Botswana Medical Equipment Policy is produced in line with the provisions of the Botswana’s long term Vision 2016 and the Botswana National Health Policy. Both Vision 2016 and the Botswana Health Policy emphasize the provision of quality service to all citizens of Botswana.

Medical equipment and instruments pervade all aspects of modern medicine and healthcare services. The availability of efficacious, good quality, safe and effective medical equipment is an important condition for a well functioning curative and preventive health service.

Quality of service, as provided by appropriate utilization and systematic planning of the medical equipment, influences the patient outcome, which in turn has an impact on the national health balanced budget.

This policy will guide health providers on the management of equipment and has tried to recognize and show that the effective use of medical equipment involves more than the purchase and installation of a piece of equipment. It requires a number of technical and administrative inputs.

My Ministry urges all stakeholders to actively support the principles and objectives contained in this policy document, and to ensure its implementation.

HON. REV. DR. JOHN SEAKGOSING
MINISTER OF HEALTH
ACKNOWLEDGEMENTS

This document is a result and culmination of joint and collective efforts from government institutions, international organisations, non-governmental organisations, professional organisations, individuals and the Ministry of Health personnel in particular leaders of hospitals, who participated in the development of this policy during the period of consultations. The central role played by the then Department of Technical Support Services in the development of this policy is particularly acknowledged.
GLOSSARY

Efficacy - the ability of diagnostic or therapeutic modalities to fulfill their intended clinical purpose under optimum conditions.

Effectiveness - the ability of a diagnostic or therapeutic modality to fulfill its intended clinical purpose under real world conditions and in a day to day practice.

Performance - measure of the ability of equipment to fulfill its intended purpose in conformity with its technical specifications or standard.

Safety - systems freedom from danger that make them safe for day to day use.

Cost-effectiveness - the measure of health benefits or a given cost.

Medical Equipment/Device - apparatus or systems employed for the prevention diagnosis, or treatment of disease in humans that do not normally enter metabolic pathways.
BOTSWANA MEDICAL EQUIPMENT POLICY.

1.0 INTRODUCTION

Medical equipment play an important role in the provision of health services at all levels. The expenses associated with the procurement, operation, maintenance and repair of medical equipment is a major cost to health services and governments. However, the importance of effectively managing medical equipment in the Ministry of Health has only recently been recognised.

For many years, the Ministry of Health (MOH) has selected equipment not based on available information and allocated inadequate funds for repair and maintenance, and managers had not taken seriously the need to standardise equipment. No provision for after-sales support was taken into account in designing projects. The unfortunate result of this oversight as revealed by the World Health Organisation (WHO) study is that less than 50% of medical equipment is in working order in most developing countries.

In 1987, WHO established a Global Action Plan on the Management, Maintenance and Repair of Healthcare Equipment and Devices in order to raise awareness of these issues and help countries to rationalise health care equipment and devices services. One of the principal recommendations of the WHO Global Action Plan was that public health services establish a national Healthcare Technical Service (HTS) to co-ordinate the different disciplines involved in medical equipment, instruments and devices management. The HTS should formulate and implement a medical equipment, instruments and devices development strategy based on a good understanding of all aspects of healthcare technology management in the country.

One of the essential 'tools' for this work was to develop a policy through which to provide an enabling environment for any subsequent strategies to be successful. The effective management of medical equipment in developing countries is dependent on the establishment of suitable and effective policies in all areas which impact on medical equipment: planning, resource allocation, selection, procurement, operation, maintenance, personnel and training, technology assessment, research and development and local production. The pursuit of this holistic approach to the management of medical equipment is still lacking in Botswana.

Appropriate policies cannot be developed unless there is a full understanding of the medical equipment sector in the country. The understanding should be based on the fact that, acquisition of a piece of medical equipment represents the introduction of new equipment, instruments and devices into the healthcare environment.

The successful adoption of such medical equipment involves a number of activities in addition to the purchase of the hardware including, user and technical training, supply of consumables, maintenance and conformity to international
safety standards. The full range of activities provided in this framework and referred to as the "medical equipment package".

The Situation Analysis on medical equipment in Botswana carried out in 1992 revealed lack of systematic planning in the acquisition of health equipment and devices, particularly during the procurement and utilisation phases. This resulted in high levels of inappropriate utilisation of medical equipment and unnecessary expenditures. There was lack of proper and uniform acquisition strategies, which also contributed to a high level of medical equipment cost, and resulted in lack of equity with respect to patient access and distribution of the medical equipment.

Most of all, there was no coherent system of regulation and assessment of these medical equipment. The fragmented, inefficient and ineffective manner, in which some medical equipment resources were managed and distributed, was thus cause for concern. As already indicated there were also weaknesses on the areas of planning, resource allocation, selection, procurement, operation, maintenance, personnel training, technology assessment, research and development, and local production.

The key policy components which arise from the Situation Analysis and cover the different activities of the Medical Equipment Package (MEP) that need to be addressed by the Ministry of Health are:

- Management and Planning
- Allocation of financial resources
- Selection
- Procurement
- Getting equipment ready for use
- Using equipment throughout its life
- Maintenance
- Personnel
- Training
- Equipment and devices assessment
- Research and development; and
- And local production.

2.0 GOAL

Our goal is to deliver improved health services, by giving health service providers the necessary medical equipment resources that meet the requirements of the nation in the prevention, diagnosis, and management of diseases/conditions by ensuring the efficacy, safety, durability, quality, cost-effectiveness and appropriateness of healthcare technology."
3.0 OBJECTIVES

The objectives are to:

Ensure that consistent availability of efficacious, effective, safe, prompt and appropriate medical equipment is maintained in health facilities.

Ensure that all citizens have equitable access to essential medical equipment on a sustained basis.

Ensure the provision of essential medical equipment that are appropriate and affordable to government health facilities and the private sector.

Promote the safe operation of medical equipment through correct use by skilled and knowledgeable staff.

Establish mechanisms and guidelines for donations of medical equipment.

4.0 STRATEGIES

4.1 Management and Planning

4.1.1 Objective

To ensure that Botswana’s medical equipment policy is developed and administered by an appropriate technical body in a rational way according to the objectives defined under 3.0, based on sufficient information and understanding of the state of the equipment, instruments and devices at any given time.

4.1.2 Strategy

4.1.2.1 Establishment of a Management Structure

a. Strengthen Division of Medical Equipment Management Services (MEMS), hereinafter referred to as “the Division”, responsible for all aspects of medical equipment, is established in the Ministry of Health. The Division is responsible for all national networks of biomedical engineering services according to the structure detailed in Annexure 1.

b. The Division has a proper organisational chart and scheme of service and is headed by Chief Biomedical Engineer.

c. The Division is responsible for liaising with all other health service providers and maintenance organisations in order to properly co-ordinate management services of the medical equipment.

d. A Medical Equipment Advisory Committee (MEAC) will be established with clear terms of reference and a membership including the private sector and district hospitals. The Permanent Secretary in MoH will appoint the members of the
committee. A Medical Equipment Advisory Committee meeting will be held at least once a year. Every hospital will have an MEAC and District Health Teams (DHT) that report to the main MEAC.

4.1.2.2 Formulation of Plans

a) The Medical Equipment Policy Implementation Plan will be formulated, adopted and implemented.

b) All health facilities will maintain a minimum standard equipment list depending on the level of service provided, and will be modified when necessary to suit the latest medical equipment and devices and modern needs.

c) The Division will have the authority, after consulting with the government health facility, to re-distribute equipment around the country if it is not being utilised where it is, and will control a central stock of essential life-saving equipment as substitutes for equipment which is sent for repair.

d) The repair, replacement, capital and development budget for the equipment and devices will be the responsibility of the Division.

4.1.2.3 Equipment Procedure Manual

The existing organisational procedures and guidelines will be reviewed and simplified and made into a Ministry of Health Computerised Maintenance Management System. A series of catalogues will be developed to assist users with various aspects of managing equipment.

4.1.2.4 Monitoring, Supervision and Feedback

Indicators will be developed for overall equipment management and reporting purposes. Annual reports from health facilities will include statistics according to these indicators. A Computerised Maintenance Management System would provide feedback every day on out-standing equipment repairs, equipment procurement, and existing equipment performance.

National meetings will be held annually to review overall program of implementation of the policy and guidelines.
4.1.2.5 Communication

MoH will communicate with private sector and other relevant Ministries, i.e. Ministry of Finance and Development Planning, Ministry of Local Government, Ministry of Infrastructure and Technology to raise awareness about healthcare equipment and devices so that it is in line with a priority for management and funding.

MoH will closely liaise with the Department of Building and Engineering Services (DBES) on civil, electrical and mechanical works requirements.

MoH will liaise with other healthcare providers, private hospitals, mission hospitals etc., to share information on equipment management and planning. The Division will implement a programme for raising awareness amongst users concerning the value of equipment and the looking after it, through importance of training, workshops, and re-orientation.

4.1.2.6 Legislation

The Ministry of Health will make legislation to regulate medical equipment in the public and private sectors.

5.0 SELECTION

5.1 Objective

To ensure that the medical equipment incorporated in the Botswana Standard Equipment Lists is appropriate, affordable, and safe for the delivery of the healthcare service.

5.2 Strategies

5.2.1 Criteria for Choice of Equipment

When choosing, ordering equipment/instruments and laying down of specifications, the following criteria will be considered:

- Equipment Safety
- User (and patient) Safety
- Ease of use
- Appropriateness to priority of health problems
- Environmental conditions
- Purchase and operational costs
- After sale support (servicing & repair i.e., vendor or in-house
- Availability of spare parts, accessories and consumables
- Compliance with International standards.
Medical Equipment Advisory Committee will regularly evaluate equipment performance to link to the Essential Service Packages being developed for all categories and levels of the healthcare service.

Annual requests from health facilities will be based on the Botswana Standard Equipment Lists, and any other additional service that may require healthcare equipment and devices.

5.2.2  Health Standard Lists

The Botswana Standard Equipment Lists will be reviewed periodically by the Medical Equipment Advisory Committee to link to the Essential Service Packages developed for all categories and levels of the healthcare service.

5.2.3 Writing Generic Specifications

All purchasing will be undertaken in accordance with the existing database of equipment specifications. Any proposals for updating specifications will be evaluated by the MEAC. Technology assessment and research reports of relevance will be tabled at the MEAC for potential amendment of specifications.

Generic specification will be acquired from the market and reputable medical equipment organisations and modified according to local need if necessary. All purchasing will be laid down in accordance with specification and the MEAC will avail the specifications.

All specifications for medical equipment will state that they should be manufactured in accordance with the international standard IEC 601 (Parts 1 & 2), and for anaesthesia equipment in accordance with ISO 9001.

5.2.4 Standardisation

Minimise the variety of equipment models, specifications may be modified and standardised. Standardisation will be based on acceptable specifications and the type of healthcare service provided.
6. PROCUREMENT

6.1 Objective

To ensure that medical equipment is procured at best-cost benefit ratio, in an efficient manner, on time and is delivered safely to the appropriate destination.

6.2 Strategies

6.2.1 Division Responsible for Procurement

The Division will be responsible for co-ordinating procurement of equipment for government and mission hospitals. Purchase Contracts will be undertaken centrally. Catalogues will detail the Botswana Standard Equipment Lists and the equipment on Purchase Contracts for the different levels of the health service.

6.2.2 Principles of Procurement

MoH will procure medical equipment in accordance with its Purchasing and Replacement Policies and in line with the 10-year Core Equipment Service Expenditure Plan for all government and mission hospitals.

All equipment will be procured according to Specifications and in line with annual Purchase Contracts.

6.2.3 Specifications and Terms and Conditions of (Tendering) Purchase Contracts

Specifications and Purchase Contracts will be updated annually based on reports from users and technical input from the Department, and approved by the MEAC.

Mission hospitals will stock and purchase equipment using MoH Specifications and Standard Equipment Lists. Mission hospitals will make use of existing MoH Purchase Contracts for procurement of equipment.

Private and Mine hospitals will also follow the same guidelines or WHO guidelines on their specifications.

6.2.4 Purchase Contracts

MoH will procure equipment in accordance with tender rules and procedures. Full details of the standard tender conditions will be included in the Purchase Contracts.
7. **GETTING EQUIPMENT READY FOR USE**

7.1 Objective

To ensure that new medical equipment is checked, tested, and ready for safe use in a conducive working environment.

7.2 Strategies

7.2.1 Site Preparation

Site preparation work will be undertaken with advice from medical equipment suppliers so that the room and utility supplies provided are compatible with the equipment when it arrives.

7.2.2 Installation

The Division will be responsible for the installation, commissioning, calibration and acceptance of medical equipment into service according to the Medical Equipment Procedure Manual.

7.2.3 Initial User Training

Users will be trained in the operation, user maintenance, and safe use of the medical equipment before using it.

8 **EQUIPMENT DONATIONS**

8.1 Objective

To ensure that administrative procedures for receiving medical equipment coming as donations are safe, not obsolete, and meet our specifications.

Donor policies have influenced the pattern of medical equipment procurement. In most cases, donations circumvent the selection and procurement systems of the recipient, where such systems exist. As a result, little consideration is taken of actual local requirement, the number of user-staff and their capability and the level of technical expertise of available service personnel. This is usually due to economic changes and financial problems facing a particular recipient, and the growing burden of diseases. In Botswana, donors shall always be made to respect these four core principles:

- A health care equipment donation should benefit the recipient to the maximum extent possible.
- A donation should be given with due respect for the wishes and authority of the recipient and in conformity with existing government policies and administrative arrangements.
There should be no double standard in quality: if the quality of an item is unacceptable in the donor country, it is also unacceptable as a donation.

There should be effective communication between the donor and the recipient, with all donations resulting from a need expressed by the recipient. Donations (solicited) should never be sent unannounced.

8.2 Strategies

8.2.1 Guidelines

8.2.1.1 Donation requirements and Criteria

Prior to making a piece of equipment available for donation, it is crucial that the potential donor makes a critical evaluation of it.

8.2.1.2 General Quality

The donor will ensure that donated medical equipment is fully operational at the system and sub-system levels and that all essential accessories, consumables, testing and calibration instruments, and both operating and service manuals in English are included in the package, with spare parts and supplies readily available.

8.2.1.3 Safety, Specifications and Standards

All medical equipment will meet or exceed existing safety and performance specifications provided by the international standards. They will meet standards promulgated by international bodies such as International Organisation for Standardisation (ISO) and International Electro-technical Commission (IEC).

8.2.1.4 Obsolescence

Obsolete medical equipment or medical equipment for which replacement parts are unavailable will be donated only if they are destined "for parts only", and so designated.

8.2.1.5 Appropriate Technology

In considering the provision of medical equipment, potential donors will ensure compliance to the following criteria which will include but not limited to:

- Simplicity of operation.
- Minimal number of accessories required.
- Availability of necessary operating supplies (particularly disposable) in the recipient country, at affordable cost.
- Standardisation with other HCT in the locale.
- Low energy consumption.
- Does not use environmentally hazardous substances.
- Ease of maintenance.
- Tolerance to unstable electrical supplies and physical environment and compliance with power supply used in Botswana.

8.2.1.6 Equipment Donations in Emergency Situations

The general rule of thumb is that capital medical equipment should not be donated in emergency situations, unless it is established that the emergency will be continued over a long period. The exception to this is any medical equipment listed in the guide published by the United Nations entitled "Emergency Relief Items: Compendium of Generic Specifications", Volume 2, 1992, as amended from time to time.

8.2.1.7 Special Requirements

Donors will be encouraged to comply with National Medical Equipment (NME) Specifications, which include criteria on service contracts. In exceptional circumstances if donors are unable to comply, they will be required to make available consumables and spare parts for the lifetime of the medical equipment.

The Medical Equipment Advisory Committee will be responsible for evaluation and consideration of all new donations being offered and reject any that do not conform to NME Specifications, standards, or guidelines on the contents of Purchase Contracts.

8.2.1.8 Training

Training of personnel to operate and maintain the equipment is an important aspect of the preparation. If the recipient has difficulty organising training for operators and maintenance personnel the donor should suggest alternatives. One alternative could be for the donor to provide such training, with or without the contribution from the recipient.

9.0 USING EQUIPMENT THROUGHOUT ITS LIFE-SPAN
9.1 Objective

To ensure continuous functionality, reliability and safety of the medical equipment throughout its life span.

9.2 Strategies

9.2.1 Consumables, Accessories and Spare Parts

The MoH will make resources available to ensure that medical equipment can be used throughout its life. There will be a Catalogue in the Department with descriptions of items to facilitate ordering of medical equipment consumables, accessories and spare parts.

9.2.2 Manuals

Copies of both operation and technical service manuals will be made available at the department and facility level for all medical equipment.

9.2.3 Safety

There will be Medical Equipment Safety Procedure Manuals in the department.

9.2.4 Planned Preventative Maintenance (PPM)

There will be scheduled maintenance plans for all medical equipment at the Medical Equipment Management Services Workshops. Planned Preventative Maintenance on its own would not improve healthcare service delivery or performance of medical equipment. Appropriate and calibrated tools and testing instruments shall be used for planned preventive maintenance.

The following should be done in conjunction with PPM:

- Walk through Inspection
- User training

9.2.5 Monitoring the State of Equipment

Annual equipment audit will be executed in order to check the working order and condition of equipment.

9.2.6 Disposal and Replacement

The Department will provide technical input on the remaining expected life span and reliability for further use of medical equipment (according to
10.0 MAINTENANCE

An effective system for carrying out maintenance in-house as well as a system for managing maintenance contracts will be put in place, in accordance with details in the Computerised Maintenance Management System.

10.1 Objective

To ensure maximised life span and continuous safe operation of medical equipment.

10.2 Strategies

10.2.1 Persons Responsible for Maintenance

The Division will have a national network of workshops responsible for overall management and repair (see Annex 1). When necessary and where appropriate, fixed and mobile maintenance services will be set up.

10.2.2 Maintenance Management, Repair and Care

The Division will be responsible for overall government hospitals and medical equipment corrective and planned preventative maintenance. Necessary resources will be made available for maintenance and repair. Maintenance management will be based on the CMMS.

11. PERSONNEL

11.1 Objective

To ensure adequate and suitably qualified personnel to manage the healthcare technology effectively.

11.2 Strategies

11.2.1 Users
The users of medical equipment will receive induction programmes on operation and care of equipment when they commence service.

11.2.2 Technical management

The staff establishment of the Division will take into consideration adequate and appropriate levels of expertise required at each facility.

12. EFFECTIVE USE OF EQUIPMENT

12.1 Objective

To ensure staff has knowledge, skills and positive attitude to operate, maintain and manage medical equipment effectively.

12.2 Strategies

12.2.1 Training Requirements

Basic training for users will contain modules about medical equipment use.

MEMS and individual user departments shall assess their training needs on any piece of medical equipment and forward them to MoH for approval.

MoH will make funds available for refresher product training, attachments, short term and long training needs for MEMS.

12.2.1.1 Users will use the medical equipment only after training. User department will keep records on usage of medical equipment. Medical equipment that is under utilized will be taken to where it will be effectively used.
13 TECHNOLOGY ASSESSMENTS, RESEARCH AND DEVELOPMENT

13.1 Objective

To ensure that MOH is updated on changing trends in healthcare technology, and to identify and support operational research and development activities in the field of health care technology.

13.2 Strategies

13.2.1 Technology Assessment

Technology assessment and research will be the function of the Department and user facility.

Technology assessment and research reports of relevance will be tabled at the Medical Equipment Advisory Committee for potential amendment of specifications.

MEAC shall accept research/demonstration models of equipment for use in health facilities only under the Research and Demonstration Models Policy (see Annexure 4).

14 LOCAL PRODUCTIONS

14.1 Objective

To stimulate and promote local production of medical equipment and gradually decrease reliance on imports.

14.2 Strategies

14.2.1 Links with the Private Sector

MoH will liaise with the private sector, University of Botswana Faculty of Engineering and Technology and non-governmental engineering organizations in order to stimulate local production using any of the following options:-

- Assembly of medical equipment from imported parts
- Production of low technology medical equipment
- Production of spare parts for medical equipment
- Production of consumables for medical equipment

15. POLICY IMPLEMENTATION

A Botswana National Medical Equipment Policy Implementation Plan (BNMEPIP) will be formulated and adopted to ensure that this policy is put into practice.
ANNEXURES
ANNEXURE 1

Health Care Technology Advisory Committee (HCTAC)

Members and Terms of Reference.

1. **Members**

Medical Equipment Advisory Committee is appointed by the Permanent Secretary, Ministry of Health. The committee shall report to the Director of Clinical services.

1.1 The committee has the following permanent members:

- Director of Clinical services - Chairperson
- Chief Supplies Officer, MOH
- Chief Laboratory Scientist
- Orthopaedic Surgeon
- Theatre Nurse
- Biomedical Engineer
- Anaesthetist
- Radiographer
- Chief Biomedical Engineer

1.3. The Committee will co-opt other specialists or professionals as deemed necessary.

1.4. The chairperson will be Director of Clinical Services and the vice-chairperson Assistant Director of Supplies, MOH

1.5. The Division of MEMS (Head Quarters) (MEMS department by Head of MEMS at Facility) shall provide secretariat for the committee.

1.6. At least five members from the committee have to be present to make decisions on behalf of the committee.

ANNEXURE 2
2. **Terms of reference**

2.1. Medical Equipment Advisory Committee The Healthcare Technology Advisory Committee shall meet every month and when it is necessary. Its tasks include the following:

2.2. To advise the Director of Clinical Services in matters concerning instruments and equipment for all health facilities in Government

2.2.1. Instruments and equipment include all equipment and instruments for diagnosis, treatment and monitoring of patients, also including laboratory equipment, furniture specially made for health services, aids for the handicapped. Equipment and plants for daily running of buildings (infrastructure) is normally not included (except paging and radio communication systems), but the Committee should be kept informed through liaison with DBES on these issues.

2.3. Recommend steps to be taken to ensure that stocks of instruments and equipment at all Government health facilities are adequate to permit each facility to fulfill its health care functions.

2.4. Develop and maintain standards pertaining to quality, quantum and/or makes/models for instruments and equipment for health facilities at different levels of operation, bearing in mind the skills of health workers operating the instruments and equipment, and the needs for rationalization.

2.5. Monitor the usage/utilization of medical equipment, the downtime (for repairs etc.) and the quality and lifespan of equipment in order to improve procedures and future selection of right technology.

2.6. Assess annual and ad hoc requests for equipment for a) new activities b) replacement of existing equipment c) change in technology in order to minimize patient risks and suffering.

2.7. Prepare specifications for equipment and evaluate tenders and recommend to Public Procurement and Asset Disposal Board (PPADB)

2.8. Ensure countrywide distribution of equipment according to policy, standards and actual needs.

2.9. Give preference to local manufactures and dealers of equipment when their offers are of same quality and price comparable to those from foreign companies.

3.0. The committee shall ensure that equipment donated by agencies should conform to specified standards and meet a need already identified and recognized by the committee.
1. General

1.1. This document is intended to give guidelines and areas of responsibility for matters dealing with purchase of medical equipment for all public health facilities in Government. The guidelines are in accordance with the supplies regulations. The term Medical Equipment includes laboratory equipment, furniture specially manufactured for health services, surgical instruments and aids for the handicapped. It does not include items which are found in the drug catalogue and are obtained from Central Medical Stores. This proposal does not deal with standard furniture or domestic items.

1.2 The following procedures supersede previous procedures for purchasing and distributing medical surgical and dental equipment signed by AD/HS K. M. Makhwade 7/6/90.

2. Responsibilities

2.1. Director of Clinical Services is responsible for equipping the health facilities.

2.2. For control of purchase, utilization, use, maintenance and write off of medical equipment and instruments the Director of Health Services has the MEAC at his disposal. Therefore, all purchases of medical equipment should pass through the committee - except replacement of write offs of minor instruments and low risk medical equipment.

2.3. Terms of reference for the committee is appended to this document.

2.4. The departments responsible for equipping and purchasing of medical equipment are as follows:

2.4.1. Department of Clinical Services is responsible for:

- Budget for a) new equipment and b) replacements for written off equipment for all hospitals
- Annual assessment of the use of and need for new medical equipment in each hospital, indicating appropriate technology
- Annual preparation of a list of equipment needs including purpose of the purchase (relation to medical activity) and specifications or preferred manufacturer and make.
- Notification to the Secretary of the MEAC hereafter called the Secretary) when emergency needs occur or when a piece of equipment is no longer needed.
- Liaise with all parties concerned about planning and equipping new wards or hospitals.
2.4.1.1. Each district and referral hospital is responsible for submitting information to the DCS necessary for:

- preparing plans for equipment renewals and procurement related to new medical activities.
- reporting emergency needs and surplus equipment to the Secretary.

2.4.1.2. Every hospital should establish an equipment committee to ensure collection of information for the above purposes, to prioritize equipment needs in the hospital, and to evaluate present equipment.

2.4.2.1. Each primary hospital has the same responsibilities as the district and referral hospital to ensure proper handling of equipment requests. See 2.4.2 and 2.4.3 above.

2.4.3. **Department of Clinical Services**

is responsible for:

- Budget for laboratory and pharmaceutical equipment and maintenance of all medical equipment under Ministry of Health.
- collaboration with the Supplies Department to maintain a detailed inventory for all medical equipment and instruments and issue annual lists to all hospitals.
- Advise institutions and departments on procurement of instruments and equipment.
- Ensure that all requests for medical equipment are attended to without delay.
- Prepare all information for the instrument committee, and ensure that recommendations from the users and the medical engineering division are submitted prior to all major purchases.
- Liaise with Supply Department on procurement, tender specifications and recommendations.
- Professional attendance to medical equipment when repairs or preventative maintenance are needed and write-off of unserviceable and obsolete medical equipment.

- Call the instrument committee meetings every two months.
- Inform the hospitals/users on the process and the outcome of their requests.
- Acceptance testing and commissioning of medical equipment and instruments.

2.4.4 Manpower Department

is responsible for:

- Budget to assure all Institute of Health Sciences facilities are equipped according to the standard lists.
- Budget for a) new equipment and b) replacements for written off equipment for all
  Institute of Health Sciences - Notification to the Secretary when emergency needs occur
  or when a piece of equipment is no longer needed.
- Liaise with all parties concerned about planning and equipping new health facilities.

2.4.4.1. Each Institute of Health Sciences has the same responsibilities as the district and
  referral hospital to ensure proper handling of equipment requests. See 2.4.2 and 2.4.3
  above.

2.4.5. **Supply Department**
  is responsible for:

- Preparation of tender invitations and procurement of medical equipment.
- Stock-taking and participating actively in the maintenance of the Medical Equipment
  Asset Register.

2.4.6. **Planning Unit**
  is responsible for:

- Providing input to the Secretary on upgrading projects and building of new health
  facilities.
- Ensuring that equipment estimates are obtained and included in the financial project
  plans.
- Advising on availability of funds for equipment and instruments in new facilities.
3. Procedures

The procedures for purchasing medical equipment are described by the flow chart shown in Appendix A. There are different ways of handling purchases of equipment, not only due to the supplies and tender regulations, but also according to any standardization list, replacement items or whether the equipment represents an upgrading of the service or a new medical activity/service. However, each health facility should forward all requests in the same manner.

3.1. Submission of requests

3.1.1. All enquiries about medical equipment shall be submitted only from hospital superintendent /medical officer in charge. They shall be directed to Director Clinical Services, Ministry of Health, with the attention of the Secretary of the MEAC. If urgent, facsimile should be used. This is valid also for equipment for laboratories, pharmacies and clinical testing equipment for workshops. For ordering medical equipment a special form should be used (specimen on Appendix A attached).

3.1.2. A list of needs should be forwarded to the DCS, Attn: Secretary of the MEAC annually in August. Requests for new equipment should include user specifications for the equipment stating what it should be used for, the number and types of examinations etc., and could also include preferred makes and models. All requests for replacements should enclose write off certificate(s) issued by any MEMS-workshop. Each hospital is requested to have its own committee to assess medical equipment needs, priorities needs etc.

3.1.3. The instrument committee shall standardize equipment for all primary and district hospitals, meaning that equipment group (type) and quantum (relative to size and functions) is set. The committee may also standardize makes and models of equipment for all health facilities, for primary health services only, or for hospital services. The list of standardized equipment for hospital can be obtained from:
   - Secretary of the MEAC HCTAC, the Chief Biomedical Engineer, MOH
   - Chief Supplies Officer, MOH

3.1.4. All health facilities have a standard list of equipment and instruments. The list can be obtained from:
   - Principal Primary Health Care Officer, MLGLH
   - Chief Biomedical Engineer, MOH
   - Chief Supplies Officer, MOH

3.2. Procedures for the HCTAC and Secretariat at the Ministry of Health

All requests are handled as follows:
3.2.1. The Secretary will upon receipt of equipment request consult DHS, DPHC and DHM respectively for allocation of funds. Department of Clinical Services will prepare the agenda for the next meeting.

3.2.1. All requests, which are replacements of written-off equipment, will directly be forwarded to Secretary of HCTAC.

3.2.2. The tender will normally be assessed by a subgroup of the committee members or sometimes professionals appointed by the committee. The assessment group should as a minimum have one representative from the users (doctor/nurse), one from technical support service (biomedical/hospital engineer) one from administration, and one from supplies department. The assessment group makes recommendation to the committee. In cases of emergency, an extra ordinary meeting will be convened by 50% of members to consider a request. Chairperson or Vice Chairperson shall be present.

3.2.3. After approval by the committee, the matter is forwarded to the Assistant Director of Supplies, who will issue the GPOs or forward the matter to the Central Tender Board. If the matter is deferred by the committee, the secretary will report back to the hospital.

3.2.4. The Supply department is responsible for keeping the secretary informed about delivery times, arrival of equipment and other related issues. The secretary is responsible to inform the users and the committee about equipment on order. A photocopy of GPO shall be made available to the Secretary of HCTAC.

3.3. Supply of medical equipment

Small equipment will normally be delivered to the Supplies Department in Head Quarters MEMS personnel will test and commission. If the equipment is fine, Supplies would sign the delivery note then sent to the user via the local stores. Larger equipment is normally being installed by the supplier at site and acceptance test is done immediately after installation, before the supplier leaves. User training arrangements can be done if agreed at least one week in advance by all involved parties.

3.4. User and maintenance training

Training of users and maintenance staff should normally be included in the contract for larger or advanced equipment. Wishes for special user training should be included in requests from the hospitals.

3.5. Accessories and Consumables

Consumables for the equipment are provided by CMS. Consumables must be specified as part of the purchase for initial use. Accessories are provided by MEMS at facilities. It is also the duty of the instrument committee to consider the different types and costs of
consumables and accessories when new equipment is being recommended, and to consider future supply of the consumables and accessories via National Health Laboratory, CMS, Supplies Department or directly from dealer to each health facility.
ANNEXURE 3

The Department shall have a national network of workshops responsible for overall maintenance and repair as follows:

NORTHERN REGION

i) Nyangabgwe Hospital-Referral Workshop
ii) Letsholathebe II Memorial Hospital Workshop
iii) Selibe-Phikwe Government Hospital Workshop
iv) Sekgoma Memorial Hospital Workshop
v) Bobonong Primary Hospital Workshop
vi) Ghanzi Primary Hospital Workshop
vii) Gumare Primary Hospital Workshop
viii) Gweta Primary Hospital Workshop
ix) Kasane Primary Hospital Workshop
x) Letlhakane Primary Hospital Workshop
xi) Masunga Primary Hospital Workshop
xii) Mmadinare Primary Hospital Workshop
xiii) Palapye Primary Hospital Workshop
xiv) Rakops Primary Hospital Workshop
xv) Tutume Primary Hospital Workshop

SOUTHERN REGION

i) Princess Marina Hospital-Referral Workshop
ii) Athlone Government Hospital Workshop
iii) Mahalapye Government Hospital Workshop
iv) Scottish Livingstone Hospital Workshop
v) GoodHope Primary Hospital Workshop
vi) Hukuntsi Primary Hospital Workshop
vii) Sefhare Primary Hospital Workshop
viii) Thamaga Primary Hospital Workshop
ix) Tsabong Primary Hospital Workshop
x) Sbrana Psychiatric Hospital Workshop
ANNEXURE 4

RESEARCH AND DEMONSTRATION MODELS POLICY

The Research and Demonstration Models Policy requires that all of the following criteria be satisfied:

i) The equipment has been officially released into the market;
ii) That medical equipment complies with the international manufacturing standard IEC 601 (Parts 1 & 2), and anaesthetic equipment complies with ISO 9001;
iii) The research/demonstration models will remain the property of the supplier;
iv) The supplier will bear the running costs incurred during the research/demonstration period (eg accessories, consumables);
v) The supplier will be responsible for any subsequent litigation arising from the use of research/demonstration models on patients;
vi) The Ministry of Health waives all responsibility for loss or damage of the research/demonstration models;
vii) The consent of the patient or patient’s relatives has been obtained for the use of a research/demonstration model on the patient.

ANNEXURE 5

Repair, replacement, capital and development budget for the equipment

Planning Expenditure

The basis for planning expenditure shall be the Inventory and the standard equipment list. The Core Equipment Service Expenditure Plan shall detail all capital and recurrent requirements for the equipment service and replacement over a 10-year period.

Purchasing shall be rational, planned and shall be based on five areas of expenditure in the following order of priority:

i) Replacement of equipment shall be continuous as equipment reaches the end of its life span.
ii) Procuring the shortfall of equipment to make a basic provision based on the Standard Equipment Lists (this purchasing shall be staggered according to priorities and criteria to be established).

iii) Provisions to be made to accommodate future expansions

iv) Requirements on emergency and disaster (unplanned)
v) Information on technology

All plans to spend money on equipment shall go through the Department. If funds are insufficient, the department will ensure that spending is protected in the same order of priority. Budget lines for equipment currently managed by MOH shall be created for each type of expenditure (e.g. capital, replacement, maintenance and repair, and running costs). The allocation of funds between health facilities and facility levels will be clarified.

The Department shall have its own budget and vote (e.g. capital, replacement, maintenance, repair and running costs) to run the healthcare equipment management service nation-wide. There shall also be sufficient funds allocated for user and technical training.

Budgeting for Depreciation

MOH shall ensure the continuation of the services it delivers by replacing equipment when it reaches the end of its life span, and to budget for this depreciation annually. The MOH shall base replacement of equipment on internationally recognised data on equipment life span, and together with inventory data shall prioritise the timing of replacement of existing stock.

Replacement shall be rational and planned, and equipment shall be replaced only when one or more of the following valid reasons have been fulfilled:

i) It is damaged beyond repair;
ii) Spare parts are no longer available
iii) It is no longer economical to repair
iv) It is technically or clinically obsolete;
v) Exhibit unacceptable safety levels
vi) The need for replacement can be justified by statistics on utilisation.

At the end of the life span of the equipment, the department shall assess whether to continue using the equipment.

Equipment shall not be replaced simply because:

i) It is an old model or just old;
ii) User departments cannot justify its replacement
iii) The latest model has arrived in the market.

The MOH shall take over responsibility for the replacement of plants in government health facilities.
The MOH shall follow international guidelines of budgeting for replacement of medical equipment, i.e. an average of 10% of the equipment current stock value each year.

Replacement and procurement budget shall be based on the 10-year Core Equipment Service Expenditure Plan, and shall be undertaken Centrally at facility level depending on the type of healthcare technology according to criteria to be established. Procedures and guidelines for replacement shall be contained in the Medical equipment Asset Register, and shall be used.

**Budgeting for Maintenance and Repair**

MOH will protect its investment in equipment by providing a maintenance budget which shall not be transferable for other use. The MOH shall follow international guidelines for budgeting for maintenance and repair, i.e. 6% of the equipment current stock value each year. However, it recognises that the initial increase in the maintenance budget shall need to be greater than this because of the state of the existing stock.

The MOH shall take over responsibility for the maintenance and repair of plant in government health facilities. Procedures and guidelines for budgeting for maintenance and repair shall be given in the CMMS, and shall be used by both government and mission facilities.

**Capital versus Recurrent Expenditure**

Planned increases in capital expenditure on equipment and plant under development budgets must have parallel increases in recurrent budgets. Information regarding new equipment procured under the development budget shall be provided to the users for budgeting for maintenance and running costs from their recurrent funds.

**Preparation of Annual Plans and Budgets**

The Department shall communicate with all health facilities regarding items to be replaced in the following financial year. Health facilities shall compile their budgets for maintenance, repairs, and consumables annually, with advice from the Department.
List of abbreviations:

DCS  Director of Clinical Services
BET  Biomedical Engineering Technician
BETA Biomedical Engineering Technical Assistant
BETS Biomedical Engineering Technical Superintendent
BME  Bio-medical Engineer
BNHCTPIP Botswana National Healthcare Technology Policy Implementation Plan
CBET Chief Biomedical Engineering Technician
CBETA Chief Biomedical Engineering Technical Assistant
CBME Chief Bio-medical Engineer
CMS  Central Medical Stores
PPADB Public Asset Disposal Board
DBES Department of Buildings and engineering Services
DHT District Health Team
GPO Government Purchase Order
MEAC Medical Equipment Advisory Committee
HCT  Health Care Technology
HCTAC Healthcare Technology Advisory Committee
**HCTS Healthcare Technical Service**
CMMS Computerised Maintenance Management System
IEC International Electrotechnical Commission
ISO International Standard Organisation
MLGLH Ministry of Local Government
MOH Ministry of Health
PBET Principal Biomedical Engineering Technician
PBETA Principal Biomedical Engineering Technical Assistant
PBME Principal Bio-medical Engineer
PPM Planned Preventative Maintenance
SBET Senior Biomedical Engineering Technician
SBETA Senior Biomedical Engineering Technical Assistant
SBME Senior Bio-medical Engineer
TOR Terms of Reference
WHO World Health Organisation