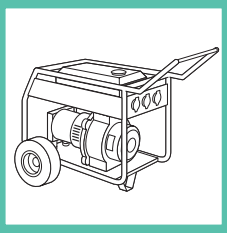
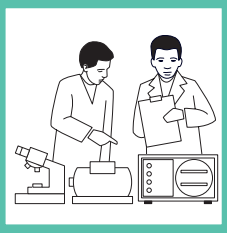


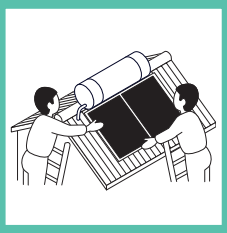
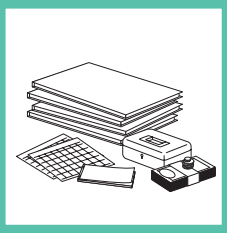
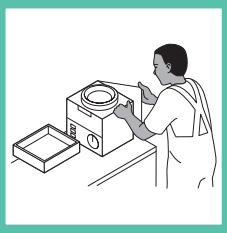

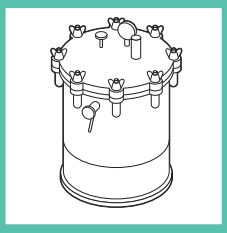

'How to Manage' Series for Healthcare Technology

Guide 6

How to Manage the Finances of Your Healthcare Technology Management Teams

Management Procedures for Health Facilities and District Authorities

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website: www.talcuk.org

Ziken International (Consultants) Ltd,
Causeway House, 46 Malling Street, Lewes, East Sussex, BN7 2RH, UK
Tel: +44 (0)1273 477474, fax: +44 (0)1273 478466, email: info@ziken.co.uk,
website: www.ziken.co.uk

'How to Manage' Series for Healthcare Technology

Guide 1: How to Organize a System of Healthcare Technology Management

Guide 2: How to Plan and Budget for your Healthcare Technology

Guide 3: How to Procure and Commission your Healthcare Technology

Guide 4: How to Operate your Healthcare Technology Effectively and Safely

Guide 5: How to Organize the Maintenance of your Healthcare Technology

Guide 6: How to Manage the Finances of your Healthcare Technology Management Teams

Keywords: *healthcare technology, management procedures, health service administration, district health services, developing countries, financial management, maintenance team, equipment*

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Design and layout by Jules Stock (email: julesstock@macunlimited.net

Illustrations and charts by David Woodroffe (email: davedraw@dircon.co.uk)

Edited by Sarah Townsend Editorial (email: sarah@sarahtownsendeditorial.co.uk,
website: www.sarahtownsendeditorial.co.uk)

‘How to Manage’ Series for Healthcare Technology

Guide 6

How to Manage the Finances of Your Healthcare Technology Management Teams

by:

Willi Kawohl
Financial Management Consultant, FAKT, Stuttgart, Germany

Caroline Temple-Bird
Healthcare Technology Management Consultant,
Ziken International Consultants Ltd, Lewes, UK

Andreas Lenel
Health Economist Consultant, FAKT, Stuttgart, Germany

Manjit Kaur
Development Officer, ECHO International Health Services, Coulsdon, UK

Series Editor

Caroline Temple-Bird
Healthcare Technology Management Consultant,
Ziken International Consultants Ltd, Lewes, UK

CONTENTS

Foreword

This Series of Guides is the output from a project funded by the UK government's Department for International Development (DFID) for the benefit of developing countries. The output is the result of an international collaboration that brought together:

- researchers from Ziken International and ECHO International Health Services in the UK, and FAKT in Germany
- an advisory group from WHO, PAHO, GTZ, the Swiss Tropical Institute, and the Medical Research Council of South Africa
- reviewers from many countries in the developing world

in order to identify best practice in the field of healthcare technology management.

The views expressed are not necessarily those of DFID or the other organizations involved.

Garth Singleton
Manager, Ziken International Consultants Ltd, Lewes, UK

Preface

The provision of equitable, quality and efficient healthcare requires an extraordinary array of properly balanced and managed resource inputs. Physical resources such as fixed assets and consumables, often described as healthcare technology, are among the principal types of those inputs. Technology is the platform on which the delivery of healthcare rests, and the basis for provision of all health interventions. Technology generation, acquisition and utilization require massive investment, and related decisions must be made carefully to ensure the best match between the supply of technology and health system needs, the appropriate balance between capital and recurrent costs, and the capacity to manage technology throughout its life.

Healthcare technology has become an increasingly visible policy issue, and healthcare technology management (HTM) strategies have repeatedly come under the spotlight in recent years. While the need for improved HTM practice has long been recognized and addressed at numerous international forums, health facilities in many countries are still burdened with many problems, including non-functioning medical equipment as a result of factors such as inadequate planning, inappropriate procurement, poorly organized and managed healthcare technical services, and a shortage of skilled personnel. The situation is similar for other health system physical assets such as buildings, plant and machinery, furniture and fixtures, communication and information systems, catering and laundry equipment, waste disposal, and vehicles.

Preface (continued)

The (mis-)management of physical assets impacts on the quality, efficiency and sustainability of health services at all levels, be it in a tertiary hospital setting with sophisticated life-support equipment, or at the primary healthcare level where simple equipment is needed for effective diagnosis and safe treatment of patients. What is vital – at all levels and at all times – is a critical mass of affordable, appropriate, and properly functioning equipment used and applied correctly by competent personnel, with minimal risk to their patients and to themselves. Clear policy, technical guidance, and practical tools are needed for effective and efficient management of healthcare technology for it to impact on priority health problems and the health system's capacity to adequately respond to health needs and expectations.

This Series of Guides aims to promote better management of healthcare technology and to provide practical advice on all aspects of its acquisition and utilization, as well as on the organization and financing of healthcare technical services that can deliver effective HTM.

The Guides – individually and collectively – have been written in a way that makes them generally applicable, at all levels of health service delivery, for all types of healthcare provider organizations and encompassing the roles of health workers and all relevant support personnel.

It is hoped that these Guides will be widely used in collaboration with all appropriate stakeholders and as part of broader HTM capacity-building initiatives being developed, promoted and implemented by WHO and its partners, and will therefore contribute to the growing body of evidence-based HTM best practice.

The sponsors, authors and reviewers of this Series of Guides are to be congratulated for what is a comprehensive and timely addition to the global HTM toolkit.

Andrei Issakov, Coordinator, Health Technology and Facilities Planning and Management, World Health Organization, Geneva, Switzerland

Mladen Poluta, Director, UCT/WHO HTM Programme, University of Cape Town, South Africa

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  Ike Osakwe (Chartered Accountant), Managing Director, GRID Consultancy, Lagos, Nigeria

- **with assistance from an Advisory Group of:**

  Hans Halbwachs, Healthcare Technology Management, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ-GmbH), Eschborn, Germany

  Peter Heimann, Director, WHO Collaborating Centre for Essential Health Technologies, Medical Research Council of South Africa, Tygerberg, South Africa

  Antonio Hernandez, Regional Advisor, Health Services Engineering and Maintenance, PAHO/WHO, Washington DC, USA

  Andrei Issakov, Coordinator, Health Technology and Facilities Planning and Management, Department of Health System Policies and Operations, WHO, Geneva, Switzerland

  Yunkap Kwankam, Scientist, Department of Health Service Provision, WHO, Geneva, Switzerland

  Martin Raab, Biomedical Engineer, Swiss Centre for International Health of the Swiss Tropical Institute, Basle, Switzerland

  Gerald Verollet, WHO Technical Officer, Medical Devices, Blood Safety and Clinical Technology (BCT) Department, WHO, Geneva, Switzerland

  Reinhold Werlein, Biomedical Engineer, Swiss Centre for International Health of the Swiss Tropical Institute, Basle, Switzerland

- **reviewed by:**

  Kwasi Addai-Donkoh, MOH Regional Health Services Administrator, Ashanti Region, Kumasi, Ghana

  Dr. P. Asman, Head of the Bio-engineering Unit, Ministry of Health, Accra, Ghana

  Narayan Baral, Administration Officer, Himalaya NGO Eye Hospital, Pokhara, Nepal

  Tsibu J. Bbuku, Medical Equipment Specialist, Central Board of Health, Lusaka, Zambia

  Juliette Cook, Biomedical Engineer, Advisor to Ministries of Health of Mozambique, and Vanuatu

Peter Cook, Biomedical Engineer, ECHO International Health Services, Coulsdon, UK

Engineer Freedom Dellosa, Chief of Hospital Equipment Maintenance Service Division, Region 9 – Mindanao Peninsula, Department of Health, Zambonga City, Philippines

Pieter de Ruijter, Consultant, HEART Consultancy, Renkum, The Netherlands

Andreas Flotzinger, Electronic Engineer, German Development Service support to Himalaya Eye Hospital, Pokhara, Nepal

Roland Fritz, HCTS Coordinator, Christian Social Services Commission, Dar es Salaam, Tanzania

Andrew Gammie, Project Director, International Nepal Fellowship, Pokhara, Nepal

Elias Luhana, Head of Bio-Medical Engineering, University Teaching Hospital, Lusaka, Zambia

Yohana Mkwizu, Regional Health Care Technical Service Coordinator, GTZ District Health Support Project, Tanga Region, Tanzania

Sulaiman Shahabuddin, Director, Patient Services, Aga Khan Foundation Private Hospital, Nairobi, Kenya

Zeenat Sulaiman, Director Projects and Administration, Aga Khan Foundation Private Hospital, Nairobi, Kenya

Birgit Thiede, Physical Assets Management (PAM) Advisor, Ministry of Health, Phnom Penh, Cambodia

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Abbreviations

a/c or acc.	account
AHA	American Hospital Association
b/f or b/fwd	balance brought forward
CD-Rom	compact disc – read only memory
c/f or c/fwd	balance carried forward
CSSD	central sterile supplies department
FOB	free-on-board
HTM	healthcare technology management
HTMS	healthcare technology management service
HTMWG	healthcare technology management working group
GAAP	generally accepted accounting principles
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German government technical aid agency)
IAASB	International Auditing and Assurance Standards Board
IASCF	International Accounting Standards Committee Foundation
IAS	international accounting standards
ICU	intensive care unit
ISA	international standards on auditing
ISO	International Organization for Standardization
MOF	Ministry of Finance
MOH	Ministry of Health
MU	money unit
NGO	non-governmental organization
P&L	profit and loss account
PPM	planned preventive maintenance
SMART	specific, measurable, achievable, relevant, time-bound (targets)
US $	United States dollars
WHO	World Health Organization

List of Boxes and Figures

List of Boxes and Figures

1. INTRODUCTION

Why is This Important?

This introduction explains the importance of healthcare technology management (HTM) and its place in the health system.

It also describes:

- the purpose of the Series of Guides and this Guide in particular
- the people the Guides are aimed at
- the names and labels commonly used in HTM, in this Series.

The Series of Guides is introduced in *Section 1.1*, and this particular Guide on financial management is introduced in *Section 1.2*.

1.1 INTRODUCTION TO THE SERIES OF GUIDES

Healthcare Technology Management's Place in the Health System

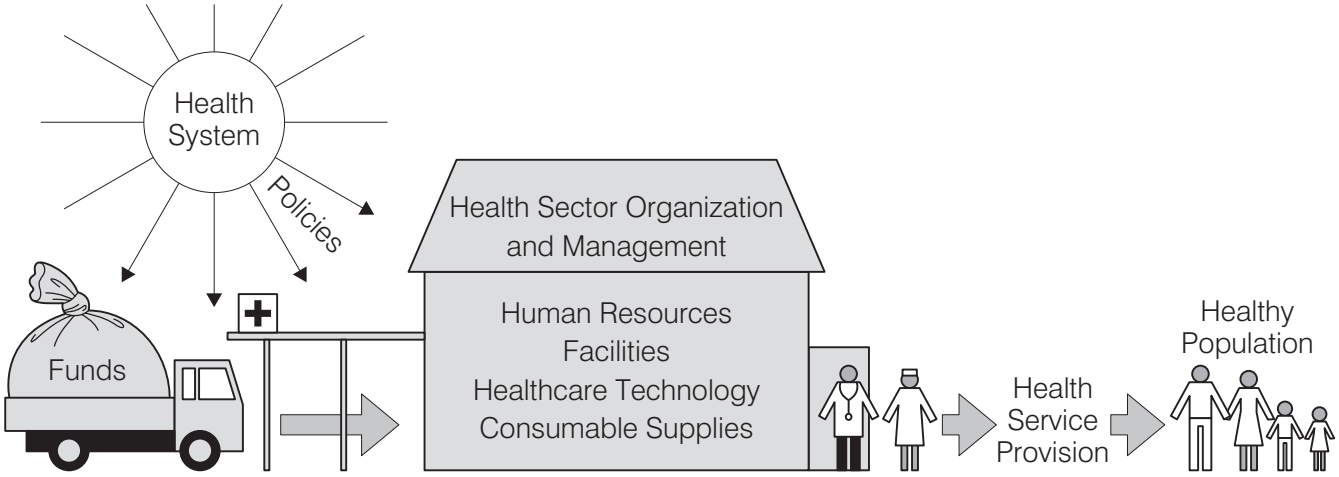
All health service providers want to get the most out of their investments. To enable them to do so, they need to actively manage health service assets, ensuring that they are used efficiently and optimally. All management takes place in the context of your health system's policies and finances. If these are favourable, the management of health service assets can be effective and efficient, and this will lead to improvements in the quality and quantity of healthcare delivered, without an increase in costs.

The health service's most valuable assets which must be managed are its human resources, physical assets, and other resources such as supplies. Physical assets such as facilities and healthcare technology are the greatest capital expenditure in any health sector. Thus it makes financial sense to manage these valuable resources, and to ensure that healthcare technology:

- is selected appropriately
- is used correctly and to maximum capacity
- lasts as long as possible.

Such effective and appropriate management of healthcare technology will contribute to improved efficiency within the health sector. This will result in improved and increased health outcomes, and a more sustainable health service. This is the goal of healthcare technology management – the subject of this Series of Guides.

Figure 1: The Place of Healthcare Technology Management in the Health System



What Do We Mean By Healthcare Technology ?

The World Health Organization (WHO) uses the broader term 'health technology', which it defines as including:

'devices, drugs, medical and surgical procedures – and the knowledge associated with these – used in the prevention, diagnosis and treatment of disease as well as in rehabilitation, and the organizational and supportive systems within which care is provided'

(Source: Kwankam, Y, et al, 2001, 'Health care technology policy framework', WHO Regional Publications, Eastern Mediterranean Series 24: Health care technology management, No. 1)

However, the phrase 'healthcare technology' used in this Series of Guides only refers to the physical pieces of hardware in the WHO definition that need to be maintained. Drugs and pharmaceuticals are usually covered by separate policy initiatives, frameworks, and colleagues in another department.

Therefore, we use the term healthcare technology to refer to the various equipment and technologies found within health facilities, as shown in *Box 1*.

BOX 1: Categories of Equipment and Technologies described as 'Healthcare Technology'

medical equipment	walking aids	health facility furniture
communication equipment	training equipment	office equipment
office furniture	fixtures built into the building	plant for cooling, heating, etc
service supply installations	equipment-specific supplies	fire-fighting equipment
workshop equipment	fabric of the building	vehicles
laundry and kitchen equipment	waste treatment plant	energy sources

For examples of these different categories, see the Glossary in *Annex 1*.

Often, different types of equipment and technologies are the responsibility of different organizations. For example, in the government sector, different ministries may be involved, such as Health, Works, and Supplies; and in the non-government sector, different agencies may be involved, such as Health, and Logistics.

The range of healthcare technology which falls under the responsibility of the health service provider varies from country to country and organization to organization. Therefore each country's definition of healthcare technology will vary depending on the range of equipment and technology types that they actually manage.

For simplicity, we often use the term 'equipment' in place of the longer phrase 'healthcare technology' throughout this Series of Guides.

What is Healthcare Technology Management?

First of all, healthcare hechnology management (HTM) involves the organization and coordination of all of the following activities, which ensure the successful management of physical pieces of hardware:

- Gathering reliable information about your equipment.
- Planning your technology needs and allocating sufficient funds for them.
- Purchasing suitable models and installing them effectively.
- Providing sufficient resources for their use.
- Operating them effectively and safely.
- Maintaining and repairing the equipment.
- Decommissioning, disposing, and replacing unsafe and obsolete items.
- Ensuring staff have the right skills to get the best use out of your equipment.

This will require you to have broad skills in the management of a number of areas, including:

- technical problems
- finances
- purchasing procedures
- stores supply and control
- workshops
- staff development.

However, you also need skills to manage the place of healthcare technology in the health system. Therefore, HTM means managing how healthcare technology should interact and balance with your:

- medical and surgical procedures
- support services
- consumable supplies, and
- facilities

so that the complex whole enables you to provide the health services required.

Thus HTM is a field that requires the involvement of staff from many disciplines – technical, clinical, financial, administrative, etc. It is not just the job of managers, it is the responsibility of all members of staff who deal with healthcare technology.

This Series of Guides provides advice on a wide range of management procedures, which you can use as tools to help you in your daily work. For further clarification of the range of activities involved in HTM and common terms used, refer to the WHO's definition of the technology management hierarchy in *Annex 1*.

Box 2 highlights some of the benefits of HTM.

BOX 2: Benefits of Healthcare Technology Management (HTM)

- Health facilities can deliver a full service, unimpeded by non-functioning healthcare technology.
- Equipment is properly utilized, maintained, and safeguarded.
- Staff make maximum use of equipment, by following written procedures and good practice.
- Health service providers are given comprehensive, timely, and reliable information on:
  - the functional status of the equipment
  - the performance of the maintenance services
  - the operational skills and practice of equipment-user departments
  - the skills and practice of staff responsible for various equipment-related activities in a range of departments including finance, purchasing, stores, and human resources .
- Staff control the huge financial investment in equipment, and this can lead to a more effective and efficient healthcare service.

Purpose of the Series of Guides

The titles in this Series are designed to contribute to improved healthcare technology management in the health sectors of developing countries, although they may also be relevant to emerging economies, and other types of country. The Series is designed for any health sector, whether it is run by:

- government (such as the Ministry of Health or Defence)
- a non-governmental organization (NGO) (such as a charitable or not-for-profit agency)
- a faith organization (such as a mission)
- a corporation (for example, an employer such as a mine, who may subsidise the healthcare)
- a private company (such as a health insurance company or for-profit agency).

This Series aims to improve healthcare technology at a daily operational level, as well as to provide practical resource materials for equipment users, maintainers, health service managers, and external support agencies.

To manage your technology effectively, you will need suitable and effective procedures in place for all activities which impact on the technology. Your health service provider organization should already have developed a policy document setting out the principles for managing your stock of healthcare technology (*Annex 2* provides a number of resources available to help with this). The next step is to develop written organizational procedures, in line with the strategies laid out in the policy, which staff will follow on a daily basis.

The titles in this Series provide a straightforward and practical approach to healthcare technology management procedures:

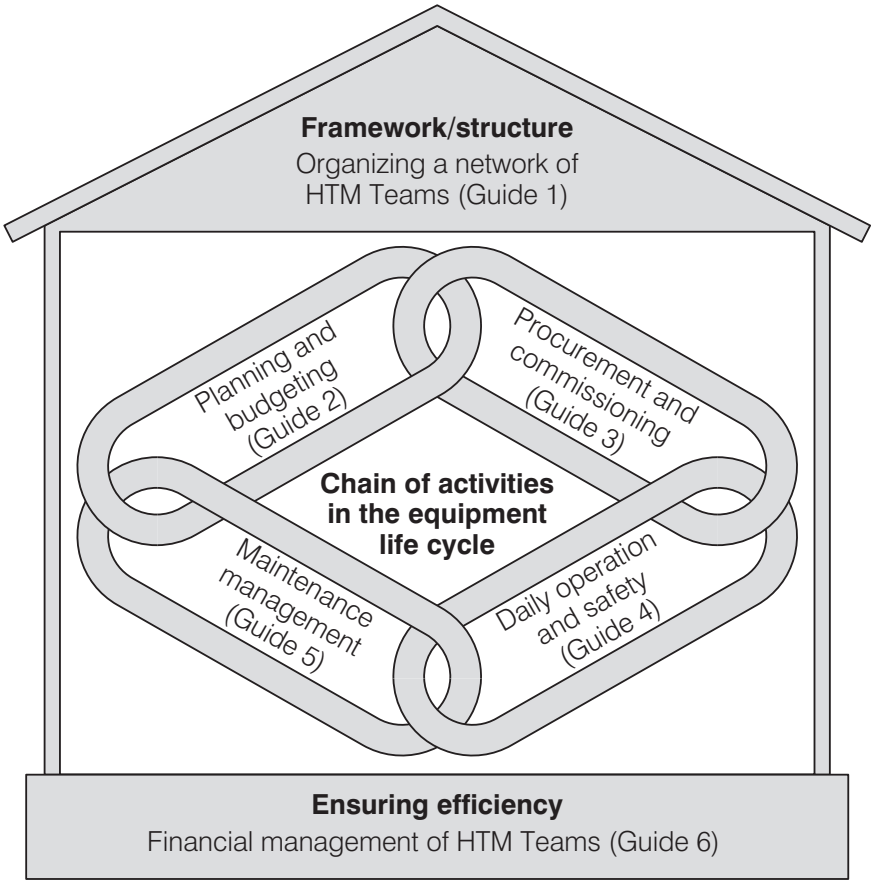
Guide 1 covers the framework in which Healthcare Technology Management (HTM) can take place. It also provides information on how to organize a network of HTM Teams throughout your health service provider organization.

Guides 2–5 are resource materials which will help health staff with the daily management of healthcare technology. They cover the chain of activities involved in managing healthcare technology – from planning and budgeting to procurement, daily operation and safety, and maintenance management.

Guide 6 looks at how to ensure your HTM Teams carry out their work in an economical way, by giving advice on financial management.

How the Guides are coordinated is set out in *Figure 2*.

Figure 2: The Relationship Between the Guides in This Series



Who are These Guides Aimed at?

These Guides are aimed at people who work for, or assist, health service provider organizations in developing countries. Though targeted primarily at those working in health facilities or within the decentralized health authorities, many of the principles also apply to staff in other organizations (such as those managing health equipment in the Ministry of Works, private maintenance workshops, and head offices).

Depending on the country and organization, some daily tasks will be undertaken by end users while others may be carried out by higher level personnel, such as central level managers. For this reason, the Guides cover a range of tasks for different types of staff, including:

- equipment users (all types)
- maintenance staff
- managers
- administrative and support staff
- policy-makers
- external support agency personnel.

They also describe activities at different operational levels, including:

- the health facility level
- the zonal administration level (such as district, regional, diocesan)
- the central/national level
- by external support agencies.

Many activities require a multi-disciplinary approach, therefore it is important to form mixed teams which include representatives from the planning, financial, clinical, technical, and logistical areas. Allocation of responsibilities will depend upon a number of factors, including:

- your health service provider
- the size of the organization
- the number of decentralized levels of authority
- the size of your health facility
- your level of autonomy.

The names and titles given to the people and teams involved will vary depending on the type of health service provider you work with.

For the sake of simplicity, we have used a variety of labels to describe different types of staff and teams involved in HTM.

This Series describes how to introduce healthcare technology management into your organization. The term **Healthcare Technology Management Service (HTMS)** is used to describe the delivery structure required to manage equipment within the health system. This encompasses all levels of the health service, from the central level, through the regions/districts, to facility level.

There should be a referral network of **workshops** where maintenance staff with technical skills are based. However, equipment management should also take place where there are no workshops by involving general health facility staff. These groups of people we call the **HTM Team**, and we suggest that you have a team at every level whether a workshop exists or not. Throughout this Series, we have called the person who leads that team the **HTM Manager.**

At every level, there should also be a committee which regularly considers all equipment-related matters, and ensures decisions are made that are appropriate to the health system as a whole. We have used the term **HTM Working Group (HTMWG)** for this committee, which will advise the Health Management Teams on all equipment issues.

Due to its role, the HTMWG must be multi-disciplinary. Depending on the operational level of the HTMWG, its members could include the following:

- Head of medical/clinical services.
- Head of support services.
- Purchasing and supplies officer.
- Finance officer.
- Representatives from both medical equipment and plant maintenance.
- Representatives of equipment users from a variety of areas (medical/clinical, nursing, paramedical, support services, etc).
- Co-opted members (if specific equipment areas are discussed or specific interest or need is shown).

The HTM Working Group prepares the annual plans for equipment purchases, rehabilitation, and funding, and prioritizes expenditure across the facility/district as a whole (see *Guide 2* on planning and budgeting). It may have various sub-groups to help consider specific aspects of equipment management, such as pricing, commissioning, safety, etc.

How to Use These Guides

Each Guide has been designed to stand alone, and has been aimed at different types of readers depending on its content (*Section 1.2*). However, since some elements are shared between them, you may need to refer to the other Guides from time to time. Also, if you own the full Series (a set of six Guides) you will find that some sections of the text are repeated.

We appreciate that different countries use different terms. For example, a purchasing officer in one country may be a supplies manager in another; some countries use working groups, while others call them standing committees; and essential service packages may be called basic healthcare packages elsewhere. For the purpose of these Guides it has been necessary to pick one set of terms and define them. You can then modify them for your own situation.

The terms used throughout the text are outlined, with examples, in the Glossary in *Annex 1*.

We appreciate that you may find it hard to pursue the ideas introduced in these Guides. Depending on your socio-economic circumstances, you may face many frustrations on the road to achieving effective healthcare technology management. We recognize that not all of the suggested procedures can be undertaken in all environments. Therefore we recommend that you take a step-by-step approach, rather than trying to achieve everything at once (*Section 2*).

These Guides have been developed to offer advice and recommendations only, therefore you may wish to adapt them to meet the needs of your particular situation. For example, you can choose to focus on those management procedures which best suit your position, the size of your organization, and your level of autonomy.

For more information about reference materials and contacts for healthcare technology management, see *Annex 2*.

1.2 INTRODUCTION TO THIS SPECIFIC GUIDE

The Importance of Financial Management

The ability to use financial resources effectively and efficiently is one of the greatest challenges facing health service providers all over the world.

It is the goal of healthcare technology management (HTM) to ensure that all the equipment belonging to health service providers is properly managed, utilized, maintained, and safeguarded. Financial investment in equipment also has to be protected, in order to avoid a situation where income is lost because equipment cannot be used. *Guide 2* of this Series covers the planning and budgeting necessary to purchase equipment for the health service and to keep it running throughout its life. This Guide, however, covers the planning and budgeting necessary to ensure that HTM Teams can carry out their work (their operations), and, if possible, run the operation as a business.

In order to do this, you will need a clear understanding of financial responsibility and financial accountability. This will enable you to use money in the best possible way, to provide a quality service to your patients while fulfilling the objectives of the health service provider.

Financial responsibility — means paying staff and creditors on time, keeping proper records of money going in and out of the facility, and avoiding obligations that the health service provider cannot fulfil.

Financial accountability — means being able to account for the money received and spent, to central bodies such as a Ministry of Health, Diocesan Health Authority, Board of Trustees, and external support agencies.

The gap between the financial needs of healthcare technology management services (HTMS) and the financial resources available is widening at an alarming rate. HTM Teams and, in particular, their managers at all levels are responsible and accountable for the management of the financial resources needed for operating an effective and efficient HTM system.

Who is This Guide Aimed at?

This Guide introduces practical financial management tools and techniques. It is primarily aimed at:

- HTM Managers
- Finance Officers

working for any type of health service provider.

However, it will also be useful for:

- members of HTM Teams and HTM Working Groups (HTMWG)
- section heads
- Health Management Teams.

We also believe it will be useful for staff responsible for healthcare technology management who are working for:

- public maintenance/service support organizations
- private maintenance/service support companies.

All such staff should have a good understanding of how to use financial management tools in their common effort to establish and operate a successful HTM Service.

What Topics are Covered?

This Guide concentrates primarily upon effective financial management of HTM activities by HTM Teams, within the overall healthcare technology management framework.

In all the Guides, it is recognised that, alongside repair and maintenance, technical staff are also responsible for a wide range of other equipment management activities including:

- planning equipment services
- managing stock
- providing technical advice for procurement
- plant operation
- training users
- developing technical cost estimates and budget forecasts.

Recommendations and procedures for all these tasks are provided in *Guides 1 to 5* of this Series.

Most health service providers managed by Ministry of Health or faith organizations have established HTM Teams. These may be based at facility, district and regional level and usually operate as cost centres. Common problems of these cost centres are:

- HTM Teams form only a small part of a larger organizational structure and have very little autonomy in their operations.
- HTM Teams often have no clear targets or operational plan and, as a result, there are no indicators by which to measure their results.

There is a generally accepted view that maintenance just costs money. Private sector companies, however, are proving that HTM Teams can be successfully operated as profit centres.

With this in mind, this Guide presents a profit centre approach for the HTM Service. However, the financial management tools and techniques introduced in *Sections 3 to 9* can be applied to HTM Teams operating for all types of health service providers. This Guide aims to:

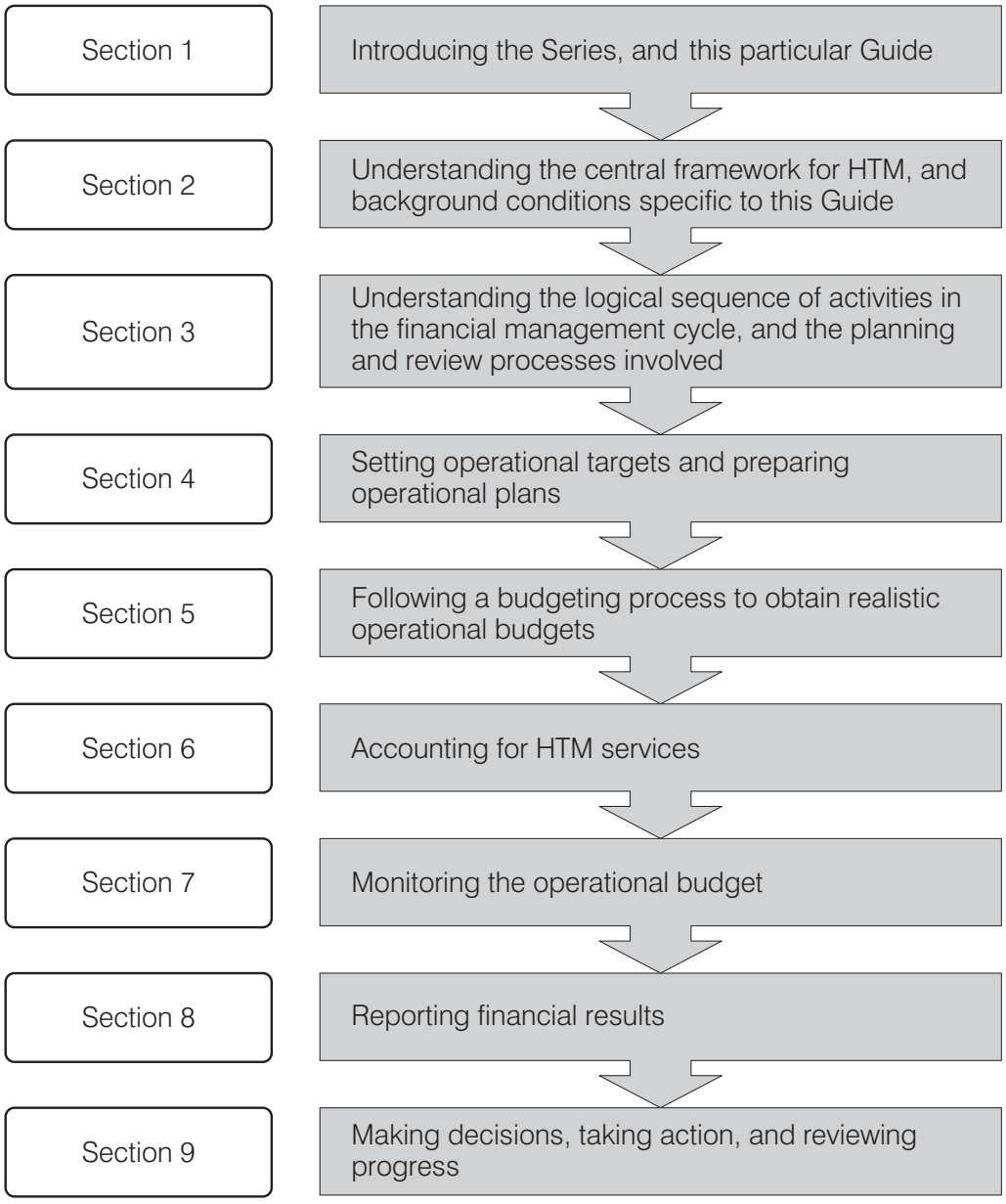
- Clarify the subject for those organizations already running as profit centres and established for full cost recovery – such as private and some NGO health facilities.
- Help those organizations already attempting partial cost-recovery (moving from cost centres towards profit centres) – such as some NGO health facilities, and faith and government health facilities that have some degree of financial autonomy.
- Encourage those organizations currently running as cost centres – such as faith and government health facilities that are not financially autonomous – to manage their resources more effectively and efficiently, and even to consider starting cost recovery.

Additional useful reference materials and contacts are given in *Annex 2*.

How is This Guide Structured?

The structure of *Guide 6* highlights the different activities required for the financial management of HTM work, as shown in *Figure 3*.

Figure 3: The Structure of Guide 6



Who Does What in Financial Management?

Since effectiveness and efficiency are goals for all health services, financial management is a collective responsibility. Therefore many people have a role to play, as shown in *Box 3*.

BOX 3: The Collective Responsibility for Financial Management

Working Together

HTM Managers (at all levels of the HTMS)	◆ are **key** to a successful financial management system for the HTM Service ◆ develop annual action plans for the financial management cycle of the HTM Service (*Sections 3 and 9*) ◆ plan what maintenance, repair, training, and range of consultancy services can be supplied to customers, according to the skills available (see *Guides 1, 4 and 5*) ◆ plan the adequate supply and stock levels of spare parts and maintenance materials (and possibly equipment accessories and consumables – see *Guide 4*) ◆ undertake financial monitoring of the HTM Teams (*Section 7*) ◆ monitor progress against targets for performance (*Sections 7 and 9*) ◆ make sound financial decisions (*Section 9*)
HTM Teams	◆ set their own operational targets and make operational plans (*Section 4*) ◆ develop their own operational and capital budgets (*Section 5*) ◆ undertake maintenance, repair, training, and consultancy work for customers ◆ formally account for their use of resources (*Section 6*) ◆ keep a comprehensive equipment and maintenance record system (see *Guide 5*) ◆ produce financial reports (*Section 8*)
Health Service Providers	◆ decide whether the HTM Service will run as a profit or cost centre and what degree of cost recovery will be required (*Section 5*) ◆ ensure that financial management is an integral part of healthcare technology management (*Section 3*) ◆ provide sufficient resources for the operations of the HTM Service (*Section 5*), and for all HTM activities (see *Guide 2*) ◆ decide on corrective action in response to financial reporting (*Sections 8 and 9*)
Health Management Teams (at all levels), and their HTMWG	◆ liaise with and oversee the HTM Service ◆ allow HTM Teams to service clients at other sites ◆ set goals for health facilities which will provide a guide for the target-setting of the HTM Teams (*Sections 4 and 9*) ◆ provide suitable space for workshop facilities (see *Guide 5*) ◆ agree on the budget format for the HTM Team (*Section 5*) ◆ agree on the accounting system for the HTM Team (*Section 6*) ◆ analyse the outcome from financial reporting (*Section 8*)
Finance Officers	◆ understand the financial management requirements for HTM Teams (*Section 3*) ◆ provide HTM Teams with advice on the financial procedures, transactions, and paperwork used by the health service provider ◆ help with the budgeting process (*Section 5*) ◆ help establish the accounting system (*Section 6*)
Accountants	◆ are consulted and offer advice on setting up a suitable accounting system for the HTM Service (*Section 6*) ◆ are consulted and offer advice on the outcome of financial reports (*Section 8*)
Customers (such as health facilities)	◆ settle bills and pay for HTM services promptly
Government Bodies	◆ provide the legal and policy framework for healthcare technology management (*Section 2*) ◆ provide the legal and policy framework for financial management (*Section 2*)

2. FRAMEWORK REQUIREMENTS

Why is This Important?

In order to deliver quality health services, it is essential to undertake effective healthcare technology management (HTM).

There are various framework requirements to help you do this. These include legislation, regulations, standards, and policies.

These framework requirements create the boundary conditions within which you undertake healthcare technology management. They include central or national guiding principles, policy issues, and high-level assumptions that can impede or assist you in your work.

It is very difficult to function effectively if these framework requirements do not exist, and you should lobby your organization to develop them.

Depending on how autonomous your health facilities are, you may be able to develop these framework requirements at facility, region/district, or central level.

In most industrialized countries, laws, regulations, policies and guidelines form an indispensable part of health service management. For many developing countries, however, these regulatory procedures have yet to be developed.

Guide 1 provides a fuller analysis of how to develop these instruments, and shows that effective healthcare technology management (HTM) is essential in order to deliver quality health services. *Section 2.1* summarizes these points and offers advice on:

- the regulatory role of government
- establishing standards for your health system
- policy issues for HTM
- the importance of introducing an HTM Service
- managing change.

Section 2.2 goes on to discuss the background conditions specific to this Guide, and provides advice on:

- authorities responsible for guidance on financial management
- central laws, regulations, standards, principles, and policies for financial management.

2.1 FRAMEWORK REQUIREMENTS FOR QUALITY HEALTH SERVICES

Regulatory Role of Government

The World Health Organization (WHO) identifies four distinct functions for health systems:

- The provision of health services.
- The financing of health services.
- The creation of health resources (investment in facilities, equipment, and training).
- The stewardship of health services (regulation and enforcement).

Health service provision and financing, as well as resource creation may be taken on by both the government and private sector. Thus, there are various options for organizing health systems:

- Mainly public.
- Mainly private for-profit (for example, run by a commercial organization), and private not-for-profit (for example, run by faith organizations, NGOs).
- A mixture of government and private organizations.

However in all these systems, the government is solely responsible for the regulation of health services. The reason for this is that the government has a duty to ensure the quality of healthcare delivered in order to protect the safety of the population. These regulations may then be enforced directly by government bodies or they may be enforced by publicly funded bodies, such as professional associations, which apply government sanctioned regulations.

Most governments would agree that the protection of health and the guarantee of safety of health services is vital. However, in many countries this regulatory function is underdeveloped, with weak legal and regulatory frameworks.

To regulate health services, the government should:

- adopt suitable quality standards for all aspects of health services, including acceptable international or national standards for healthcare technology, drugs, and supplies in order to ensure their efficacy, quality and safety
- establish systems to ensure standards are met, so that the bodies enforcing regulations have legal sanctions they can use if standards are infringed
- establish wide-ranging policies covering all aspects of the utilization, effectiveness, and safety of healthcare technology, drugs, and supplies
- establish systems to ensure these policies can be implemented.

For health services, the Ministry of Health is the body most likely to develop these government regulations. Other health service providers need to be guided by government laws, and should look to the Ministry of Health for guidance or follow their direction if required to do so by law or regulation.

Establishing Standards for your Health System

The government should agree on which quality standards have to be met by the health services in general. They will cover areas such as:

Standard
a required or agreed level of quality or attainment set by a recognized authority, used as a measure, norm, or model

- procedures and training
- construction of facilities
- healthcare technology, drugs, and supplies
- safety
- the environment
- quality management.

Since drawing up these standards can be both time consuming and expensive, governments may often choose to adopt acceptable international standards (such as ISO), rather than develop their own. However, they must be suitable and applicable to your country situation and fit in with your country's vision for health services.

The adoption of suitable international or national standards for healthcare technology is of particular relevance to this Guide. Such standards would cover areas such as:

- manufacturing practices
- performance and safety
- operation and maintenance procedures
- environmental issues (such as disposal).

These are important since countries can suffer if they acquire sub-standard and unsafe equipment. Again, in the majority of cases ministries of health would save money and time by adopting internationally recognized standards. For more information on introducing internationally recognized standards into your procurement procedures, refer to *Guide 3*.

It is not enough simply to establish these standards; they also need to be adhered to. For this reason, you should establish a national supervisory body that has the power to ensure that health service providers comply with the standards in force. To be effective, such an enforcement agency must be allocated sufficient financial and personnel resources. It should also be linked or networked with corresponding international bodies.

Much healthcare technology in developing countries is received through foreign aid and donations, but such products do not always meet international standards. Therefore, your country will need to negotiate with external support agencies. The best way to do this is to develop regulations for donors that supply equipment (see *Annex 2,* and *Guide 3* on procurement and commissioning).

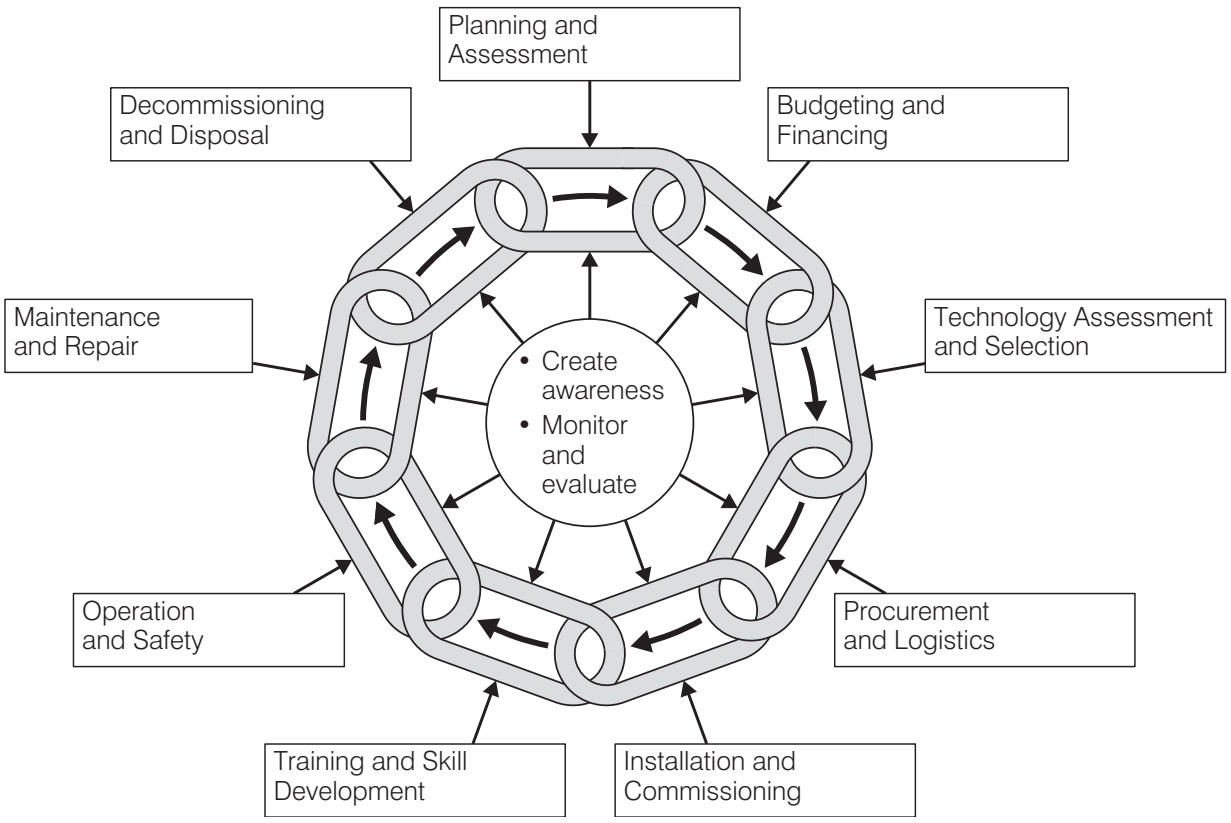
The legal system plays an important role in enforcing such standards, by ensuring that any infringements can be effectively prosecuted. It is therefore essential that the legal system is allocated sufficient financial and human resources to enforce claims against any institution operating equipment that does not meet the prescribed standards.

Developing Policies for Health Services

Every country needs to establish wide-ranging policies covering all aspects of health services. National health policies are usually developed by the Ministry of Health. If these policies are linked to regulations, then other health service providers must also follow them. Each health service provider can expand them internally, and must establish systems to ensure they are implemented.

One key framework requirement for this Series of Guides is that your health service provider should have started work on a Healthcare Technology Policy (for guidance on this process, see *Annex 2*). Such a policy usually addresses all the healthcare technology management (HTM) activities involved in the life-cycle of equipment, as shown in *Figure 4*.

Figure 4: The Healthcare Technology Management Cycle



Here we will consider just four issues that provide key background conditions:

- a vision for health services
- standardization
- the provision of maintenance; and
- finances.

A Vision for Health Services

Every health service provider needs a realistic vision of the service it can offer. This should include a clear understanding of its role in relation to other health service providers in the national health service. Only when this vision is known can the health service provider decide what healthcare technology is needed, and prioritise the actions required to develop its stock of equipment.

It is unhelpful if lots of individual health facilities pull in different directions, with no coordinated plan for the health service as a whole. The central authority of each health service provider should be responsible for considering what sort of healthcare should be offered at each level of their health service. Preferably they will collaborate with the Ministry of Health, or follow their guidance if regulated to do so.

If there is no health service plan, there is no framework on which to base decisions. *Guide 2* provides further information on developing a vision and planning your healthcare technology stock.

Standardization of Healthcare Technology

Standardization
(also known as rationalization, normalization, and harmonization) – the process of reducing the range of makes and models of equipment available in your stock, by purchasing particular named makes and models.

Introducing an element of standardization for healthcare technology will help you to limit the wide variety of makes and models of equipment found in your stock. By concentrating on a smaller range for each equipment type, your technical, procedural, and training skills will increase and your costs and logistical requirements will decrease (*see Guide 1*).

It is easier to achieve standardization if equipment is planned and ordered on a country-wide, district-wide or health service provider basis. It is therefore important to combine forces with other facilities or health service providers, and it may be wise to follow standardization strategies of the Ministry of Health. It is important that these standardization efforts do not just apply to products purchased by health facilities, but also to donations.

Standardizing your healthcare technology may be difficult for a number of reasons. Your country and local businesses may have their own trade practices and interests. National donors may have tied-aid practices, while the procurement procedures of international funding agencies, health service institutions, and individuals may act against your standardization strategies (see *Guide 3*).

You may need to hold discussions with organizations such as the Ministry of Industry and/or Trade, the chambers of commerce or specific business associations, as well as external support agencies. However, it is well worth persevering, as standardization offers many benefits, both in terms of cost and efficiency.

Provision of Maintenance

Proper maintenance is essential to ensure that the equipment you have purchased continues to meet the standards required throughout its entire working life.

Undertaking maintenance belongs to the service provision function of health systems, and could therefore, in principle, be carried out by the government, the private sector, or by a mixture of the two.

It is useful to organize the maintenance system along similar lines to the health service provision already existing in your country. For instance, if the health sector is predominantly run by the government, it is probably simplest to let the government run the maintenance organization as well. In contrast, if private organizations run the health services, it makes little sense for the maintenance activities to be carried out by a government body. In the majority of cases, a mixed system is most likely.

However, the government may wish to take a regulatory role and establish regulations that guarantee that healthcare technology performs effectively, accurately, and safely. The rules established are valid for all health service providers, irrespective of their type of organization.

Specific maintenance requirements would not need to be prescribed by the regulatory body. Instead, it is up to individual health service providers to decide how these will be provided. However, the nature and the complexity of some maintenance services often call for partnerships between the public and private health service providers. Partnerships may also exist between health service providers and private sector sources of maintenance support. For more details, refer to *Guide 1*.

To provide maintenance services, you will normally need to establish good links between maintenance workshops. This will create a network that supports the needs of all your health facilities. Maintenance is, of course, only one of many HTM activities that need to be carried out. However, the fact that maintenance workshops usually already exist in most countries serves as a useful starting point for establishing a physical HTM Service across your health service provider organization and across your country. For more details on how to organize an HTMS, refer to *Guide 1*.

Finances

To ensure that healthcare technology is utilized effectively and safely throughout its life, your health service provider will need to plan and allocate adequate capital and recurrent budgets. See *Guide 2* for more advice on this.

In a government-organized system these funds have to be provided by government budgets, while private systems or mixed systems must generate the required funds from their customers, or from benefactors and donors.

Depending on your health service provider and country, your HTM Service may be able to generate income by charging for services provided. Whether this income can be used to further improve the HTM Service depends on the policies of the responsible financing authority (such as the treasury or central finance office). *Section 8.1* provides advice on this.

The Importance of Introducing a Healthcare Technology Management Service

We have established the importance of:

- adopting standards for healthcare technology
- developing healthcare technology policies
- establishing systems to ensure the policy is implemented.

All these aims could be achieved if each health service provider practised healthcare technology management (HTM) as part of the everyday life of their health service. The best way to do this is to have an HTM Service incorporated into each health service provider organization.

Box 2 (*Section 1.1*) shows that HTM provides a wide range of benefits. *Guide 1* attempts to express this in terms of the sorts of savings that can be made if HTM is effectively carried out. Taking maintenance as an example, we can see that it not only has a positive impact on the safety and effectiveness of healthcare technology, but also has two important economic benefits:

- it increases the life-span of the equipment
- it enhances the demand for health services, since demand for services is crucially dependent upon the availability of functioning healthcare technology.

Healthcare technology that is out of order quickly leads to a decline in demand, which will in turn reduce the income and quality of services provided by the health facility. You will lose clients if, for example, it becomes known that malfunctioning of sterilization equipment may endanger the health of the patients. Similarly, patients will avoid visiting health facilities that do not possess functioning diagnostic equipment.

Thus the justification for introducing an HTM Service is that it will benefit you economically and clinically, by ensuring that healthcare technology continues to meet the standards required throughout its working lifetime.

The activities of an HTM Service belong to the service provision function of health systems. However, the government may wish to take a regulatory role and establish regulations that guarantee that HTM occurs. To achieve this, it will be necessary to have:

- a government body to provide regulations which will ensure the continued performance and safety of healthcare technology throughout its life
- a control mechanism to check that all health service providers pursue these healthcare technology management activities effectively
- legal or other sanctions that are enforceable if the rules are infringed.

The government body responsible for providing regulations could be the central level of the national HTM Service. Each health service provider could then develop its own HTM Service. It should involve a network of teams and committees that enable HTM to be practised in all facilities. In order to establish an effective HTM Service, you will need to provide sufficient inputs, such as finance, staff, workshops, equipment, and materials. Only in this way will you get the outputs and benefits that you require. For details of how to develop such an HTM Service, see *Guide 1*.

The organizational chart for the HTM Service will vary depending on the size of your country and your health service provider organization, and whether you are just starting out. However, *Figure 5* provides an example of the relationship between HTM Teams and HTM Working Groups (*Section 1.1*) that we envisage.

How to Manage Change

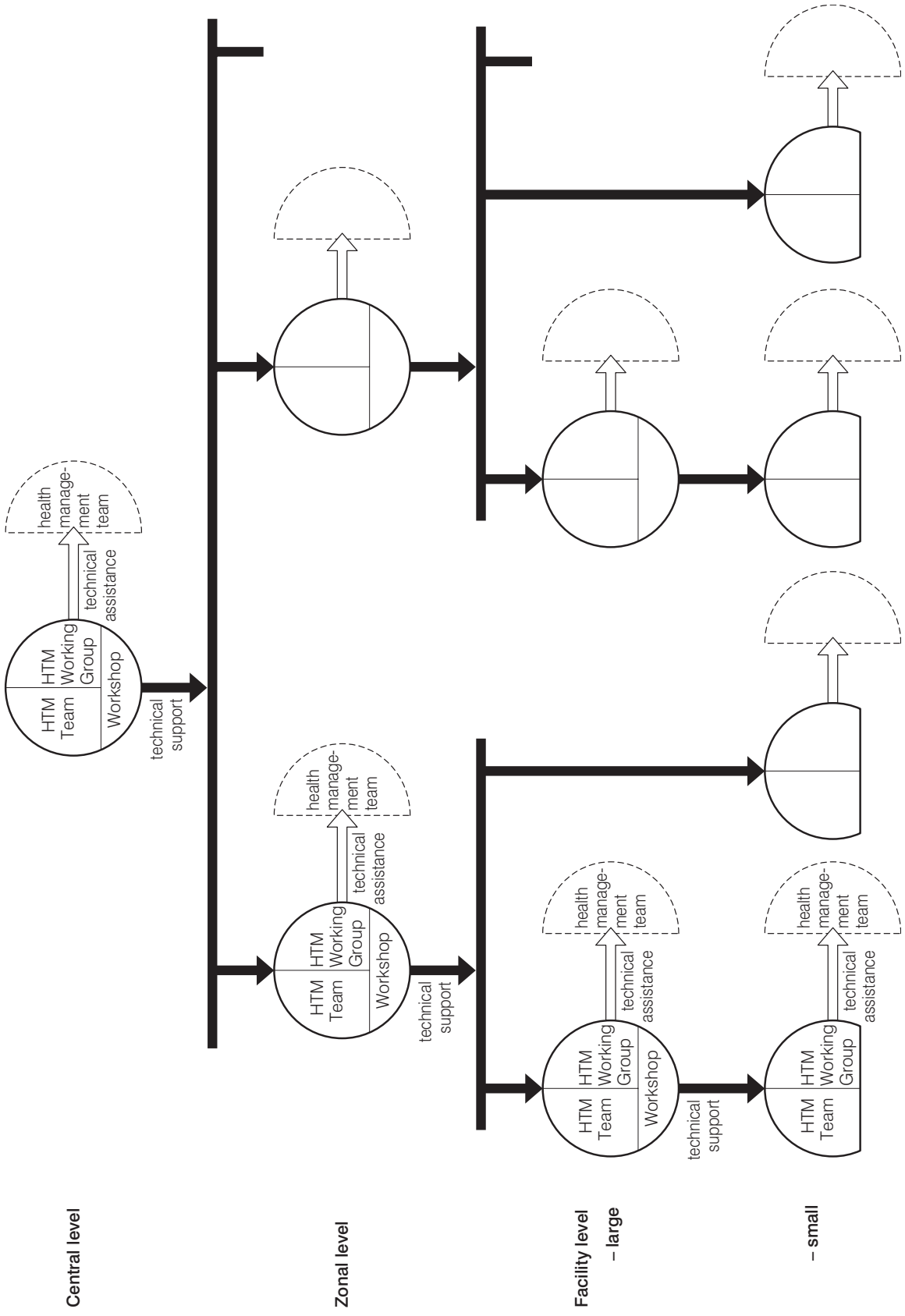
The regulatory requirements presented in this Section may appear somewhat idealistic, compared to the reality in many health systems. However, the aim is not to highlight the deficiencies of existing systems, but to provide a blueprint for a functioning healthcare technology management system. Hopefully, this will enable you to get the right framework conditions in place, and thus improve the effectiveness and the safety of your health service.

We are **not** recommending that your health service provider:

- throw out all their current HTM strategies and start again
- make sudden and sweeping changes that are likely to fail if they are over ambitious.

Rather it is better to take a step-by-step approach, introducing changes gradually, with a careful review process. To implement an HTM system with all the complexities described in this Series of Guides will take several years, and to try to achieve everything at once could be disastrous. However for healthcare technology management to improve, it is important to act.

Figure 5: Sample Organizational Chart for the HTM Service



It is possible to write down all the correct procedures and yet still fail to improve the performance of staff. To ensure that your HTM procedures are effective, it is important for there to be good managers who can find ways to motivate staff (*Section 9*). Simply ordering staff to implement new procedures usually does not work. It is much better to discuss and develop the procedures with the staff who will implement them. This could take the form of discussion, working groups or training workshops. People who are involved in developing ideas about their own work methods are more likely to:

- understand the objectives
- understand the reasons why processes are necessary
- be encouraged to change their way of working
- be more interested in making changes which result in improvement
- see that the aim of the HTM procedures is to improve their delivery of healthcare.

We recognize that many readers will face difficulties such as staff shortages, poor finances, lack of materials, a lack of influence and time, and possibly even corruption. Introducing new rules and procedures into a system or institution that has no real work ethic, or which possibly employs dishonest workers, will not have any significant effect.

Therefore, strategies may be required to bring about cultural and behavioural change. For example:

- When materials are short, instead of focussing upon breakages and loss, place more emphasis upon the importance of staff working hard and putting in the hours.
- Favour good managers who are seen to be present and doing what they preach.
- Encourage an atmosphere where staff are praised for good work, rather than a culture of judgement and criticism.

Introducing rules and administrative procedures alone will not be sufficient to bring about cultural change. You will also need to find ways of increasing performance and productivity, and acknowledging/rewarding good behaviour is essential. For example:

- It is better to break a tool while actively undertaking maintenance, rather than breaking nothing but never doing any work.
- It is better to break a rule in an emergency (such as withdrawing stocks from stores), rather than stick to the rules and risk the possible death of a patient.

Annex 2 has some examples of useful reference materials. To bring about such changes, you will require skills in:

- managing change
- staff motivation
- effective communication
- encouragement
- supportive training with demonstrations.

All parties involved in the network of HTM Teams and HTM Working Groups need to participate in developing the HTM Service. This will encourage a sense of ownership of the Service and its responsibilities, and will lead to greater acceptance and motivation among staff. If you are short of skilled staff (such as technicians, managers, planners or policy-makers), you may need to obtain specialist support to assist with some of these tasks.

2.2 BACKGROUND CONDITIONS SPECIFIC TO THIS GUIDE

Your country and health service provider may have existing principles and conditions that can affect or inform aspects of financial management. These are described here.

Responsible Financial Management Authorities

If you work for a health service provider organization, you will need to conform to any regulations and guidelines concerning financial management produced by the central financing body of your health service provider. For example:

- The Ministry of Finance (MOF) sets national policy, financial regulations, and tax regulations. It provides rules and guidance in documents such as financial planning manuals and purchasing manuals. Government health facilities must conform to these rules, and so must health facilities of other service providers (such as faith organizations) if they receive government funds.
- The national taxation authority (which also falls under the MOF) implements national tax policy and regulations. Health facilities of non-governmental and private organizations must file their accounts to this body, according to these rules.
- The Offices of the Auditor General and, in some countries, the Accountant General, independently monitor the use of public funds.
- The central level of your health service provider will decide if the HTM Service can charge for its activities, can make a profit, and whether the profit can be used to improve the HTM Service or must be returned to the treasury/finance department.

Guiding Principles

International standards, government laws, tax regulations, donor regulations, and accounting principles and policies will affect and inform certain aspects of your financial management, as follows:

Government law

In most countries, the drawing up of accounts is ruled by national legal requirements. These laws are the overall national framework for producing and presenting accounts.

Tax regulations

The national taxation authority has considerable influence on financial transactions and financial statements.

International accounting standards (IAS)

These are internationally recognized accounting standards that must be followed. They are promoted by the IASCF (International Accounting Standards Committee Foundation), serve as accounting models for individual countries, and may be adopted through countries' domestic laws or domestic accounting codes of practice.

Generally accepted accounting principles (GAAP)

These are guidelines created by the accounting profession. There are also country-specific GAAP regarding certain financial transactions.

Accounting policies

Within the framework of strict legal requirements and GAAP, health service providers are free to choose how they will treat certain financial transactions. However, you will need to conform to any policies, regulations and guidelines provided by central management bodies.

International standards on auditing (ISAs)

These are internationally recognized standards for auditing. Auditors operate as a check on organizations, by carrying out independent inspections of accounts, accounting records, procedures, and financial statements. All sectors may at some time be audited. The IAASB (International Auditing and Assurance Standards Board) encourages the use of its ISAs globally, to improve the uniformity of practice by professional accountants throughout the world.

Donor requirements

Your financial policy and regulations will also depend, to some degree, on who is funding the work of the HTM Service. If funding is provided by international donors, they will usually insist on their own requirements for financial accountability and reporting formats.

Box 4 contains a summary of the issues covered in this Section.

BOX 4: Summary of Issues in Section 2 on Framework Requirements

Quality Health Services

Government	◆ actively regulates health services whether they are delivered by public providers, private providers, or a mixture of the two ◆ develops checking systems and legal sanctions for infringement of health regulations ◆ adopts suitable standards for quality health services, in general ◆ specifically for healthcare technology, adopts standards for: - design, development, and manufacturing - performance and safety - use and training - waste disposal ◆ develops donor regulations to ensure all equipment received through foreign aid and donations also comply with the standards ◆ establishes public or quasi-public supervisory bodies to enforce regulations and standards
Ministry of Health	◆ develops national policies for health services ◆ specifically develops a Healthcare Technology Policy to cover all healthcare technology management activities including: - a vision - an element of standardization - the provision of maintenance - provision of finances for all HTM activities - the organizational structure for an HTM Service ◆ regulates on these issues (if required) ◆ develops an HTM Service made up of a network of teams and working groups ◆ uses the central level of the HTMS as the national regulatory body, if necessary, and to ensure that HTM policies are implemented ◆ provides sufficient inputs to ensure the HTMS is effective ◆ uses strategies to manage the changes involved carefully, so that they can be successful
All Health Service Providers in general	◆ conform to regulations and guidelines provided by government ◆ conform to the standards set by government ◆ follow the policies of the Ministry of Health if regulated to do so ◆ develop their own internal Healthcare Technology Policy and expand strategies ◆ develop their own HTM Service made up of a network of teams and working groups, with sufficient inputs to ensure it is effective, in order to ensure that HTM policies are implemented ◆ follow MOH regulations on the HTMS if regulated to do so ◆ implement strategies to develop skills in managing change, staff motivation, effective communication, encouragement, and supportive training with demonstrations ◆ introduce rules and procedures using discussion, working groups, training workshops, etc with the staff that will implement them ◆ include all parties involved in the network of HTM teams and working groups in the development of the HTMS ◆ introduce changes to HTM step-by-step, with a careful review process

Continued overleaf

BOX 4: Summary of Issues in Section 2 on Framework Requirements (continued)

Financial Management	**Government**	◆ establishes national policies, laws, and regulations on financial transactions and tax for government facilities and any others receiving government funds, according to international standards ◆ uses the national taxation authority to implement national tax policy and regulations for all sectors that file accounts ◆ establishes policies, laws, and regulations that form the overall national framework for registration of HTM Services, and their presentation of accounts.
	Accountant General and Auditor General	◆ monitor the use of public funds
	International Donors	◆ provide their special requirements for financial reporting and accountability ◆ commonly apply International Accounting Standards and International Standards on Auditing
	Health Service Providers	◆ abide by government laws, donor requirements and GAAP or IAS ◆ must also design their own policies for financial transactions ◆ provide central guidance to their health sector on financial policies and transactions ◆ decide whether the HTM Service can charge for its activities, can make a profit, and whether the profit can be used to improve the HTM Service further
	All HTM staff and managers	◆ conform to regulations and guidelines provided by relevant bodies on: - financial management - financial planning - purchasing - accounting - taxation - auditing - financial reporting

3. WHAT IS FINANCIAL MANAGEMENT?

Why is This Important?

Financial Management is an essential part of healthcare technology management (HTM). It is built into every aspect of the work of the HTM Service, from setting operational targets to planning, implementing, reporting, and decision-making.

Financial management skills such as planning, budgeting and monitoring, are essential in order to make well-informed decisions in a rapidly changing environment. This is one element of quality management – an important goal for managers.

The HTM Service needs to be able to manage the finances for the HTM activities that it is responsible for. Its aim is to be efficient and productive, and to make good use of resources, therefore being an effective and successful organization. It may also try to generate income to cover some of its costs.

In this Section, the subject of financial management is explored by studying the financial management cycle (*Section 3.1*). Each stage of this cycle is then covered in detail by a further Section of the Guide. Thus, this Section provides an overview of the financial management process described in the Guide.

To manage activities well requires a cycle of planning and reviewing your actions. *Section 3.2* explains how two planning and review cycles are incorporated into this Guide

Tip

- In this Guide, reference is made to two plans – an operational plan and an action plan – both of which are annual plans:
  - The term 'operational' refers only to the technical work (operations) of the HTM Team. Thus, the operational plan covers the engineering activities that the teams carry out for customers.
  - The HTM Teams also undertake other activities covered by the financial management cycle (such as budgeting, accounting and report-writing). The action plan, therefore, is overarching, refers to goals made for all such activities, and includes reviewing and updating the operational plan.

3.1 FINANCIAL MANAGEMENT CYCLE – AN OVERVIEW OF THIS GUIDE

HTM Teams need to set operational targets for their work, and decide what budgets are required to achieve these. They need to account for the use of the money, monitor whether the money was well spent, and be able to report on their financial situation. The HTM Team needs to review how well it is carrying out all these tasks, and to evaluate whether the targets of the HTM Service have been fulfilled or whether changes are required.

This process of financial decision-making consists of a logical sequence of activities, and is illustrated by the Financial Management Cycle shown in *Figure 6*.

Figure 6: Financial Management Cycle – an Overview of this Guide

This Guide covers each of these steps as follows:

Step 1: Setting Operational Targets and Preparing an Operational Plan

The HTM Team begins by setting targets for its operations for the coming year. These are determined, to a large extent, by the goals of the health facility and HTM Working Group. The HTM Team prepares an operational plan, which will then be integrated into the overall plan for the Healthcare Technology Management Service (see *Guide 2* on planning and budgeting).

Section 4 of this Guide gives details of how to prepare an operational plan for HTM Teams.

Tip • Setting operational targets/plans and budgeting (Step 2, below) are, in fact, linked in a cycle. You cannot usually establish a plan by itself. Instead, you need to think about the financial implications.

Step 2: Budgeting

The budget translates the operational plan into monetary terms. The HTM Team considers the financial resources required to implement the operational plan. They consider the costs of their planned equipment management activities and decide what financial resources are required. The budget is the key financial planning tool of the HTM Team.

Section 5 describes budgeting in greater detail.

Tip • Throughout this Guide financial transactions are described in 'money units' (MU) rather than in any one particular currency.

Step 3: Accounting

Accounting provides managers, decision-makers, donors, and creditors with financial statements that reflect the financial results of the HTM Team's work. The team can then use this information to gauge whether their resources have been administered efficiently and productively. It is therefore a very important management tool. One key aim of every accounting system is to provide financial data for planning and decision-making. Another is to provide a record of expenditure, in order to ensure propriety.

Section 6 shows you how to set up an accounting system.

Step 4: Financial Monitoring

By monitoring progress, HTM Managers at all levels of the HTMS, can make constructive adjustments for the future. The accounting system, together with the operational budget, enables them to monitor and control the work of their team and to decide whether their financial resources are being well spent.

Section 7 demonstrates how to analyze the variances (differences) revealed by comparing actual and budgeted results. It also introduces ratios for measuring managerial and economic performance.

Step 5: Financial Reporting

Financial reports provide an invaluable insight into the operational performance of HTM Teams.

Section 8 explains the key financial statements that HTM Teams need to produce, and how to read them.

Step 6: Decision-making and Taking Action

HTM Teams may prepare sensible operational plans and budgets, keep detailed accounts, and carry out monitoring and reporting. However, none of these activities will be effective unless the teams have the power and ability to make decisions and take action.

Section 9 provides an overview of how to make sound financial decisions and take action.

Tip

- Use the financial fitness text in *Annex 3* to test the financial fitness of your HTM Team.

Country Experience

HTM Teams of faith organizations in western and eastern Africa have successfully implemented financial management systems as illustrated by the financial management cycle.

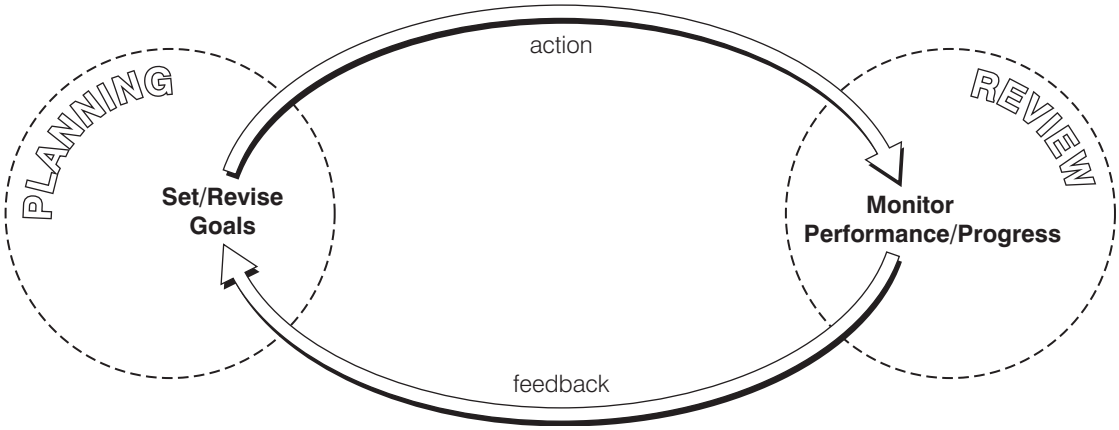
3.2 PLANNING AND REVIEW PROCESSES IN THIS GUIDE

Managing your activities involves a cycle of actions. You need to monitor your performance, and set yourself goals so that you can improve. Then you monitor your progress, revise your goals, and review your progress again. This continuous cycle of planning and review is shown in *Figure 7*.

The planning and review activities are interlinked, but it is necessary to start the discussion at some point in the cycle. In this Guide:

- the planning process (setting goals) is covered first
- followed by the review process (monitoring progress).

Figure 7: Planning and Review Cycle



The financial management cycle (*Section 3.1*) contains two planning and review cycles:

- First of all, the financial management cycle contains a smaller planning and review cycle, specifically covering the operations which the HTM Teams carry out for customers. The operational goals and plans are made in Steps 1 and 2 (*Sections 4 and 5*), while financial monitoring takes place in Step 4 (*Section 7*).
- However, the overall financial management cycle is, itself, an example of a larger planning and review cycle. All the financial management activities, including budgeting, accounting, and reporting, are established and carried out in Steps 1 to 5 (*Sections 4 to 8*). Progress is then reviewed in Step 6 (*Section 9*), and action plans are made to improve the next year's financial management activities.

The planning process and the plans themselves should be clear and straightforward, to assist participation and produce goals that can be understood and used by all staff. Staff who are involved in setting goals and preparing plans are more likely to be committed to carrying them out. Therefore, the planning process should involve representatives of all different types of staff in the:

- HTM Team
- HTM Working Group
- Finance Office
- Health Management Team.

At the end of the year, it is essential to review and carefully analyze the results achieved on all goals, before starting to develop action plans for the following year. This step is the most important: to review results on a regular basis **with the people who are doing the work.**

The main outcome of the planning and review process is that you are able to evaluate your performance. This is important for ensuring the quality of your work (quality assurance), which is an essential component of quality management.

Aims of Quality Management
- client satisfaction
- cost efficiency
- compliance to laws

We recommend that quality management is introduced into the health management systems of all the decentralized levels of the health service. This will create a frame of mind for all staff that is favourable to the challenges connected with the many new reforms and management tasks they face (such as those described in this Guide). Important elements of quality management are:

- a management team approach
- supervision and evaluation
- participative leadership
- methods for encouraging staff
- individual responsibility and initiative
- control measures such as performance measurements and impact analysis
- community participation.

Box 5 contains a summary of the issues covered in this Section.

BOX 5: Summary of Procedures in Section 3 on Financial Management

Financial Management	**HTM Managers, HTM Teams, HTM Working Groups, and Health Management Teams at all levels of the health service**	◆ ensure that financial management is an integral part of healthcare technology management ◆ develop their financial management skills so that they can manage the finances for HTM activities effectively ◆ undertake financial decision-making by following the sequence of activities within the financial management cycle (*Figure 6*), and the procedures set out in this Guide ◆ ensure they understand the difference between the operational plan and the overall action plan for HTM Teams ◆ carry out cycles of planning and review with the people doing the work, in order to manage their activities and improve performance ◆ try to introduce quality management into their decentralized level of the health service, in order to help staff face the new challenges of financial management and cost recovery.

4. HOW TO SET OPERATIONAL TARGETS AND PLANS

Why is This Important?

Every HTM Team needs to set goals for the future, in order to make informed planning decisions. Goals can be set for all HTM activities, and the other Guides in this Series describe goals for many different aspects of HTM.

This Section looks at the targets (annual goals) that the HTM Teams set for their operations (work carried out for customers). An operational plan can show how planned HTM activities over the coming year will lead to the agreed operational targets being achieved.

This will serve as a guideline and reference for HTM Teams and will contribute to well-informed and prompt decision-making.

There are three types of goals:

- Targets (annual actions that you can do with existing resources).
- Recommendations to others (actions that require external or additional inputs).
- Longer-term objectives (actions that require more time).

Section 9.2 discusses these goals in detail for action planning purposes, as well as ways of using indicators to measure progress.

In this Section, we only look at the targets (annual goals) required for the operations of the HTM Teams, and the work required to accomplish them. This is achieved through discussing:

- operational targets (*Section 4.1*)
- the purpose of an operational plan (*Section 4.2*)
- choosing planned activities to meet operational targets (*Section 4.3*)
- improving your operational planning (*Section 4.4*).

Tip

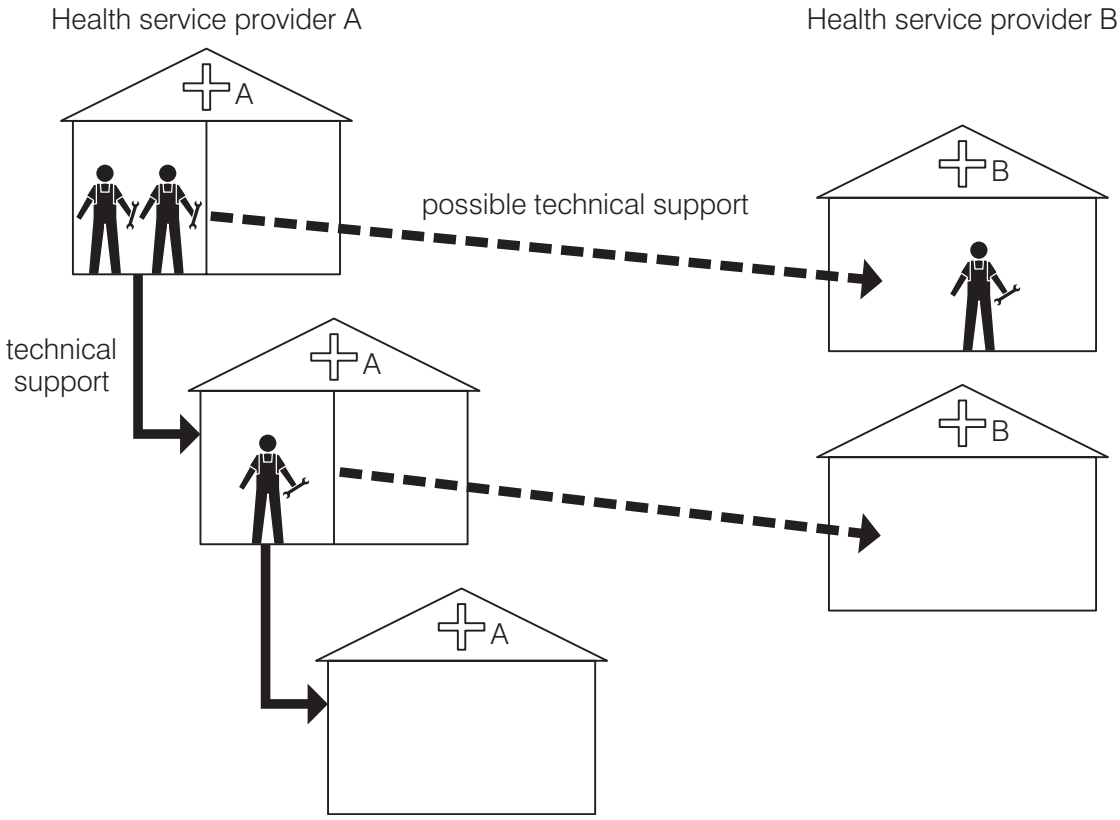
- Setting operational targets/plans and budgeting (*Section 5*) are, in fact, linked in a cycle. You cannot usually establish a plan by itself; you need to think about the financial implications. In government facilities, plans are based on the funds available. Thus, there is a compromise between what one would like to do and what one can afford to do.

4.1 OPERATIONAL TARGETS

Operational targets set out the annual goals you hope to achieve using existing resources. Good targets follow the 'SMART' target-setting process:

Specific	state **what** should be done and **who** will do it
Measurable	easy to measure, or easy to decide that the target has been achieved or if progress is being made
Achievable	possible to carry out with **existing** staff, equipment and money
Relevant	cover a priority problem or improvement
Time-bound	state when the activity should be completed by.

Operational targets for HTM Teams only refer to the engineering activities (operations) carried out for customers. They may concentrate on financial targets, such as strategies that generate income (cover costs) for the HTM Team if that is allowed. Goals for the other activities in the financial management cycle are covered in *Section 9*.



Examples of operational targets for an HTM Team might be:

Target 1: Reduce the financial contribution from international donors to 20,000 money units (MU).

Target 2: Introduce consultancy services to all health facilities for planned preventive maintenance.

Target 3: Extend repair services to two new health facilities.

Target 4: Conduct training courses at all health facilities for the planned preventive maintenance of autoclaves.

4.2 PURPOSE OF AN OPERATIONAL PLAN

Having set your targets, you then develop an operational plan containing activities that ensure you achieve those targets. In order to make the operational plan a useful tool, you should consider the following points:

- Your operational plan should be compiled jointly by staff from the HTM Team, Health Management Team, and HTM Working Group at your level of the health service.
- It should fit into the overall plan of operations for the HTM Service as a whole, and be suitable for your level within that service.
- It should encourage openness, participation, and shared responsibilities among all staff working within the HTM Service.
- The operational plan should illustrate how equipment management forms a part of the overall plan for the health service at your health facility/health authority level.
- It should reflect the needs of your customers (health facilities, health authorities, etc), but be appropriate to the skills and resources you have available.
- The document should inform and stimulate all staff working within the HTM system.
- It should provide the starting point for monitoring the operations of the HTM Team, their evaluation, performance review, and other forms of assessment.

The operational plan is drawn up annually, and will be reviewed under the process of annual action planning (setting and monitoring goals, covered in *Section 9*). This will determine whether or not it needs to be changed.

4.3 CHOOSING PLANNED ACTIVITIES TO MEET OPERATIONAL TARGETS

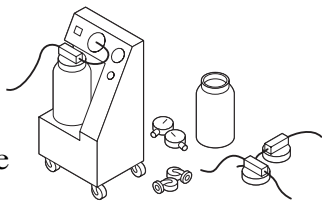
It is important that you choose suitable activities for your operational plan. These must ensure that you meet your operational targets, must be appropriate and realistic for the workload, skills, and motivation of your HTM Team, and must also be actions that you have the authority to undertake. This will vary depending on your country, health service provider, and level.

Using the examples of operational targets from *Section 4.1*, here are some possible planned activities which would achieve those targets:

For target 1: Reduce the financial contribution from international donors to 20,000 money units (MU).

Planned activities:

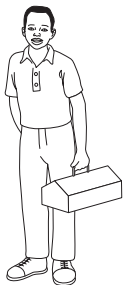
- Increase commission on sales of spare parts and equipment from 10% to 20%, resulting in extra income of MU 5,000.
- Increase operational income from maintenance and repairs by MU 6,000, from consultancy by MU 6,000, and from training by MU 3,000



For target 2: Introduce consultancy services to all health facilities for planned preventive maintenance.

Planned activities:

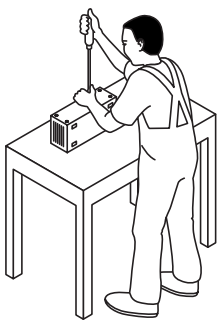
- The engineer will provide 200 chargeable hours of consultancy services per year.
- Each technician will provide 75 chargeable hours of consultancy services per year.



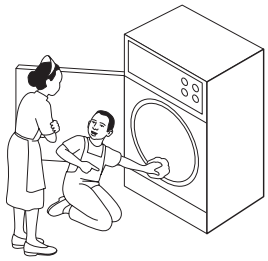
For target 3: Extend repair services to two new health facilities.

Planned activities:

- Raise the productivity level by 5% from 55% to 60% for two technicians and the engineer. Thus the productivity gain per person will lead to 92 chargeable hours per year for repair services.



For target 4: Conduct training courses at all health facilities for the planned preventive maintenance of autoclaves.



Planned activities:
- Increase the number of training courses from four to six courses per year.
- One new trainer to be selected and trained by the engineer.

You will need to monitor these targets and activities to see if progress is being made or whether they have been achieved. *Section 7* discusses financial monitoring tools that you can use, and *Section 9* looks at the use of indicators for measuring progress.

4.4 IMPROVING YOUR OPERATIONAL PLANNING

Good operational planning takes practise. There are several issues to consider if you wish to improve your ability to set operational targets and make operational plans. *Box 6* provides a checklist that HTM Teams can use to improve their operational planning.

BOX 6: A Checklist for Improving your Operational Planning

When making plans for the HTM Team:

- Did you consider any relevant policies, regulations, and national laws that provide a framework within which you should operate, or which could affect your plans (*Section 2*)?
- Did you review and learn from past experience before making a new plan?
- Did you consider the goals of your health service provider before setting your targets?
- Did you clearly define your operational targets?
- Did you propose planned operational activities, expected results, and desired impacts that are in line with your operational targets?
- Is your operational plan suited to the needs of your customers (health facilities, health authorities, etc)?
- Is your operational plan suitable for your level within the organizational structure of the HTM Service (in other words, is it suited to your place within the decision-making process, the division of labour, shared responsibilities, etc)?
- Is your operational plan suited to the level of financing available?
- Did you agree on tools and indicators for financial monitoring and performance assessment (*Sections 7 and 9*)?

Tip • For more advice on how to analyze problems, decide on solutions, and plan actions see *Section 9.1*.

Once you have successfully defined your operational plan, it will become a guideline and reference for the HTM Team. It can then contribute to well-informed and prompt decision-making about the work to be carried out for customers.

Box 7 contains a summary of the issues covered in this Section.

BOX 7: Summary of Procedures in Section 4 on Operational Planning

Operational Planning	**Health Service Provider**	◆ plans and budgets for the HTM Service ◆ appoints a range of multi-disciplinary staff to form HTM Teams and HTM Working Groups ◆ clearly defines the goals of the health service ◆ sets service-wide goals for healthcare technology management (HTM) activities
	HTM Managers	◆ plan which types of maintenance and repair work can be carried out by the in-house teams and when to use external contracts (see *Guide 5* on maintenance management) ◆ plan which types of consultancy services (other HTM activities such as installation, training, inventory-keeping, safety testing) can be carried out by the in-house teams and when to use external contracts ◆ review past experiences and advise HTM Teams on their proposed targets and plans ◆ ensure the HTM Team's operational plan fits into the plans for the HTM Service as a whole
	HTM Teams	◆ prepare their operational targets and plan (as described in this Section) ◆ use tools and indicators for financial monitoring and performance assessment (*Sections 7 and 9*) ◆ use strategies to improve their operational planning abilities (*Box 6*)

5. HOW TO PREPARE AN OPERATIONAL BUDGET

Why is This Important?

Budgets help HTM Managers, HTM Teams, and Health Management Teams to achieve their targets.

Budgets also illustrate financial responsibilities to central bodies, donors, and the owner (health service provider).

Budgeting creates a financial framework within which HTM Managers and HTM Teams can work.

The operational budget refers to the planned engineering activities (operations) that the HTM Team carries out for its customers. In other words it allocates funds against the activities in the operational plan (*Section 4*). It is a recurrent budget – all capital needs are contained in a separate capital budget.

The quality and usefulness of an operational budget for healthcare technology management depends to a large degree upon the professional skills and experience of the people who prepare it.

Some might argue that budgeting takes a lot of time, increases paperwork, and contributes to inflexible working practices. However, experience shows that the time and effort invested in preparing a realistic budget pays off during the course of the year. An operational budget that is realistic and effective benefits the HTM Service and your HTM Team in the following ways:

- The financial planning process takes place in a transparent and systematic way.
- Operational budgets provide the basis for monitoring and control.
- Budgets issue a challenge to HTM Managers and their teams to achieve operational and professional goals.
- Budgets help to improve communications between all the people involved in healthcare technology management, and this ensures better coordination of activities in the HTM Service.

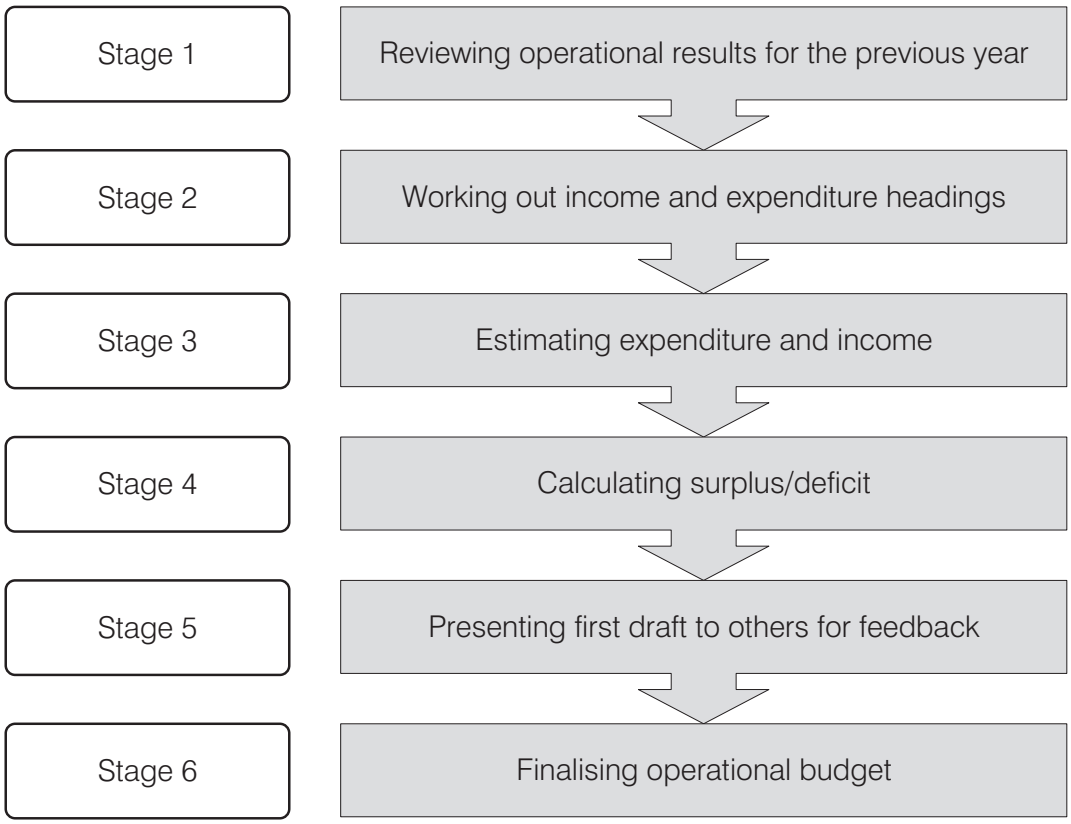
In this Section, we look at:

- the budgeting process (*Section 5.1*)
- how to create a standardized budget format (*Section 5.2*)
- how to define your operational income (*Section 5.3*)
- how to define your operational expenditure (*Section 5.4*)
- an example of an operational budget (*Section 5.5*)
- how to define your capital budget (*Section 5.6*).

5.1 BUDGETING PROCESS

Preparing a budget involves setting operational targets and planning your HTM activities as accurately as possible. It is important to follow a series of stages in the process of budgeting, as shown in *Figure 8*. This will ensure your budget figures are consistent, realistic and accurate.

Figure 8: Stages in the Budgeting Process



The following procedures are involved at each stage:

Stage 1: Start by reviewing the operational results of the previous year. The lessons learned should be used for operating more effectively in the future. *Section 8* explains how to use financial statements as a tool for equipment management.

Stage 2: Work out where your income is likely to come from, so that you can create income headings. Use your operational plan to work out what your expenditure headings should be. *Section 5.2* describes a standardized budget format for income and expenditure.

Stage 3: Estimating your operational income and expenditure for the coming year can be difficult. However, if you have a realistic operational plan showing the different types of HTM activities to be carried out by the HTM Teams, you should be able to arrive at a reasonable estimate. *Sections 5.3 and 5.4* provide details and examples.

Stage 4: At this stage, the budget tells you whether you are likely to be able to raise the money you need to implement your operational plan. If not, you may need to re-think some of the operational targets and plans and re-budget. *Section 5.5* provides an example of an operational budget, and *Section 5.*6 provides an example of a capital budget.

Stage 5: While the process of budgeting may be delegated to specific staff members or committees, everyone involved in HTM should understand how the budget is drawn up, why it is important, and how it is monitored. After their feedback, it may be necessary to look again at certain operational activities and to re-budget.

Stage 6: The operational budget should be finalized at least three months before the start of the financial year it refers to. A finalized budget is not one that is finished but one that is ready for use. Successful preparation of the operational budget depends to a very large extent on how well you have linked the budget to your operational targets and plans, and how well the budgeting process is tailored to your organizational needs.

5.2 BUDGET FORMAT

To coordinate and integrate the budgets of the HTM Service within the health system you should use a standard budget format. This will allow you to link it to other budgets. It also prepares a common ground for discussions over budget content and specific budget items.

Box 8 provides a useful example of a standard budget format for your HTM Service, and instructions on how to use it. It is called an operational budget because it is based on only the engineering activities (operations) of the HTM Team. However, budgets should always show the full picture (in other words, the total income and expenditure), and, therefore, the budget format also contains entries for other 'non-operational' incomes and expenditures.

The budget format shown in *Box 8* is only intended as a guide. You will need to create your own, tailor-made budget format to suit your specific circumstances. A good budget format should always be simple, consistent with the format of other relevant HTM documents, logically organized and easy to understand, with very few instructions required.

An example of an operational budget is provided in *Section 5.5*, with sample figures and explanations taken from *Sections 5.3 and 5.4*.

Further details on how your health service provider can plan and budget for equipment and a wide range of HTM activities (such as equipment procurement, installation, operation, and rehabilitation) are contained within *Guide 2* of this Series, which deals with planning and budgeting.

BOX 8: Example of a Standard Operational Budget Format for the HTM Service

	Budget element	Money unit (MU)
1.	**Operational Income**	
1.1	Training courses for equipment users	
1.2	Maintenance, repairs, and calibration services to health facilities	
1.3	Consultancy services for planned preventive maintenance, installation, commissioning, safety, etc	
1.4	Transport charges	
1.5	Sales of spare parts and equipment	
1.6	Commission on all sales of spare parts and equipment	
	1.7 Total Operational Income (sum of 1.1 to 1.6)	
2.	**Operational Expenditure**	
2.1	*Direct operational expenditure (related to jobs, thus variable costs):*	
2.1.1	Salaries and wages for technical staff (engineers, technicians, artisans, etc)	
2.1.2	Staff training	
2.1.3	Specific materials, supplies, spare parts per job (these costs are passed on to the customer and charged to them later – see line entries 1.5 and 1.6)	
	2.1.4 Sub-total direct operational expenditure (sum of 2.1.1 to 2.1.3)	
2.2	*Indirect operational expenditure (overheads, thus fixed costs):*	
2.2.1	Salaries and wages for support staff (secretary, cleaner, driver, etc)	
2.2.2	Travel and transportation	
2.2.3	Office supplies	
2.2.4	Rent of offices, workshop floor space	
2.2.5	Vehicle insurance premiums	
2.2.6	General materials and supplies	
2.2.7	Depreciation of assets	
	2.2.8 Sub-total indirect operational expenditure (sum of 2.2.1 to 2.2.7)	
	2.3 Total Operational Expenditure = direct plus indirect expenditure (sum of 2.1.4 and 2.2.8)	
3.	**Operational Surplus or Deficit = income minus expenditure (1.7 - 2.3)**	
4.	**Other (Non-operational) Income** (such as donor contributions and government subsidies)	
5.	**Other (Non-operational) Expenditure** (for example, interest paid, donations made)	
	6. Total Surplus or Deficit (= 3 + 4 - 5)	

5.3 OPERATIONAL INCOME

Did you know?

- A cost centre is a unit within a health service provider organization that is only responsible for keeping track of costs.
- A profit centre is a unit responsible for both generating income and for the expenditure incurred.

HTM services can be operated either as cost centres or as profit centres. The main differences between these two approaches are shown in *Figure 9*.

Private HTM Teams and many NGO and faith teams operate as profit centres. However, most government HTM Teams operate as cost centres (see *Guide 2* on planning and budgeting).

Figure 9: The Difference Between Profit and Cost Centres

Criteria	Profit Centre	Cost Centre
Objectives for financial management	To be a commercial organization, generate income, undertake full cost recovery, make a profit, use some profit to improve and develop the service offered if allowed.	Moving towards being a commercial organization, undertake partial or no cost recovery, use any surplus subject to rules of the organization (for example, in government, the surplus returns to the treasury).
Objectives for HTM	Clearly expressed	Not stated
Priorities	Priorities are set and resources allocated	Not decided or expressed
Staff involved	Multi-disciplinary teams/groups	Technician, manager, and representative of central body
Budget method	Operational targets ↓ Operational plan ↓ Financial resources needed to achieve operational results	Financial resources available ↓ Operational plan ↓ Desirable operational results
Basis for budgeting	Operational plan based on planned activities	Last year's budget plus/minus a certain percentage or sum
Budget lines/items	Range of items, flexibility	Few items, fixed

Experience in West Africa

In a West African country, the HTM Service of a faith organization has operated successfully as a profit centre since 1996. Most of the faith organizations in the western African region are in the process of reorganizing their HTM Services as profit centres.
In contrast, most government HTM Services in African countries operate as cost centres.

The income for an HTM Team can come from:

- government subsidy, donor grants, and health service provider support
- money the team generates itself.

As the latter type of income is new for many HTM Teams, we will now explain it in more detail.

The basic concept of a profit centre is based on this simple formula:

operational income - operational expenditure = profit (surplus)

Of course, if you subtract total expenditure from total income you will also get an indication of profit. But we are interested in the 'operational' profit or loss, as it is a more important result of the operations of the HTM Team.

There are, therefore, three options for increasing profit, as follows:

- Decreasing the operational expenditure by being more efficient.
- Increasing the operational income by carrying out more tasks for customers.
- Increasing the operational income by charging more.

In order to start planning your budget, you will need to begin by estimating your operational income. This is the income HTM Teams can generate from their own engineering activities (operations). It is easier if you divide it up into types of income, for example:

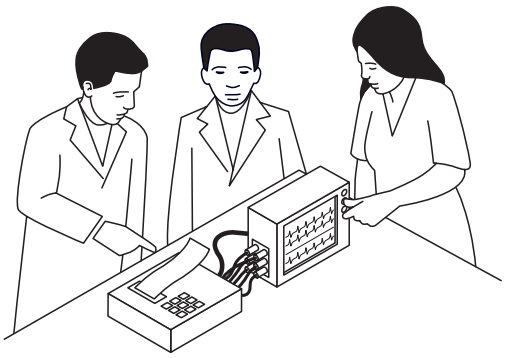
a. training courses
b. maintenance, repairs, calibration
c. consultancy services
d. transport charges
e. sale of spare parts, materials, and equipment
f. commission
g. other (non-operational).

This will not only make budgeting easier, it will also help you to communicate more effectively with other staff and provide a good starting point for monitoring your operational income.

Depending on your health service provider and country, your HTM Service may be able to generate income by charging for services provided. Whether this income can be used to improve the HTM Service further depends on the policies of the responsible financing authority (treasury, central finance office, donor agency, etc). *Section 8* provides some advice on this.

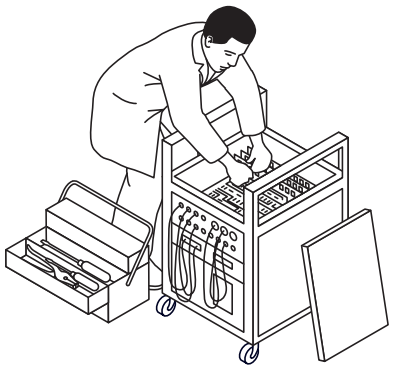
Now we look at each type of income and show how to produce an accurate estimate of your operational income, paying special attention to service charges and transport charges.

a. Income from Training Courses



This is fairly easy to estimate because all financial information should be readily available. The income from training courses should cover all expenditures required for running the training programme (such as equipment, materials, travel and subsistence, fees, accommodation, room hire) plus a reasonable surplus. For more information on planning training see *Guide 2* on planning and budgeting, and for the resources required to run training courses see *Annex 4*.

b. Income from Maintenance Services



The most effective way to calculate income from maintenance services is to look at service charges per hour for technicians/engineers.

The advantages of this method are:

- it allows a comparison between internal and external maintenance services
- it is a good yardstick to determine effectiveness and efficiency of HTM Teams
- it provides a basis for pricing of services such as training, maintenance, repairs, and consultancy.

To calculate service charges per hour you need to know how many hours of time your maintenance staff are available for work (known as chargeable hours), and what their productivity levels are (how many of those hours are used for HTM activities). We look at each of these interlinked issues in turn.

Productivity analysis of engineers and technicians

Often employees/workers do not like to discuss or calculate their productivity, but it is an important tool if you are trying to calculate the service charge to set for your work.

The productivity level of an employee/worker can be calculated using the following equation:

$$\text{Productivity (\%)} = \frac{\text{time worked}}{\text{time available}} \times 100$$

where:

- time worked equals only all the hours charged to work orders (for scheduled maintenance, repairs, and other engineering activities) and not the hours spent on tasks not linked to a work order
- time available equals total time paid, minus vacation, public holidays, and sick leave.

Thus if the total available hours for an employee/worker was 2,000 hours, and the time worked was 1,000 then:

$$\text{Productivity} = \frac{1{,}000 \times 100}{2{,}000} = 50\%$$

As this productivity level relates only to time charged to work orders, it is a reflection of the time spent directly on activities that could generate income. This figure provides key information about the relationship between 'productive' time and time available. When discussing productivity, it is usual to talk of 'productive' and 'non-productive' time. Although it may not sound like it, it is important to realize that non-productive time is as valuable as productive time, and is different to unproductive time as follows:

- Productive time is time spent on engineering activities that produce an output which can be charged to the customer, or reflects completed work orders (sometimes known as direct labour)
- Non-productive time is time spent on administrative activities which, although essential, do not produce an output that can be charged to customers, and are not listed on work orders (sometimes known as indirect labour).
- Unproductive time is time that is wasted.

Box 9 provides some definitions and examples of productive and non-productive tasks/time.

BOX 9: Example of Productive and Non-Productive Time

(Adapted from the American Hospital Association (AHA) and Bauld references – see *Annex 6*)

Productive time or direct labour	**Non-productive time or indirect labour**
Tasks or services provided to a client where the deliverable product is information, advice, a serviced device, or a patient service.	**Time** that is paid, but not expected to result in any work of benefit to clients, but is for necessary administrative and overhead-type functions.
Chargeable: These tasks or services can be considered chargeable tasks, whether or not an actual transfer of funds occurs between departments	
For example:	**For example:**
Attending to operator errors	Administrative meetings
Design services	Break time
Documentation of productive activities	Budgeting
Emergency call-outs	Calibration of test equipment
Equipment modification	Committee meetings
Hazard reporting	Conventions/seminars
In-service training	Documentation of non-productive activities
Inspection of incoming equipment	Employee activities
Installation and commissioning	Keeping up with the field/reading journals
Necessary travel time	Maintenance of inventory
Ordering spare parts, materials, consumables, etc	Maintenance of technical library
Planned preventive maintenance (PPM)	Meeting sales personnel
Performance checks	Public holidays
Pre-acquisition planning	Record-keeping
Product evaluation	Sick leave
Repairs	Stock control
Safety inspections	Supervision
Service contract management	Training of own team
Site preparation	Vacation
Technical consultation	

Care must be taken when considering what is a reasonable level of productivity for your circumstances.

Box 10 shows the American Hospital Association's breakdown of productivity levels for medical equipment management departments in hospitals in the United States. We are not suggesting that the actual figures are valid anywhere else, but what is interesting is their analysis of the difference between the figures, and their views on why productivity may fall.

BOX 10: AHA's Discussion of Productivity Levels in the United States of America

On the basis of historical data, the following breakdowns can be made for productivity levels:

Productivity levels of more than 85%	=	Questionable
75–85%	=	Excellent
60–74%	=	Acceptable
55–59%	=	Borderline
less than 55%	=	Unacceptable

Productivity of more than 85 per cent is questionable because it is difficult to achieve this without either unpaid overtime, improper documentation of time worked, or an increasing level of recalls or repairs. Experience has shown that a team that accounts for its work by individual job and sustains a real level of productivity of more than 85% for three to six months is headed for a rash of recalls and complaints.

Productivity of less than 55 per cent is unacceptable (in the USA) because it indicates productive time per person of less than 4.5 hours per day. This workload would be insufficient to justify a member of staff full time unless the sources of outside service are a considerable distance away.

Lower-than-expected productivity generally indicates special problems requiring management attention. These problems include:

- Lengthy periods spent waiting to gain access to equipment. This problem requires some discussion with department heads to effect a mutually acceptable solution.
- Long periods of time spent tracking down equipment that has been relocated.
- Use of biomedical technicians to perform clerical functions that could easily be handled by a less skilled individual.
- Use of inefficient test forms, requiring personnel to spend much more time than is necessary filling out overly-detailed service reports.
- Inefficient maintenance practices, such as taking equipment back to the workshop for maintenance that could be done in the user department, or routinely returning to the workshop between work orders.

There is no doubt that an efficient, well-managed internal maintenance programme can provide most health facilities with some cost savings and other additional benefits. The challenge is in maintaining the consistently high level of management oversight needed to keep the programme running in an optimum fashion.

When you consider productivity levels for your HTM Service, you need to look at typical productivity levels in your country, and for similar types of work. Then you can determine a productivity level that is suited to your conditions and is attainable. Productivity levels will be affected by:

- culture
- climate
- work practices
- constraints such as shortages of spare parts, distances to travel, and lack of tools
- levels of morale
- motivation
- management

etc.

Experience from East Africa

In one East African country, an HTM Team calculated their productivity level at 40 per cent and were very disappointed with this result. But then they looked at productivity levels in the private engineering sector of their country and found those to be only 50 per cent. So, in the context of national constraints, their existing productivity was not too bad. They also had a reasonable goal to aim for to improve their situation.

Chargeable hours

Once you know your productivity level, you can calculate your chargeable hours. These are the hours that staff are available for work that can be charged to customers.

Box 11 contains an example of how to calculate the chargeable hours for an engineer or technician, and shows how this may change depending on their productivity levels.

Tip • Deficits are usually shown in brackets in financial statements.

Service charges per hour

Once you know your chargeable hours, you can calculate the service charge per hour to set.

Box 12 provides an example of how to calculate your service charges per hour so that you can make a profit.

BOX 11: How to Determine Chargeable Hours for an HTM Team Member

Calculation with example figures	Hours per year
paid hours per engineer/technician (40 hours per week x 52 weeks)	2,080
minus paid public holidays (8 hours x 12 days)	(96)
minus paid vacation (8 hours x 15 days)	(120)
minus paid absence/leave (8 hours x 4 days)	(32)
Available hours 100%	**1,832**
Chargeable hours if your productivity level is 60%	**1,100**
Chargeable hours if your productivity level is 55%	**1,007**

BOX 12: How to Calculate the Service Charges for an HTM Team

Steps with sample figures	Money unit (MU)
1. Determine your chargeable hours (*Box 11* shows how to calculate this figure, and provides the example figures assuming a productivity level of 60%)	
One engineer chargeable hours	1,100
Two technicians chargeable hours	2,200
Total chargeable hours	**3,300**
2. Determine your operational expenditure (*Section 5.4* explains the terms direct and indirect operational expenditure, and *Section 5.5* provides the figures from its example of an operational budget)	
direct operational expenditure	74,300
indirect operational expenditure	29,000
Total operational expenditure	**103,300**
minus costs passed on to the customer for materials, supplies, spare parts	(42,300)
Net operational expenditure (expenditure net of the cost for materials)	**61,000**

3. Determine your service charges per hour

Service charges per hour are calculated using the following equation:

$$\frac{\text{net operational expenditure}}{\text{chargeable hours}} = \frac{61{,}000}{3{,}300} = 18.48 \text{ MU/hour}$$

4. Determine the service charge you will set for clients

A service charge of 18.48 MU/hour on average for each maintainer is required to cover net operational expenditure.

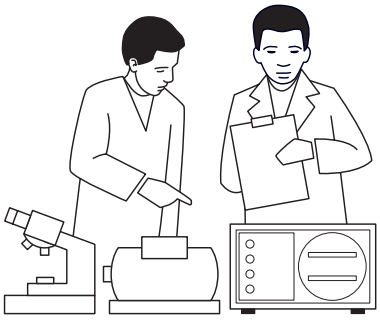
Thus, in order to generate a profit of 10% the average hourly rate for each HTM Team member should be set at 20.30 MU/hour.

Experience from East Africa

In one East African country, the HTM Team of a faith organization had to raise service charges (per technician/hour) by 360 per cent in order to compensate for the decrease in donor contributions. By selling consultancy services to health facilities of other health service providers, the HTM Team have been able to reduce the service charges for health facilities of faith organizations.

c. Income from Consultancy Services

As well as maintenance and training, HTM Teams can offer consultancy services to health facilities for activities, such as:

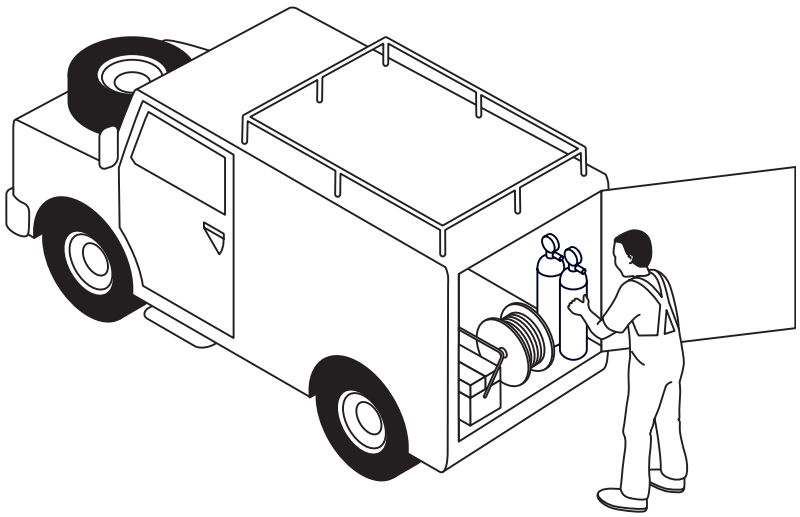


- advice on procurement
- site preparation
- installation and commissioning
- safety testing
- calibration of equipment
- purchase and stock control of equipment spare parts, consumables, and accessories
- establishing and regularly updating an equipment inventory.

The income from these services is also calculated by looking at the service charges per hour for technicians/engineers, as discussed for maintenance services in *point b*, above.

d. Income from Transport Charges

Transport charges must be estimated very carefully in order to recover expenditures for vehicles through income from transport charges. *Box 13* shows how to calculate transport charges.



BOX 13: How to Estimate Transport Charges for a Four-Wheel Drive Vehicle per km for a Period of Five Years

Calculation with sample figures	Money unit (MU)
Purchase price including import tax	50,000
Insurance (500 MU x 5 years)	2,500
Fuel (20,000 km x 5 years x 10 litres/100km x 1.00 MU)	10,000
Tyres (one set per year x 5 years x 1,200 MU)	6,000
Repairs and maintenance (2,000 MU per year x 5 years)	10,000
Road licence and government tax (200 MU x 5 years)	1,000
Contingencies	4,000
Total vehicle costs for five years covering 100,000km overall	**83,500**
minus estimated retail value after five years	(18,000)
Net vehicle costs for five years covering 100,000km overall	**65,500**
Thus, transport charges per km	**0.655**

e. Income from Sales of Spare Parts, Materials and Equipment

You can estimate your expected income from the sale of spare parts, materials, and equipment by analyzing recent history, and cooperating with health service providers in the planning of their equipment stock (see *Guide 2* on planning and budgeting).

This income from sales balances out the expenditure you incurred purchasing spare parts, materials, and equipment on behalf of your client (see costs passed on/charged to customers under direct expenditure in the operational budget example in *Section 5.5*).

f. Income from Commission

It is usual to take a commission on sales (discussed in *point e*, above) to cover the administrative cost of purchasing, storing, and issuing the item sold. This commission will be a percentage (usually between 10% and 20%) of the sale value and will depend on the organization, sector, and country.

g. Income from Other Sources

This item is for non-operational income such as government subsidies, donor grants, earned interest, etc.

5.4 OPERATIONAL EXPENDITURE

It tends to be the case that operational income is often overestimated, while operational expenditure is underestimated. Operational expenditure is the money spent by the HTM Teams while undertaking their engineering activities (operations).

In order to make accurate forecasts of expenditure, it is advisable to differentiate between:

a. direct operational expenditure

b. indirect operational expenditure

c. other (non-operational) expenditure.

a. Direct Operational Expenditure

This type of expenditure can be related to a specific technical service job provided by technical staff. It is sometimes also referred to as variable costs or shared costs because the expenditure varies with the quantity or level of services provided to customers.

There are three typical direct operational expenditures. The first two:

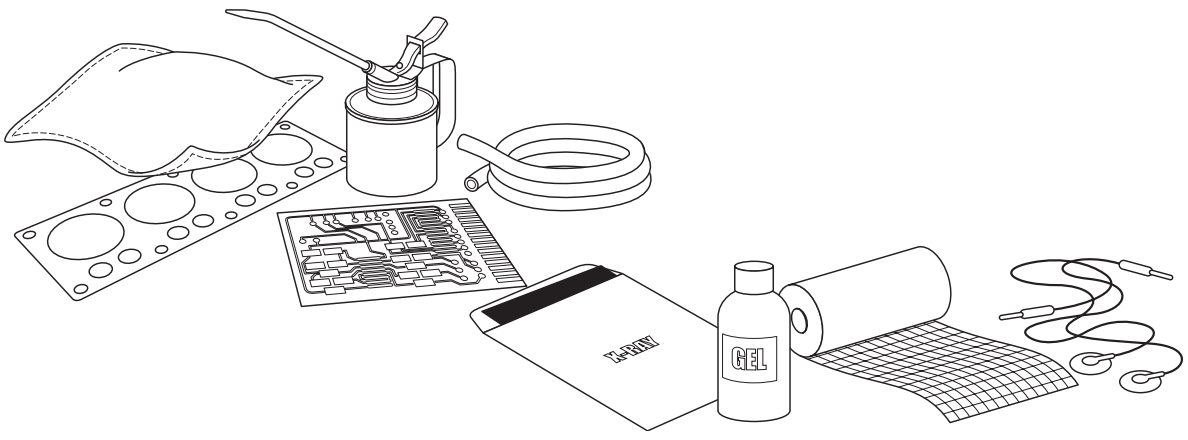
- salaries and additional benefits and allowances of technical staff (engineers, technicians, artisans, etc), and
- training and meetings of technical staff,

have to be included in the total of direct operational expenditure used for calculating service charges per hour (*Section 5.3*).

The third:

- specific materials, spare parts, and supplies for each job

are passed on to the customer and are charged to them later, thus they are not included in the total direct costs used for calculating the service charge per hour (*Section 5.3*).



b. Indirect Operational Expenditure

This type of expenditure is often referred to as overheads or fixed costs, and does not fluctuate with the quantity or level of services provided to customers.

Typical indirect operational expenditures are:

- salaries, wages, and benefits for support staff (accountant, secretary, office clerks, etc)
- travel and transportation
- communication
- office supplies
- rent for offices, workshops
- vehicle insurance premiums
- depreciation of assets (*Section 8.2*)
- general materials and supplies.

Only those expenditures of relevance to your HTM Team should be included in the total of indirect operational expenditure used for calculating the service charge per hour (*Section 5.3*).

c. Other Expenditure

This item is for non-operational expenditure such as interest paid on loans, donations made, etc.

Section 5.5 provides an illustration of these operational expenditures.

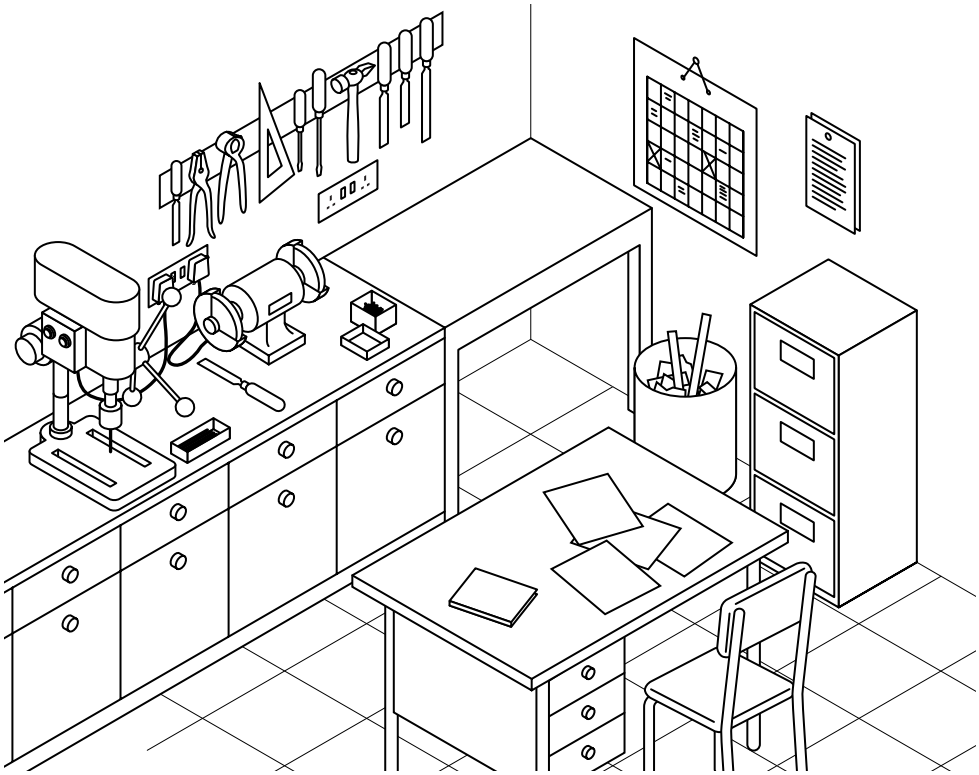
5.5 EXAMPLE OF AN OPERATIONAL BUDGET

Box 14 provides an example of an operational budget with sample figures. As shown in *Section 5.2*, your operational budget is made up of operational income and operational expenditure (see *Box 8*). Thus, *Box 14* uses the operational income elements discussed in *Section 5.3*, and the operational expenditure elements discussed in *Section 5.4*. The example is based on the sample operational targets and planned activities in *Section 4*, and the sample figures are based on the examples in *Section 5.3*.

BOX 14: Example of an Operational Budget

Budget element	Money unit (MU)
Operational Income	
Training courses for equipment users (6 training courses per year x 1,000 MU)	6,000
Maintenance and repairs Chargeable hours per technician/year x MU/hour (1,025 hours x 2 technicians x 20.30 MU/hour) Chargeable hours per engineer/year x MU/hour (900 hours x 1 engineer x 20.30 MU/hour)	59,885
Consultancy For advisory services provided to health facilities: Chargeable hours per technician/year x MU/hour (75 hours x 2 technicians x 20.30 MU/hour) Chargeable hours per engineer/year x MU/hour (200 hours x 1 engineer x 20.30 MU/hour)	7,105
Transport charges (11,750km x 0.65 MU/km)	7,637
Sales of spare parts, materials and equipment	42,300
Commission 20% commission on all sales of spare parts and equipment (20% of estimated total sales amounting to MU 42,300)	8,460
Total Operational Income	**131,387**
Operational Expenditure	
Direct operational expenditure:	
Salaries and wages for technical staff	28,000
Training costs	4,000
Materials, supplies, spare parts (these pass-through costs are charged to customers later)	42,300
Sub-total direct operational expenditure	*74,300*
Indirect operational expenditure:	
Salaries and wages for support staff	8,000
Travel and transportation	1,000
Office supplies	1,000
Communication	3,000
Rent of offices and workshops	2,000
Vehicle insurance premiums	500
Depreciation	10,000
Materials and supplies	3,500
Sub-total indirect operational expenditure	*29,000*
Total Operational Expenditure	**103,300**
Operational Surplus or Deficit (total operational income – total operational expenditure)	28,087
Other (Non-operational) Income (donor contributions, government subsidies, etc.)	20,000
Other (Non-operational) Expenditure (interest paid, donations made, etc.)	(400)
TOTAL Surplus or Deficit (operational surplus or deficit + non-operational income – non-operational expenditure)	**47,687**

5.6 CAPITAL BUDGET



Planned expenditure on capital items such as buildings, equipment, and vehicles used by the HTM Team should not be included in the operational budget but are set out in a separate capital budget. *Box 15* contains an example of a capital budget.

BOX 15: Example of a Capital Budget

Budget element with sample figures	Money unit (MU)
Purchase costs	
Office equipment	2,000
Workshop equipment	8,000
Four-wheel drive vehicle	50,000
Total purchase costs	**60,000**
Financing	
Loan from bank	34,000
Loan from donor	26,000
Total funding required	**60,000**

Though capital budgets and operational budgets are expressed separately, in practice the two are interlinked. For example, if you buy a new vehicle (under your capital budget), this will bring the benefits of increased transport capacity and efficiency, and this should be reflected in your operational income. However, it will also bring with it certain costs, such as depreciation and expenditure on petrol, insurance and maintenance. This should be reflected in your operational expenditure.

For more information on capital budgeting for HTM activities as a whole, see *Guide 2* on planning and budgeting.

Box 16 contains a summary of the issues covered in this Section.

BOX 16: Summary of Procedures in Section 5 on Budgeting

Budgeting	**Health Service Provider**	◆ plans and budgets for the HTM Service in order to provide it with sufficient resources ◆ reviews draft capital budget prepared by the HTM Team
	Health Management Teams	◆ agree on a budget format for the HTM Service and link it to other budgets in the healthcare system ◆ make recommendations on capital budgets ◆ discuss drafts of budgets and finalize the operational budget ◆ determine the productivity level and service charges per hour ◆ set limits for expenditure items ◆ set targets for different types of income
	HTM Managers	◆ gather information and estimate figures for operational income and expenditure, and summarize them in an agreed budget format ◆ prepare capital budget proposals

6. HOW TO SET UP AN ACTIVITY BASED ACCOUNTING SYSTEM

Why is This Important?

The main objective of every accounting system is to provide financial data for planning, monitoring, reporting and decision-making.

Accounting provides HTM Teams, HTM Managers, Health Management Teams, health service providers, donors and creditors with financial statements that reflect the true results of HTM activities. It is therefore a very important management tool.

Did you know?

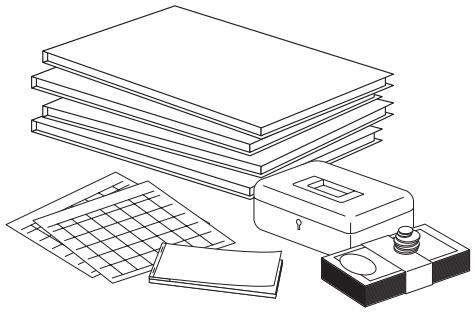
Accounting is an essential part of financial management.

Managers in the HTMS need to understand enough about accounting procedures to ensure their financial management is based on accurate and relevant accounting information.

A good knowledge of accounting will enable you to monitor whether money is being well spent, and can help you to achieve your operational targets.

In this Section, we look at:

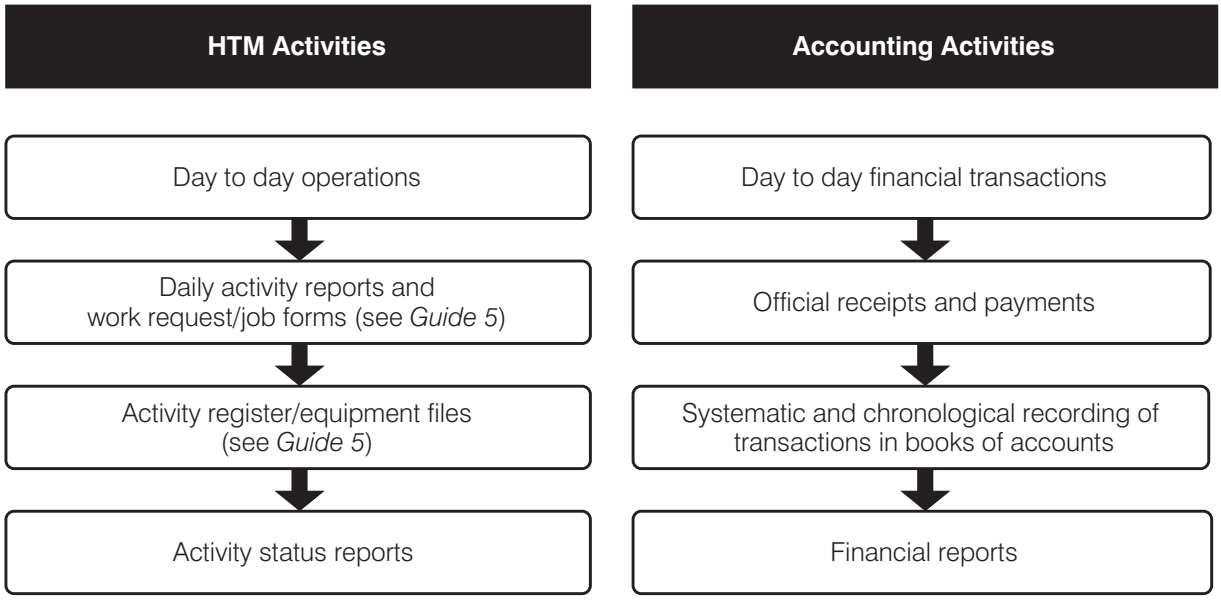
- HTM and accounting activities (*Section 6.1*)
- the accounting cycle (*Section 6.2*)
- the accounting system (*Section 6.3*)
- a chart of accounts (*Section 6.4*).



6.1 HTM AND ACCOUNTING ACTIVITIES

To be useful to the HTM Service, an accounting system must be tailor-made. This way, you can ensure that it will generate the reliable information you need to make effective decisions. HTM Managers should work with a chartered accountant to develop such a system, to ensure healthcare technology management activities and accounting activities are well matched. *Figure 10* illustrates how this could be done.

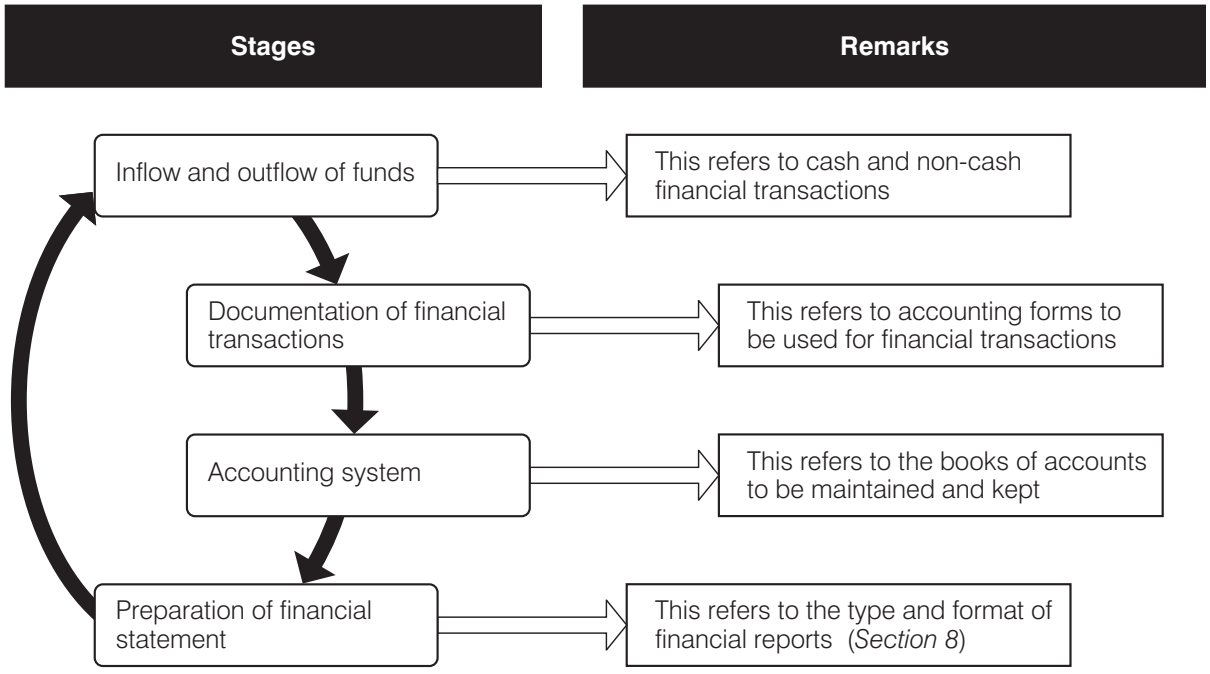
Figure 10: Matching HTM and Accounting Activities



6.2 ACCOUNTING CYCLE

Once you have matched HTM and accounting activities, you will need to agree on an accounting cycle to produce financial statements. *Figure 11* shows the four basic stages of the accounting cycle. The duration of the accounting cycle depends on your financial reporting periods, for example, half-yearly and annual financial statements.

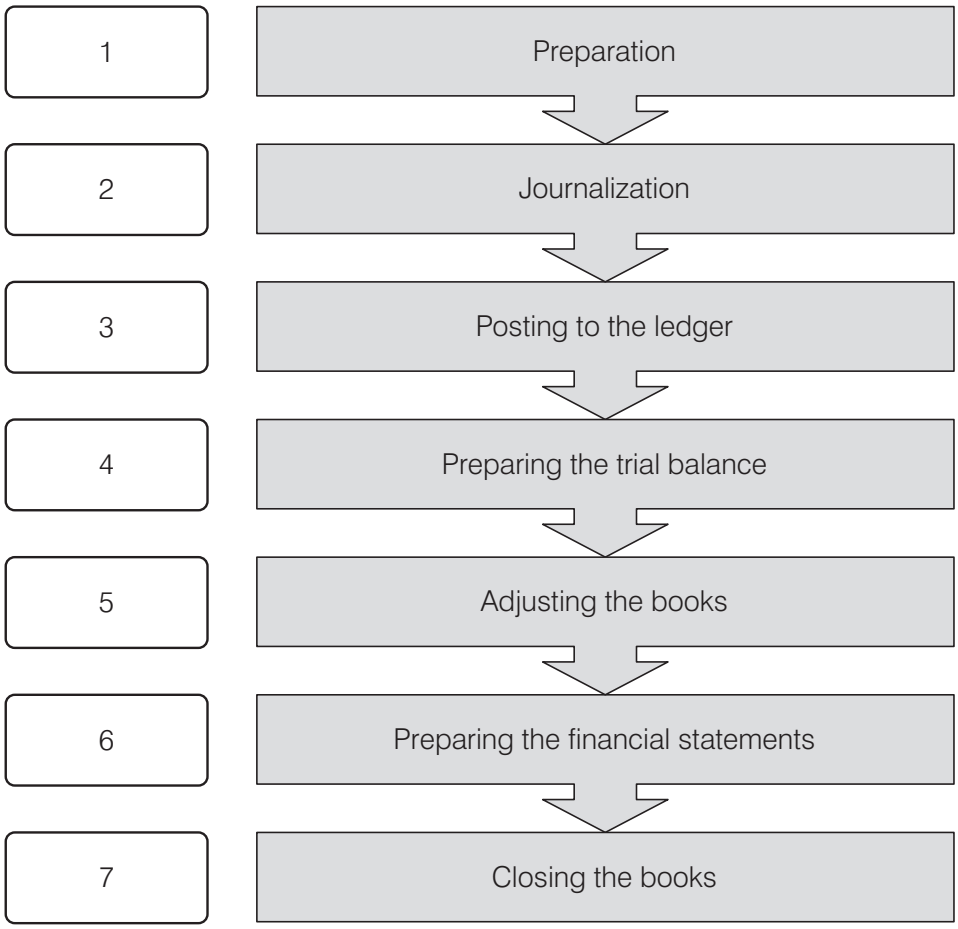
Figure 11: The Accounting Cycle



6.3 ACCOUNTING SYSTEM

The purpose of the accounting system is to record, classify, and summarize financial transactions in date order (chronologically) and in accordance with the chart of accounts (*Section 6.4*). A series of steps are involved in recording transactions in books of account, in a systematic and chronological way. These steps are shown in *Figure 12*.

Figure 12: The Seven Steps of the Accounting System



The activities involved in these steps are:

Step 1: Preparation

Primary evidence or source documents of transactions are gathered together.

Step 2: Journalization

Transactions are entered in a journal according to the date they occurred, as evidenced by the corresponding vouchers or official receipts. These should be recorded in date order (chronologically). At the end of the month, totals and balances are recorded. A journal is an account book that is used to record amounts transferred from one ledger account to another ledger account, together with explanations for the transfers.

Step 3: Posting to the Ledger

A ledger is an account book used for recording financial transactions with a separate page for each account. Totals from the journals are transferred (or 'posted') to the proper account in the ledger. Each entry in the ledger is given a reference, showing the source page in the journal from which it came. A similar reference entry is made in the journal, showing the destination page in the ledger to which the transfer has been made.

Step 4: Preparing the Trial Balance

The trial balance is the list of all the accounts in the ledger, together with the correct balance for each account. It will show that the debit entries in the ledger will balance with the credit entries.

Step 5: Adjusting the Books

Additional journal entries might have to be made to correct the balances of some of the accounts. This may be necessary in order to present the results of operations and the financial condition of the business in a more fair and more accurate manner.

Step 6: Preparing the Financial Statements

From the adjusted trial balance, first the profit and loss account is prepared, then the balance sheet. *Section 8* describes how to read these financial statements.

Step 7: Closing the Books

The accounts are closed at the end of the financial year, and any unspent monies are moved as follows:

- Where donor-funded projects show a fund balance, this is moved to the appropriate 'fund account' (according to the donor's regulations).
- Where businesses show an operational profit, this is moved to 'retained earnings'.
- In the case of government funds, any unspent balance is returned to the treasury.

The balance sheet will reflect this situation and show the state of the finances at the start of the next financial year, and a new income and expenditure account is started.

6.4 CHART OF ACCOUNTS

The record of your expenditures (your accounts) should be arranged in a logical order and listed in a Chart of Accounts: this will simplify the bookkeeping and preparation of financial statements.

There are two systems of bookkeeping:

- **Single entry bookkeeping –** this shows inflow and outflow of cash and the cash balance. Each transaction is recorded only once.
- **Double entry bookkeeping –** each transaction is recorded twice. One entry shows where the money came from and another entry shows where it went. For example, where salaries are paid in cash, this affects two accounts in the chart of accounts. The money comes **from** the cash account and goes **to** the salaries account.

In some countries, the law provides a chart of accounts that every business must use. In addition, donor-funded HTM Services may be required to follow a chart of accounts set up by the donors. However, local laws take precedence and it is usually possible to adapt the legal chart of accounts to the requirements of both donors and the HTM Service.

An example of a chart of accounts for recording the financial transactions of an HTM Service is given in *Annex 5*.

Chartered accountants, auditors, and management consultants in your country can help you to organize a chart of accounts tailored to your specific requirements.

Country Experience

In many West and East African countries, HTM Services which have changed their operating approach from cost to profit centre have created a tailor-made chart of accounts as part of their new financial management system.

Box 17 contains a summary of the issues covered in this Section.

BOX 17: Summary of Procedures in Section 6 on Accounting

Accounting	**Health Service Provider**	◆ provides the charts of accounts used by the health facilities for reference ◆ provides accounting principles, methods, and policies for the HTM Team.
	Health Management Teams	◆ make sure the chart of accounts for HTM activities fits into the chart of accounts for the health service provider (Ministry of Health, diocese, private business, etc).
	HTM Managers	◆ help accountants to match HTM activities with the account headings in the chart of accounts ◆ agree with accountants on the duration of an accounting cycle leading to financial reports.

7. HOW TO USE FINANCIAL MONITORING TOOLS

Why is This Important?

Through monitoring the operational budget regularly, managers are able to learn from experience, and to anticipate and estimate future events, thus avoiding a negative result later on.

Financial monitoring tools, such as variance analysis and performance ratios, should form an integral part of healthcare technology management. These provide reliable management information, which will enable the HTM Manager and the HTM Team to take corrective and preventive action, where necessary.

As discussed in *Section 3.2,* the planning and review cycle for managing activities requires you to monitor progress against your operational plan and its associated operational budget. This Section looks at suitable financial monitoring tools for doing this.

There will always be differences between your budgeted and actual operational figures. To take corrective action for the future, you need to monitor, understand and analyze all differences. Differences between actual operational results and the operational budget are known as variances.

In this Section, we look at two financial monitoring tools:

- monitoring variances (*Section 7.1*)
- performance ratios (*Section 7.2*).

7.1 MONITORING VARIANCES

Variance
the difference found when a comparison is made between actual results and budgeted plans. The variance may be favourable or adverse to the interests of the organization.

To carry out effective monitoring, you should establish a regular monitoring procedure and prioritize those variances that will be most useful to you. In this Section, we examine how the budget, together with actual figures taken from accounting books, can be used to prepare a variance report.

Variances are either positive or negative:

Positive variances are favourable variances. For example, actual income is higher than budgeted income, or actual expenditure is lower than budgeted expenditure.

Negative variances are unfavourable variances. For example, actual income is lower than budgeted income, or actual expenditure is higher than budgeted expenditure. Negative variances are usually shown in brackets within financial statements.

Box 18 provides an example of a variance report for an operational budget. It uses budget figures taken from the example in *Section 5.5*, and sample actual figures.

Box 19 provides an example of a variance report for a capital budget. It uses budget figures taken from the example in *Section 5.6*, and sample actual figures.

BOX 19: Example of a Variance Report for a Capital Budget

	Budget Money units (MU)	Actual (MU)	Variance (MU)	Variance %	Remarks
Purchase Costs					
Office equipment	2,000	2,380	(2,380)	(19.0)	unfavourable
Workshop equipment	8,000	6,416	1,584	19.8	favourable
4WD vehicle	50,000	46,450	3,550	7.1	favourable
Total Purchase Costs	**60,000**	**55,246**	**4,754**	**7.9**	favourable
Financing					
Loan from bank	34,000	30,000	4,000	11.8	favourable
Loan from donor	26,000	26,000	0	0	-
Total Funds Available	**60,000**	**56,000**	**4,000**	**6.7**	favourable

To ensure that variance reports are meaningful, they should include analysis of the problems, and suggestions for avoiding them in the future.

First of all, the HTM Manager and his/her team should assess the implications of each variance by asking the following questions:

- Is it a positive or a negative variance?
- Does it affect just one budget item, or a combination of budget items?
- Is it within or outside the normal range?
- Is the variance due to a new cause or a permanent problem?
- Does the variance affect only your HTM Team, or does it affect the HTM Service as a whole, and/or your customers?

BOX 18: Example of a Variance Report for an Operational Budget

	Budget Money units (MU)	Actual (MU)	Variance (MU)	Variance %	Remarks
Operational Income					
Training	6,000	4,237	(1,763)	(29.4)	unfavourable
Maintenance and repairs	59,885	50,303	(9,582)	(16.0)	unfavourable
Consultancy	7,105	6,252	(853)	(12.0)	unfavourable
Transport charges	7,637	9,045	1,408	18.4	favourable
Sales of spare parts, materials and equipment (passed on/charged to the customer)	42,300	34,840	(7,460)	(17.6)	unfavourable
Commission	8,460	6,968	(1,492)	(17.6)	unfavourable
Total Operational Income	131,387	111,645	(19,742)	(14.8)	unfavourable
Operational Expenditure					
Direct operational expenditure:					
Salaries and wages (technical)	28,000	30,800	(2,800)	(10.0)	unfavourable
Staff training	4,000	4,000	0	0	-
Materials, supplies and spare parts (passed on/charged to the customer)	42,300	34,840	7,460	17.6	favourable
Sub-total direct operational expenditure	74,300	69,640	4,660	6.3	favourable
Indirect operational expenditure:					
Salaries and wages (support)	8,000	8,800	(800)	(10.0)	unfavourable
Travel and transportation	3,000	3,486	(486)	(48.6)	unfavourable
Office supplies	1,000	1,214	(214)	(21.4)	unfavourable
Communication	1,000	2,412	(1,412)	(141.2)	unfavourable
Rent of offices and workshops	2,000	28,000	(800)	(20.0)	unfavourable
Vehicle insurance premiums	500	586	(86)	(17.2)	unfavourable
Materials and supplies	3,500	2,917	583	16.7	favourable
Depreciation	10,000	11,049	(1,049)	(10.2)	unfavourable
Sub-total indirect operational expenditure	29,000	33,264	(4,264)	(14.7)	unfavourable
Total Operational Expenditure	103,300	102,904	396	0.4	indirect + direct = favourable
Operational Surplus or Deficit	28,087	8,741	19,346	(68.9)	total income minus total expenditure = unfavourable
Other (Non-operational) Income such as donor grants	20,000	20,000	0	0	-
Other (Non-operational) Expenditure such as interest paid	(400)	(400)	0	0	-
Total Surplus or Deficit	47,687	28,341	(19,346)	(40.02)	unfavourable

Secondly, recommend actions to decision-makers by asking the following questions:

- Why is there a variance?
- What should we do about it?
- Who needs to take action?
- When do they need to act?
- How should they act?

Variance reports like this should be prepared on a regular basis (for example, quarterly, half-yearly or yearly). Monitoring your operational and capital budgets both regularly and systematically will help you to identify trends and take timely corrective and preventive action where necessary. In this way, you can avoid financial constraints and negative operational results.

7.2 PERFORMANCE RATIOS

Performance ratio
a short and precise indicator of operational performance which shows important inter-relationships.

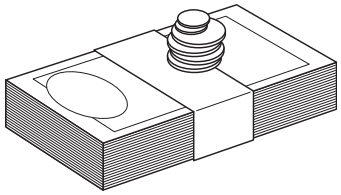
Performance ratios can be a useful management tool. In order to use ratios effectively, you will need to ensure that they are designed to:

- fit your system of healthcare technology management
- make comparisons year on year
- make comparisons with other HTM Teams
- reveal trends in the development of direct and indirect operational expenditure
- identify trends in the development of different types of income
- measure productivity gains/losses.

As well as looking at performance ratios based on accounting information, you should also take into account any non-monetary benefits, such as any increase in the availability and reliability of equipment.

Your ratios should be both specific and appropriate to your HTM Service, though you may be able to benefit from using common business ratios for operating performance.

All HTM Services use money as a raw material. Depending on your type of health service provider, you may have to pay for this raw material in the form of interest to the bank, dividends to the owner/shareholder, or repayments on loans. HTM Services carrying out partial cost recovery may have to earn sufficient money to make these payments, while those operating as profit centres definitely have to. Payment can only come from the operating surplus. To generate an operating surplus, the assets and owners'/shareholders' fund have to be used efficiently.



There are two key ratios to measure the performance of an HTM Service operating as a profit centre (*Section 5.3*):

- Return on total assets (ROTA) measures the operating efficiency of HTM Services, and is expressed as a percentage.
- Return on equity (ROE) measures the return on the owners'/shareholders' fund (equity) invested in an HTM Service, and is expressed as a percentage.

Box 20 uses sample figures to provide an example of the way in which these key ratios are used.

BOX 20: Example of Using Key Ratios to Measure Performance

1. Let's assume the following situation for an HTM Service:

Operational surplus	=	MU	8,741
Total assets	=	MU	136,741
Owners' fund	=	MU	50,000
Interest payable	=	MU	2,000
Tax payable	=	MU	0

2. Then calculate one performance ratio, the return on total assets, as follows:

$$\text{ROTA} = \frac{\text{Operational surplus}}{\text{Total assets}} \times 100\% = \frac{8{,}741}{136{,}741} \times 100\% = 6.39\%$$

3. Then calculate the second performance ratio, the return on equity, as follows:

$$\text{ROE} = \frac{\text{Operational result minus interest payable to lenders and tax payable to tax authorities}}{\text{Equity (owners'/shareholders' fund)}} \times 100\%$$

$$= \frac{8{,}741 - 2{,}000}{50{,}000} \times 100\% = 13.48\%$$

4. Conclusion:

ROE of 13.48% is a very high rate of return for the owners'/shareholders' investment.

ROTA of 6.39% is a good return for total assets, indicating an efficient use of assets.

These are very good results. This will enable the HTM Service to grow and to attract new funds for the expansion of HTM activities.

Another important indicator for your operational performance is gains or losses in productivity. *Box 21* provides an example of how to monitor productivity and the impact of your findings. It uses planned figures from the example in *Section 5.3*, and sample actual figures.

BOX 21: Example of Monitoring Productivity to Measure Performance

1. Let's assume the following situation for an HTM Service, and calculate the variances:

Productivity previous year: 55%

This year:	*Planned*	*Actual*	*Variance*
Productivity	60%	50.6%	(9.4%)
Chargeable hours	3,300	2,785	(515 hours)
Operational income	66,990	56,555	(10,435 MU)
Direct and indirect operational expenditure	103,300	102,904	396 MU
Costs passed on to customers	42,300	34,840	(7,460 MU)

2. Conclusion:

There is a loss in productivity of 4.4% as compared to the previous year's productivity of 55%.

Actual productivity is 9.4% below the set productivity target of 60%.

A total of 515 available working hours were not turned into operational income, resulting in lost operational income of MU 10,435.

3. Impact:

To see the effect of the loss in productivity, we compare the planned service charges per hour (which we hoped would cover operational expenditure) with the actual service costs incurred.

Based on planning assumptions (*Section 5.3*), the following service charge per hour was used:

$$\text{Service charge per hour} = \frac{\text{Net operational expenditure}}{\text{Chargeable hours}}$$

$$= \frac{\text{Planned direct + indirect expenditure minus costs passed on to customers}}{\text{Planned chargeable hours}}$$

$$= \frac{103{,}300 - 42{,}300}{3{,}300} = \frac{61{,}000}{3{,}300} = \mathbf{18.48\ MU/hour}$$

However, the actual service costs per hour incurred were:

$$\text{Actual service costs per hour} = \frac{\text{Actual direct + indirect expenditure minus costs passed on to customers}}{\text{Actual chargeable hours}}$$

$$= \frac{102{,}904 - 34{,}840}{2{,}785} = \frac{68{,}064}{2{,}785} = \mathbf{24.44\ MU/hour}$$

Thus, service charges of **18.48** for the HTM Team were greatly underestimated.

The lower then expected productivity and higher net operational expenditure (expenditure net of the costs for materials) are the main reasons for this disappointing result.

The service charge used should have been at least **24.44 MU/hour**.

Various financial ratios can be useful for analyzing the operational income and expenditure for the current year. You may compare these ratios with those for previous years to establish a trend in the development of income and expenditure. *Box 22* provides some examples of useful financial ratios.

BOX 22: Examples of Useful Financial Ratios for Analyzing Income and Expenditure

1. Indirect operational expenditure in comparison with total operational expenditure

$$\frac{\text{Indirect operational expenditure}}{\text{Total operational expenditure}} \times 100\%$$

Example of results (using sample figures only):

2000	2001	2002	2003
21.6%	27.7%	31.3%	38.1%

Conclusion: indirect expenditure (also known as overheads or general expenditure) is rising. This is a negative trend. The management didn't set a limit for indirect operational expenditure as compared to total operational expenditure.

2. Service charges in comparison with total operational income

$$\frac{\text{Total of service charges for maintenance and consultancy}}{\text{Total operational income}} \times 100\%$$

Example of results (using sample figures only):

2000	2001	2002	2003
87.6%	84.7%	79.2%	62.0%

Conclusion: this decreasing percentage implies an increase in income without a proportionate increase in service charges. This means that you are making more efficient use of your resources and/or taking on more jobs. Thus, this trend indicates a successful introduction of new services to customers, providing a greater proportion of your income.

3. Operational surplus (profit) in comparison with total operational income

$$\frac{\text{Operational surplus (profit)}}{\text{Total operational income}} \times 100\%$$

Example of results (using sample figures only):

2000	2001	2002	2003
19.2%	18.4%	16.8%	7.6%

Conclusion: the diminishing operational surplus (profit) is an alarming trend. It means your operational expenditure must be increasing more than your operational income.

Performance ratios and indicators are used for monitoring and as tools for control. You should select and design the ones that you feel best support your effort to maintain steady, ongoing control of the work of the HTM Service.

Country Experience

In East and West African countries, those HTM Services of faith organizations that have adopted a profit centre approach have successfully used variances to monitor budgets, and performance ratios to improve their level of efficiency.

Box 23 contains a summary of the issues covered in this Section.

BOX 23: Summary of Procedures in Section 7 on Financial Monitoring

Financial Monitoring	**Health Service Provider**	◆ introduces key performance ratios for HTM Teams.
	Health Management Teams	◆ develop further performance ratios tailor-made to the requirements of the HTM Service and HTM Teams ◆ analyze and explain variances and make recommendations to decision-makers.
	HTM Managers	◆ monitor progress with the operational plan and budget by: - preparing variance reports - calculating performance ratios.

8. HOW TO USE FINANCIAL REPORTS

Why is This Important?

There are strict national legal requirements set by government agencies, and guidelines set by national and international accounting associations, for the drawing up of financial statements.

Financial statements are useful, as they provide you with a clear indication of your financial situation. Typical financial statements include balance sheets and profit and loss accounts.

Additional internal financial reports, such as variance reports and performance reports, are also necessary to make well-informed financial decisions (*Section 7*).

In order to use financial statements for decision-making, you will need to understand how to read two important financial 'tools'. Thus in this Section, we look at:

- the profit and loss account, which shows where you have been in financial terms (*Section 8.1*)
- the balance sheet, which shows where you are now in financial terms (*Section 8.2*).

The profit and loss account has to be prepared first, since its result (profit or loss) is recorded in the balance sheet.

8.1 PROFIT AND LOSS ACCOUNT

The profit and loss account is also sometimes referred to as an income and expenditure account or as an operating results statement. The profit and loss account monitors income and expenditure over a period of time. The time intervals can be a week, a month, an accounting period, or a year. The profit and loss account shows the financial result of your activities over that period.

The profit and loss account can be divided into three components:

- income
- expenditure
- profit or loss.

Box 24 shows the basic layout for a profit and loss account. Deficits are usually shown in brackets in financial statements.

BOX 24: Basic Layout for a Profit and Loss Account

Operational income	100,000	Operational expenditure	80,000
Loss	-	Profit	20,000

The profit and loss account shows the result of your operations, and illustrates how successful you were at managing your resources – in other words, if you succeeded in making a profit, or made a loss.

Box 25 provides an example of a profit and loss account, using (actual) figures from the example in *Section 7* (see *Box 18*).

BOX 25: Example of a Profit and Loss Account (at the End of a Period of Time)

Operational Income (MU)		**Operational Expenditure (MU)**	
Training	4,237	*Direct operational expenditure:*	
Maintenance and repairs	50,303	Salaries and wages (technical)	30,800
Consultancy	6,252	Staff training	4,000
Sales of spare parts, materials and equipment (charged to the customer)	34,840	Materials, supplies and parts (passed on to the customer)	34,840
Commission	6,968	**Sub-total**	**69,640**
Transport charges	9,045	*Indirect operational expenditure:*	
		Salaries and wages (support)	8,800
		Travel and transportation	3,486
		Office supplies	1,214
		Communication	2,412
		Rent of offices and workshop floor space	2,800
		Vehicle insurance premiums	586
		Materials and supplies	2,917
		Depreciation	11,049
		Sub-total	**33,264**
Total Operational Income	**111,645**	**Total Operational Expenditure**	**102,904**
Loss	-	**Operational profit** (income – expenditure)	**8,741**

As explained in *Section 5.3*, you can work out your profit by subtracting your expenditure from your income. There are a number of ways of doing this:

1. If you take your operational income (the money you generated from your HTM activities charged to customers) and subtract only your direct operational expenditure (the money spent undertaking those HTM activities for customers), you obtain what is known as your **gross profit**. This is used as an important measurement of your operational performance, and can be compared to figures from previous periods.

   In the example in *Box 25*, the gross profit would be 111,645 - 69,640 = 42,005 MU

2. If you take your operational income (the money you generated from your HTM activities charged to customers) and subtract both your direct operational expenditure (the money spent undertaking those HTM activities) and your indirect operational expenditure (overhead costs), you obtain what is known as your **operational profit**. This can be compared to figures from previous periods.

   In the example in *Box 25*, the operational profit = 8,741 MU

3. The operational profit can also be used to calculate your **profit margin** (expressed as a percentage) and this can be compared to those of other providers of HTM Services. It is calculated using the following formula:

   $$\text{Profit margin} = \frac{\text{Operational profit}}{\text{Operational income}} \times 100\%$$

   In the example in Box 25, the profit margin would be $\frac{8{,}741}{111{,}645} = 7.8\%$

4. You will also get an indication of profit if you subtract your total expenditure from your total income. This would include your non-operational expenditure (such as interest paid) and non-operational income (such as government subsidies) – see *Sections 5.3 and 5.4*. But it is usual to concentrate on the 'operational' profit or loss instead, as this is a more important result of the operations of the HTM Team.

Tip

- Any donor funds which have not been utilized during the financial reporting period should be treated as liabilities (something you owe) and not seen as surplus or profit – see the example of a balance sheet in *Box 28* (*Section 8.2*).

Whether profit can be used to improve the HTM Service further, depends on the policies and decisions of the owners of the assets. Retained profits (surplus from the previous year) may be used to acquire new assets or to expand the capacities of the HTM Service, depending on the rules of your health service provider. For example, this is the case if the health service provider is a private organization, or a government or faith organization that has started to undertake cost recovery.

Country Experience

In many East and West African countries, the HTM Services of faith organizations successfully manage to generate an operational surplus (profit). In most cases, owners and donors allow this to be retained in order to improve the HTMS.

8.2 BALANCE SHEET

The balance sheet is like a snapshot of the HTM business – it shows the financial picture of an enterprise at a particular moment in time (a date). You can prepare a balance sheet whenever you like, in order to monitor the financial status of your enterprise. It can be useful to prepare a balance sheet at fixed intervals (such as monthly, quarterly, or annually) for this purpose.

Before you can complete the balance sheet, you need to know the depreciated value of your fixed assets (buildings, vehicles, tools, equipment etc). We will look at this calculation first, then at the preparation of the balance sheet.

Calculating the Depreciated Value of Assets

Depreciation of assets (such as vehicles or office and workshop equipment) allows for a reduction in the value of an asset to take into account its wear and tear. In the case of private organizations, these calculations are done for tax purposes as there is a benefit in showing the reduced value of assets. Ideally, organizations should set aside the amount by which an asset is reduced in value, into a fund that will finance the replacement of the asset (see *Guide 2* on planning and budgeting).

Box 26 provides an example of the calculations required for depreciating assets. Depreciation periods vary depending on the expected lifespan of the equipment. The example uses a depreciation period of five years, thus there would be an annual depreciation of 20% of the value of the equipment. The table shows how to calculate depreciation for the first and the second years. You continue to make the calculations in this way in each subsequent year until the item is written off (condemned at the end of its life).

BOX 26: Example of a Depreciation Schedule

Item	Purchase cost (MU)	First year		Second year		Subsequent years
		Depreciation (20% of purchase cost) (MU)	Value after depreciation (purchase cost – depreciation) (MU)	Depreciation (20% of value after first year's depreciation) (MU)	Value after depreciation (value at end of first year – depreciation) (MU)	
Vehicle	46,450	9,290	37,160	7,432	29,728	Continue these calculations in the same way each year
Office equipment	2,380	476	1,904	380	1,524	
Workshop equipment	6,416	1,283	5,133	1,026	4,107	
Total	**55,246**	**11,049**	**44,197**	**8,838**	**35,359**	

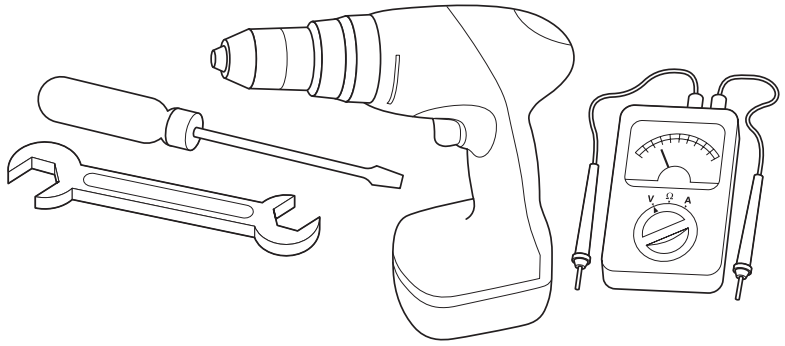
Preparing the Balance Sheet

The balance sheet compares your current resources (your assets) with what you owe (your liabilities).

Assets can be split into two types: fixed assets and current assets.

Fixed assets

show how much the owner (provider) of an HTM Service has invested in buildings, vehicles, tools and equipment. Only the depreciated value of the assets (a reduced amount that reflects wear and tear every year) is used in the balance sheet.



Current assets are cash, the contents of bank accounts, monies owed by customers for unpaid services already provided (debtors), as well as non-cash items that can be converted into cash within a period of 12 months (such as stocks of materials).

Liabilities can be sub-divided into current and long-term liabilities, as well as funds invested in the business.

Current liabilities are the amounts owed by the HTM Service for goods or services that have been received but not yet paid for, overdraft costs on bank accounts, and the balance of any donor funds received but not yet used.

Long-term liabilities are amounts owed by the HTM Service for more than 12 months, such as loans from banks or donors.

Invested funds If you subtract your liabilities from your assets you are left with an amount which is made up of:

- the initial capital investment in the enterprise by the owners (the **owners' fund**), and
- any previous profits retained in the enterprise (the **retained profit**).

For accounting purposes, these are also classed as liabilities in the balance sheet.

Box 27 shows the basic layout of a balance sheet with four components. The balance sheet will always balance. The result from the profit and loss account (*Section 8.1*) is recorded in the balance sheet. If it was a profit it appears under 'retained profits'; if it is a loss it appears as a reduction in the 'owners' fund'.

BOX 27: Basic Layout of a Balance Sheet

Assets		**Liabilities**	
Fixed assets (depreciated value)	60,000	Owners' fund	100,000
		Retained profits	20,000
Current assets	80,000	Current and long-term liabilities	20,000
Total assets	**140,000**	**Total liabilities and funds**	**140,000**

Your use of such a balance sheet will vary depending on your type of health service provider:

- This type of balance sheet is used in the private and non-governmental sectors, and will be used by HTM Teams run as profit centres.
- Government facilities (run as cost centres) do not have owners' funds. Any retained profit would be called surplus from the previous year, and is usually returned to the treasury. Instead, government facilities balance their budgets (see *Guide 2* on planning and budgeting), by identifying their likely income and trying not to let their expenditure exceed it. They don't normally know the exact value of all their fixed assets, but they do have an idea of their liabilities. Governments don't normally use depreciation in their financial system. Instead, they should budget to replace their fixed assets (see *Guide 2*). Governments don't have to submit accounts for tax purposes either.
- The facilities of faith organizations and government facilities with a degree of autonomy will fall somewhere in between and should be moving from the balancing budgets situation towards this full type of balance sheet.

Box 28 provides an example of a balance sheet, based on (actual) figures from the example in *Section 7* (see *Box 19*).

BOX 28: Example of a Balance Sheet

Fixed assets (depreciated values – see *Box 27*)	**Money units (MU)**	**Owners' fund**	**(MU)**
Vehicle	37,160	Issued shares	50,000
Office equipment	1,904	Retained profits	8,741
Workshop equipment	5,133		
Sub-total fixed assets	**44,197**	**Sub-total owners' fund**	**58,741**
Current assets	**(MU)**	**Liabilities**	**(MU)**
Bank	48,304	Loan from bank	30,000
Cash	961	Loan from donor	26,000
Materials/supplies	41,479	Donor fund balance	20,000
Accounts receivable	1,800	Accounts payable	2,000
Sub-total current assets	**92,544**	**Sub-total liabilities**	**78,000**
Total assets	**136,741**	**Total liabilities and funds**	**136,741**

Box 29 contains a summary of the issues covered in this Section.

BOX 29: Summary of Procedures in Section 8 on Financial Reporting

Financial Reporting	**HTM Managers**	◆ discuss the profit and loss account and the balance sheet with accountants and auditors
	Health Management Teams	◆ analyze financial statements and prepare conclusions and recommendations to central bodies for decision-making ◆ prepare internal financial reports such as variance and performance reports (*Section 7*)
	Health Service Provider	◆ studies financial reports and recommendations from the HTM Teams and gives feedback

9. HOW TO MAKE FINANCIAL DECISIONS AND TAKE ACTION

Why is This Important?

No matter how well you prepare your operational plan and budget, or keep your accounts and monitor and report results, without the power and ability to make decisions and take action you will be unable to manage the finances of your HTM Service effectively.

You need to review your financial management activities so that you can analyze the results, make decisions, and plan your actions for the following year. Such evaluation helps you to ensure the quality of your work.

This last step in the financial management cycle (*Section 3.1*) involves:

- analyzing financial data and making financial decisions (*Section 9.1*)
- taking action for the following year (*Section 9.2*)
- monitoring progress with financial management activities (*Section 9.3*).

As discussed in *Section 3.2*, all staff involved in the financial management of HTM activities should be involved in this planning and review process.

9.1 FINANCIAL ANALYSIS AND DECISION-MAKING

The key to making sound financial decisions is to carefully analyze your financial data and financial management tools. Such analysis enables you to discover:

- where you have been successful
- where you have failed to achieve your aims
- what problems are constraining you
- what strategies have improved your performance.

Thus, the **first step** is to analyze the following:

- Variance reports and performance indicators and ratios (*Sections 7.1 and 7.2*).
- Financial results – profit and loss (*Section 8.1*).
- Financial statements – balance sheet (*Section 8.2*).
- The appropriateness of the operational targets set (*Section 4.1*).

The **second step** is to identify any problems and find solutions. Make sure that everyone involved participates in this process as it will help them to learn and will provide better solutions.

It is very important to define your problem clearly before trying to take decisions on its resolution. *Box 30* provides some strategies for doing this, using the example from *Section 7.1*.

Different people are responsible for taking decisions on different aspects of the financial system. *Box 31* shows the suggested division of responsibilities.

BOX 31: Different Responsibilities for Financial Decision-Making and Taking Action

Health Service Provider	makes financial decisions and takes action on: ◆ capital investments ◆ financial targets ◆ targets for operational income ◆ limits for expenditure items
HTM Teams	make financial decisions and take action on: ◆ operational budget ◆ budget variances ◆ performance indicators ◆ service charges per hour ◆ chargeable hours ◆ productivity level ◆ plan of action
HTM Managers	make financial decisions and take action on: ◆ all daily financial transactions within the framework of the approved operational budget ◆ contracts with sub-contractors

Other strategies for improving your ability to make financial decisions are:

- to develop the financial skills of your staff to implement the activities in this Guide (see all Sections, examples, and *Annex 3*)
- to make changes at your own pace and avoid obligations in the financial management cycle which cannot be fulfilled (*Section 3*).

Once you have made a sound financial decision based on analysis of financial data and a good problem-solving technique, it is time to:

- make sure everyone involved is informed about the decision and agrees with it (see end-of-Section summary boxes), and
- prepare an action plan which everyone involved is committed to (*Section 9.2*).

BOX 30: Outline of the Problem-Solving/Decision-Making Process

Problem definition process	***Example***	**Result**	***Example***
1. Recognition Discuss and document individual views, proven facts, and relevant symptoms, until everyone involved accepts that there is a problem	*Analysis of financial data highlights a problem*	Agreement that an issue needs to be resolved	*The enterprise is making a loss*
2. Label Clearly document both sides of the conflict you want to resolve	*Some believe that the overheads are too high, others that the income is too low*	An agreed statement of the problem	*The negative variance on income is much greater than that on overheads, thus the problem is too little income.*
3. Analysis Find and agree on the *single* most fundamental source of the problem	*On studying the actual incomes received, many are found to have negative variances, but one shows the greatest money loss.*	Unanimous identification of the root cause which needs correcting	*Much less money was raised from maintenance and repair services than expected.*
Solution decision-making process	***Example***	**Result**	***Example***
4. Options List *all* alternative strategies that have the slightest chance of resolving the problem and correcting its root cause	*Look at all the issues that impact on maintenance and repair services*	A complete list of possible solutions	◆ *Staff become more productive.* ◆ *Service charges are raised.* ◆ *Numbers of clients increase.* ◆ *Clients ask for more maintenance support.* ◆ *Clients pay their bills.* ◆ *Staff with improved technical skills can offer more support.*
5. Evaluation Choose the best solution on your list by objectively evaluating the strategies available	*Some of the solutions are difficult for you to implement, such as getting clients to pay their bills. But one solution offers benefits in a number of ways.*	A firm joint decision on the chosen solution	*Improve technical skills of staff so that additional types of support can be offered to clients, thus increasing the take up of maintenance and repair services and improving client satisfaction.*
6. Action plan Organize systematically the tasks, timing, staff, and resources required to implement the decision in the real world	*See Section 9.2 for the action planning process*	A complete step-by-step plan to translate the decision into reality	◆ *Send senior staff on various short courses.* ◆ *Provide on-the-job training for junior staff.* ◆ *Renew contact with old clients and approach new clients.* ◆ *Demonstrate the improved maintenance and repair services available.* ◆ *Broaden the range of maintenance and repair services offered by the team.*

9.2 ACTION PLANNING

Purpose

It is necessary for each HTM Team to have goals and plans which set out their priority activities. The goals and plans (such as those from *Section 9.1*) must be clearly defined so that they guide the work of:

- the HTM Team
- the HTM Service
- the health facility
- the health service as a whole.

Good management benefits from an Annual Action Plan that has clear, specific goals for the important activities of the HTM Team. Thus, an action planning process should be undertaken once a year, as standard practice. This is an opportunity for the teams to agree the range of activities (initiatives and changes) they want to implement, because they believe the activities will improve:

- their working environment
- their performance
- the service they provide.

Other Guides in this Series cover the action plans for other aspects of HTM activities, and the service-wide annual action planning process.

Here, the goals and plans will enable HTM Teams and managers to monitor their own performance as well as their progress with the financial management cycle.

Setting Goals

Three types of goals are required – targets, recommendations, and longer-term objectives:

i. Targets

Targets guide the work of the HTM Team and HTM Working Group during the following year. They help to improve services and make sure that the most important work gets done. Targets are one of the best tools for judging progress and work performance. We suggest that each department/group should have between five and 10 targets, all of which should follow the 'SMART' target-setting process described in *Section 4.1*.

The annual action planning process should focus on improvements and changes that staff can carry out themselves, and that can be achieved with existing staff, equipment, facilities and other resources.

It will be clearer if targets are written down using the following headings, which can be used when the final plans are produced:

Target	By whom	How to measure	How to achieve	Timetable
Actions agreed, listed in order of priority	Names of persons who will be responsible	How progress will be determined (see indicators below)	Resources required	Time-frame for start and completion

ii. Recommendations

You will discover that some important problems cannot be overcome or improvements achieved unless extra supplies, staff, or funds are provided, or unless assistance is obtained from outside. In such cases, recommendations are required. These should be:

Specifically addressed: to the person, official, department, organization, etc that is able to carry out the recommendation.

Reasonable: there is no point in asking for the impossible, such as 10 times more staff.

Essential: there should be no easy way for the HTM Team to achieve the same results on their own.

For example, there are boundaries and limitations to what the HTM Team can achieve in the annual action planning process. The need for major investments in equipment should be discussed through activities such as the equipment development planning process (see *Guide 2* on planning and budgeting). Similarly, ongoing shortages of staff or money should be addressed to higher authorities who can influence such issues.

iii. Longer-term objectives

You will also discover some problems that cannot be solved in one year. Maybe they need large amounts of money, longer preparation, or plenty of time to achieve. Or maybe it is simply not possible to do everything at once. In such cases, longer-term objectives are required which will be carried forward to the next year, or for implementation later on.

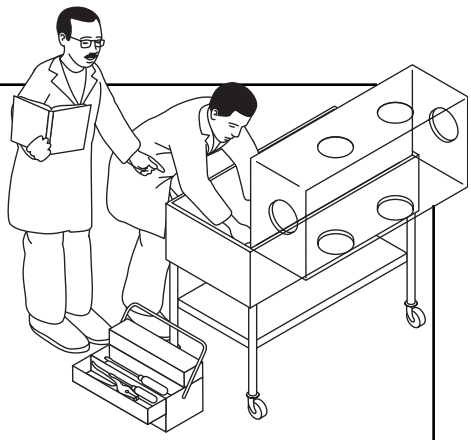
How to Measure the Goals

Each goal must be easily measured, so that you can see if it has been achieved or if progress is being made:

- You need a way of determining if you are moving towards your goal – this is called an *indicator*. There will always be several possible indicators for each goal, and more than one way of measuring them.
- You need to know where you are starting from, in other words, what the situation is now – this is called the *baseline data*. The data chosen must be relevant to the indicator.

Box 32 provides an example of different ways of measuring a goal using indicators and baseline data.

BOX 32: Example of How to Measure a Goal



Goal: Let's improve our maintenance and repair skills

An indicator: Increase the number of on-the-job maintenance training courses for HTM Team members

One way of measuring this:

Calculation required:

Percentage of HTM staff who have received on-the-job maintenance training

$$= \frac{\text{Number of HTM Team members received on-the-job maintenance training}}{\text{Total number of HTM Team members requiring training}} \times 100\,\%$$

Baseline data: Eight members of the HTM Team require on-the-job maintenance training, but in January only two were found to have attended a course.
Therefore your baseline data is 25%.
Your aim is to improve this situation and increase this percentage.

Alternative way of measuring this:

Baseline data: In a study of the current situation you find that you only ran on-the-job maintenance training courses once in the last year, and you plan to start running them every quarter.

Calculation required:

Percentage of on-the-job maintenance training courses implemented

$$= \frac{\text{Number of on-the-job maintenance training courses carried out in a time period}}{\text{Number of training courses that should have been done in that time period}} \times 100\,\%$$

After 12 months you find that, in fact, you only managed to run three out of the four courses planned, that is, 75% of your target.

It is necessary to choose suitable indicators that are specific to all your annual goals. There are many possible indicators for HTM Teams, and the HTM Service as a whole, so staff and managers should look for the most important activities (or statistics and results) to measure. Examples of the types of indicators which can be used for the financial management cycle of activities are those describing:

- the existing situation
  - numbers of clients
  - numbers of consultancy jobs
- improved performance
  - transport charges cover transport costs
  - resources accounted for
  - suitable service charges set
- cost-benefits
  - percentage of costs recovered
- efficiency and effectiveness
  - satisfy clients
  - make a profit/surplus.

The HTM Team, HTM Working Group, etc should meet to agree on a few suitable indicators that can be measured easily and quickly (if possible). Try to make indicators positive as this can help to motivate staff. Sometimes it is useful to use common indicators for different teams, groups, and staff, so that their progress can be compared.

Once the indicators have been agreed, they need regular measuring and charting. The relevant Health Management Team will need to decide:

- how records of these indicators will be kept, for example in a register, with a form, or on a chart
- who will be responsible for keeping them
- how regularly the results will be summarized (for example, each month)
- what form of charts and displays you will use to display the monthly summarized results (so that it is easy for people to see how they are progressing).

9.3 MONITORING PROGRESS

All equipment-related activities, including financial management activities, should be monitored, evaluated, and supervised. The results of such monitoring are useful for providing feedback to:

- HTM Team members
- Health Management Teams
- the Healthcare Technology Management Service.

Monitoring Progress Against Annual Goals

Monitoring progress against the goals set in *Section 9.2* is one of the best ways that staff, managers, and the health service provider can judge their work performance. Thus, it is necessary to follow up the plans and goals set in order to ensure that they are put into practice. If this is not done and goals sit on a shelf gathering dust, then all the time spent planning will have been wasted.

Regular monitoring of progress against goals is essential throughout the year. This should be done using the measuring and charting methods introduced in *Section 9.2*. Displaying annual goals and progress towards them can be helpful to staff.

This is the time to give praise for good progress, or to find out what might be causing shortcomings or problems, and then seek a solution. If solutions are quite impossible it may be necessary to change the plans. If common indicators were used for different sections, groups, and staff, it will be possible to compare their progress. If good progress is being made, you may be able to reward staff in some way relating to work conditions, career progression, skill-development, etc (see *Guide 4* on operation and safety and *Guide 5* on maintenance management).

Once planning and financial systems are established, it is also possible to link annual planning with the process of setting the health facility's budget. For example, the fact that an HTM Team achieves its goals could play an important part in justifying the budget allocations they request from the Health Management Team (see *Guide 2* on planning and budgeting).

Monitoring Progress in General

Monitoring your progress with financial management in general can help to identify problems and needs. Regular monitoring of activities is essential for improving quality. The results of monitoring are also useful for providing feedback to staff and senior management. By receiving feedback on their activities and answers to their queries, staff benefit from experience, and feel a part of the system as a whole. In this way staff:

- will be informed
- can obtain support
- will feel involved and empowered
- can be encouraged to take responsibility.

Therefore you should review your progress with all aspects of the financial management cycle. Ask yourself, for example, whether you:

- set appropriate operational targets (*Section 4.1*)?
- wrote a suitable operational plan (*Sections 4.2 and 4.3*)?
- determined the correct resources required for your operational plan (*Section 5*)?
- prepared a suitable operational budget (*Section 5*)?
- established an accounting system (*Section 6*)?
- recorded and processed transactions correctly (*Section 6*)?
- monitored variances and performance ratios (*Section 7*)?
- wrote suitable financial reports (*Section 8*)?
- communicated the results effectively (*Section 8*)?
- made good financial decisions (*Section 9.1*)?
- took appropriate corrective action (*Section 9.2*)?

Box 33 contains a summary of the issues covered in this Section.

BOX 33: Summary of Procedures in Section 9 on Financial Decision-Making, Action Planning and Monitoring Progress

Decisions	**Health Service Provider, HTM Teams, HTM Managers**	◆ make financial decisions appropriate to their level of responsibility (*Box 31*) ◆ make financial decisions following suitable analysis and a problem identification and solving process (*Box 30*)
Action Plans	**Health Service Provider**	◆ ensures there is an annual action planning process
	HTM Teams, and HTM Working Groups	◆ set their targets, recommendations, and longer-term objectives each year, in order to improve their performance (after reviewing the previous year's performance) ◆ develop suitable measurement indicators for these goals and gather baseline data
Monitor Progress	**HTM Managers**	◆ ensure that progress against annual goals is monitored, displayed, used to provide feedback to staff, and used to develop improved goals for the following year ◆ ensure progress with the activities of the financial management cycle is monitored
	Health Management Teams	◆ ensure that progress against any goals (annual or regular) is used to prompt the correct response, such as training, better budgets, capital inputs, career progression, etc

Tip • Once you have started to implement the procedures in this Guide, go back and review how financially fit your HTM Team is now. You can use the financial fitness test in *Annex 3* to help you with a diagnosis.

ANNEX 1: GLOSSARY

Accounts:	A record of the amount owed, owing, or held by an organization.
Accountant:	The person responsible for preparing the accounts.
Accounting concepts:	Generally accepted guidelines that should be followed when keeping accounts or when preparing annual financial statements.
Accumulated fund:	Accounts that have built up over the years, for example through annual surpluses or gifts, available for the general purposes of an organization.
Administrative level:	See decentralized authorities.
Advance:	Amount of money paid in advance of an activity – but in the knowledge that the amount will become due within a known period of time (for example: salary advance, travel advance); the advance is given to ensure the person to whom it is paid has sufficient funds to commence or continue work for the benefit of an organization.
Assets:	All current resources owned by an organization, for example money, loans, equipment, land.
Audit:	An independent inspection of the accounts, the underlying accounting records, the procedures, and the financial statements of an organization.
Auditor:	The person who carries out an audit; they are asked to prepare a report on their findings and to give an opinion on the truth, accuracy and fairness of the accounts.
Autonomous:	Self-governing or independent.
Balance:	The amount remaining on an account after adding up all the individual transactions, then calculating the difference between the total of the amounts entered on the left-hand side of the book (debits) and the total of the amounts entered on the right-hand side of the book (credits).
Balance sheet:	A list of all relevant balances in the ledger at a certain date, presented in such a way that the reader can see the monetary value of assets, liabilities and funds, as recorded in the accounts, at that date.
Budget:	A written financial plan listing future known or estimated income and expenditure covering a given period of time, such as a year (annual budget).
Budget and actual:	A statement showing budgeted income and expenditure by type and actual income and expenditure. Any difference (or variance) is also shown.
Budget ratio:	The ratio between budget items.
Capital:	The total amount of money belonging to a person or put into a business by the owner, which is used to run the business or to generate other income from other activities requiring capital.
Capital budget:	Planned expenditure on capital items (such as buildings, equipment, vehicles) which require substantial (possibly one-off) payments in a year, and should not be included in the recurrent (or operational) budget.
Cash:	Any type of money, including the balance in a bank account. May also mean coins, notes or cheques.

Cash flow forecast:	Written estimates of cash (or bank) transactions over a future period of time, usually showing estimated receipts and payments on a monthly basis.
Cash flow statement:	The cash flow statement is composed of five components: 1. net cash flow from operating activities; 2. returns on investment and servicing of finance; 3. taxation; 4. investing activities; 5. financing.
Central level:	Highest authority of your health service provider, such as Ministry of Health or Board.
Chart of accounts:	A list of all ledger accounts together with their reference numbers.
Commission:	An additional or overhead charge levied on top of the cost of a sale to cover the administrative cost of purchasing, storing and issuing the item sold.
Communication equipment:	Any equipment that is used for sending or receiving information, such as telephones, two-way radios, nurse-call systems, paging systems.
Contingency:	An event in the future which may happen but is not guaranteed to happen; an amount set aside in the budget for contingencies is a reserve for unexpected expenditure.
Cost centre:	A unit of an organization that generates expenses and has no responsibility for generating revenue (income); its goal is to adhere to expense budgets, which are tailored to meet certain objectives. Which type of unit (health authority, facility, division, or department) acts as a cost centre depends on whether it is at a level that has the independence and responsibility to be allocated money, spend it, and account for the expenditure.
Credit balance:	If the total of the amounts recorded on the credit (right-hand) side of an account is *greater* than the total of the amounts recorded on the debit (left-hand) side of the same account, the difference between these two totals is a credit balance.
Current account:	The record of the amount owed by or to a third party that has regular financial transactions with an organization, such as a bank, a regular supplier, an overseas partner.
Current assets:	Cash, the contents of bank accounts, monies owed by customers for unpaid services already provided (debtors), as well as non-cash items that can be converted into cash within a period of 12 months (such as stocks of materials).
Current liabilities:	The amounts owed by an organization for goods or services that have been received but not yet paid for, overdraft costs on bank accounts, and the balance of any donor funds received but not used for a specified purpose.
Debit balance:	If the total of the amounts recorded on the credit (right-hand) side of an account is *less* than the total of the amounts recorded on the debit (left-hand) side of the same account, the difference between these two totals is a debit balance.
Debtor:	A person or organization who owes money to a person or organization.
Decentralized authorities:	Local units of an organization which have had authority transferred to them from the central level of the organization. For example, district, regional, provincial or diocesan health authority.

Deficit:	The amount by which expenditure exceeds income.
Depreciation:	The amount by which the monetary value of an asset is reduced over a period of time due to its everyday use ('wear and tear') or due to the fact that it could not be sold second hand for as much as it originally cost; the asset is said to depreciate in value.
Direct operational expenditure:	Can be related to a specific technical job provided by HTMS staff; it is sometimes also referred to as variable costs or shared costs because the expenditure varies with the quantity or level of services provided to customers.
Donor:	See external support agency.
Double entry:	The system of book-keeping where each transaction is entered twice; once on the left-hand side (debit) and once on the right-hand side (credit).
Effectiveness:	A comparative measure of how various inputs are brought together to produce outputs. Thus an effective organization will be more efficient and productive, producing the same outputs at lower cost (or more outputs for the same cost) than a less effective one.
Efficiency:	A comparative measure that links inputs and outputs; if there are two alternative ways of producing the same outputs but one uses less inputs (man-hours for example) it is said to be more efficient. Linked to effectiveness since an effective organization will be more efficient (produce more outputs for the same cost).
Energy sources:	A source of energy or power, such as generating sets, solar panels or transformers.
Endowment fund:	A permanent grant of capital or an ongoing annual grant from a donor for a specified purpose.
Equipment-related supplies:	Items which are essential for equipment use, such as consumables, accessories, spare parts, and maintenance materials used with equipment.
Equipment users:	All staff involved in use of equipment, such as clinical staff (e.g. doctors and nurses), paramedical staff (such as radiographers and physiotherapists) and support services' staff (such as laundry and kitchen workers).
Expenditure:	The amount of money spent (or due to be spent) by a unit within an organization; payments made out of a financial allocation provided for a particular purpose; money spent from your income.
External support agency:	A body responsible for providing money, equipment, or technical support to developing countries on various terms, such as international donors, technical agencies of foreign governments, non-governmental organizations, private institutions, financial institutions, faith organizations.
External support agency staff:	People working for external support agencies that health workers come into contact with, such as country representative, desk officer, consultant, co-ordinating agency, director.
Fabric of the building:	Items which are part of the integral structure or framework of a building, such as doors, windows or roofs.

Facility:	See health facility.
Financial year:	Period over which a set of accounts operate; the date up to which the annual accounts of an organization are prepared (not necessarily the calendar year).
Fire fighting equipment:	Equipment used to put out fires, such as fire blankets, buckets, extinguishers, hoses and sprinkler systems.
Fixed assets:	Show how much a provider of HTM services has invested in buildings, vehicles, tools and equipment.
Fixed costs:	See indirect operational expenditure.
Fixtures built into the building:	Items which are not part of the integral structure of a building but are installed into the fabric of the building, such as ceiling-mounted operating theatre lights, scrub-up sinks and fume cupboards.
GAAP:	Generally accepted accounting principles are guidelines created by the accounting profession; there are also country specific GAAP regarding certain financial transactions
Head of section:	Departmental manager, such as head of department, group leader, officer in-charge, senior operator.
Health facility:	Buildings where healthcare is delivered, ranging from small units (clinics, and health centres), and small hospitals (rural, district, diocesan), to large hospitals (regional, referral).
Health facility furniture:	Furniture with a specific clinical use in health facilities, such as beds, cots, trolleys, infusion stands.
Health management team:	Health management body, such as facility management committee, district/regional/diocesan/central Health Management Team, Board.
Health service provider:	A provider of health services, such as Ministry of Health or Defence, non-governmental organization, private institution, employer organization or corporation (for example, mine), faith organization.
Health system:	Comprises all organizations, institutions, and resources devoted to health actions (defined as any effort, in personal or public health services or through intersectoral action), whose primary purpose is to improve people's health (Source: WHO).
HTM Manager:	Head of the HTM Team; ranging from a general member of health staff with some management skills in the smallest HTM Teams to an engineering manager in the highest level HTM Teams.
HTMS:	Healthcare Technology Management Service made up of a network of HTM Teams and HTM Working Groups.
HTM Team:	A body responsible for the management of equipment, such as, equipment management team, maintenance management team, physical assets management team; part of the HTM Service.
HTM Working Group:	A working group, or standing committee responsible for making decisions on healthcare technology management issues; part of the HTM Service.
Imprest:	An agreed fixed amount given to someone who needs a constant balance of money usually for business purposes; from time to time this person accounts for how they have spent the money at which time the imprest is replenished by receipt of a further sum; this further sum will equal the expenditure; the original imprest amount is therefore restored.

Income and expenditure account:	A statement giving totals of each category of income and expenditure over a given period of time. This account is prepared at the end of the organization's financial year and at more regular intervals so that management can compare it with budgeted income and expenditure.
Indirect operational expenditure:	Often referred to as overheads or fixed costs; this type of cost does not fluctuate with the quantity or level of services rendered to customers.
In-house:	Activities undertaken by staff already employed by the health service provider organization (rather than using temporary hired labour or external contractors).
Interest:	An amount paid to the owner of funds following agreement with a third party that they may, for the time being, hold the owners' funds (the amount paid depends on a set percentage rate).
Inventory:	A systematic listing of stock (or assets) held. An *annual inventory* is prepared at the end of each year following a physical inspection and count of all items owned by an organization. The list gives details, such as location, reference number, description, condition, cost and the date the inventory was taken.
Journal:	An account book that records amounts transferred from one ledger account to another ledger account together with the date and reasons for the transfer.
Laundry and kitchen equipment:	Equipment required for kitchen or laundry activities, such as cookers, cold rooms, washing machines, hydro-extractors, roller-ironers.
Lease:	A written agreement by which the owner of a property or a machine agrees that it may be used by a third party for a certain period of time; this right is given in exchange for payment of rent.
Ledger:	A book containing pages for each account, for recording accounting transactions.
Liabilities:	All amounts owed by an organization to other parties. In accounting terms, funds invested in the business are also listed as liabilities.
Loan:	An amount of money lent to someone with an agreement as to when it will be repaid to the lender. The agreement also states whether interest will be charged on the outstanding amount and, if so, at what rate. The lender may also require 'security' for the loan – under this agreement the lender is given the right to take over ownership of an asset, such as property, if the terms of the loan agreement are not respected and a loss arises, for example, if the loan is not repaid.
Logbook:	A written record kept in each vehicle giving details of journeys carried out. Details include dates, places visited, mileage, purpose of trip, and the driver's name.
Long-term liabilities:	Amounts owed by an organization for more than 12 months, such as loans from banks or donors.
Maintainers:	See maintenance staff.
Maintenance staff:	Staff responsible for maintenance of equipment, such as craftspeople, artisans, technicians, technologists, engineers.

Manager:	Any staff involved in the management of equipment-related activities. This could include administrators, nurse-in-charge, medical superintendent, chief executive, director, health secretary, medical practitioner, maintenance manager, policy-maker.
Medical equipment:	Equipment used for medical purposes, including x-ray units, diathermy units, suction pumps, foetal doppler, scales, autoclaves, infant incubators, centrifuges.
Money unit:	Money; a description that doesn't rely on the use of any particular currency.
Office equipment:	Equipment used in an office, such as computers, photocopiers, calculators, record systems.
Office furniture:	Furniture used in an office, such as desks, chairs and filing cabinets.
Operating result:	See profit and loss account.
Operational:	Relating to the technical work (operations) of HTM Teams, in other words relating to the engineering activities undertaken for customers (which may be charged for if allowed) and not the other administrative and organizational tasks undertaken by HTM Teams.
Overhead costs:	Fixed or indirect costs or expenses.
Owner's fund:	The initial capital investment in the enterprise by the owners.
Payment voucher:	A form prepared by an organization upon which details of a payment are recorded, including: the date and purpose of the payment, who authorized the payment, and the name and signature of the person receiving it. Other supporting documents such as purchase orders, invoices, etc are attached to the payment voucher before it is filed.
Payroll:	A weekly or monthly list of salaries and wages due to be paid to the staff of an organization.
Performance ratios:	Useful management tools; they provide short and precise indicators regarding operational performance and show important inter-relationships.
Petty cash:	A small (petty) amount of cash kept to finance small payments (usually kept on an imprest basis as explained above).
Plant, general:	Machinery such as boilers, lifts, air-conditioners, water pumps or compressors.
PPM schedules:	Planned preventive maintenance protocols, or lists of activities, describing the work to be carried out on equipment at specified regular intervals, in order to prevent breakdowns and ensure the equipment is operational and safe.
PPM timetable:	A calendar showing the days when PPM tasks should be performed according to the PPM schedules, in order to ensure that they occur at the required frequency.
Productivity:	A comparative measure that links outputs to a single unit of inputs, thus if one worker using the same tools can produce more goods than another, he or she is said to be more productive. Linked to efficiency since a more efficient organization will produce the same outputs at lower cost, and linked to effectiveness since an effective organization will be more productive (produce more outputs for the same cost).

Profit centre:	A unit of an organization that generates both revenue (income) and expenses; its goal is to have revenue exceed expenses.
Profit and loss (P&L) account:	Part of a financial report; it explains how the operational result was realised. Sometimes the P&L account may be referred to as income statement or operating results statement.
Provision:	An amount set aside from general funds in the accounts to provide against future loss. For example, if there is some doubt as to whether a debt will be paid, an amount equivalent to the debt is set aside from the general fund until the amount is actually paid or until the debt is written off.
Quality control:	A system of maintaining standards; testing a sample against specifications.
Receipt:	A form given to a third party who has paid money to an organization; this form is evidence that the payment has been received by the organization; the date of the receipt, the person from whom the money was received, the amount and purpose of the money received are recorded on the receipt, a copy of which is kept by the organization.
Recurrent budget:	Planned expenditure on recurrent items for ongoing monthly needs, such as drugs, materials, spare parts, food, fuel, which should not be included in the capital budget.
Reserve:	An amount set aside from general or other funds from which expenditure in future years might be financed should the need arise: for example, in a year when there is an unexpected deficit.
Restricted fund:	An amount given to an organization by a third party (donor) which may only be used for purposes prescribed by the third party.
Retained profit:	The accumulated profit retained in a business since the business started.
Service supply installations:	Supply installations such as electrical installations, water and sewage pipelines, gas supplies.
Standard:	A required or agreed level of quality or attainment set by a recognized authority, used as a measure, norm, or model for all aspects of health services and healthcare technology.
Standardization:	Rationalization, normalization, and harmonization; in other words, reducing the range of makes and models of equipment available in stock, by purchasing particular or named makes and models.
Stock:	Goods held by an organization for its own use or for resale. For the purposes of accounting, stock is valued at either the original cost or at a current realizable value – whichever is the lowest.
Support staff:	Additional types of staff in the health service besides medical personnel, such as planner, Finance Officer, procurement officer, stores controller, human resource officer.
Surplus:	The amount by which income exceeds expenditure.
Title deeds:	Legal document that is the proof of ownership of property, or of some other asset.
Training equipment:	Equipment required when running traing courses, such as overhead and slide projectors, video and tape recorders.

Treasurer:	The person on the governing body of an organization who has a general responsibility for ensuring that its financial affairs are properly managed.
Trial balance:	A list of all the balances on the ledger accounts; the total of all the debit (left-hand side) balances should be equal to the total of all the credit (right-hand side) balances.
Users:	See equipment users.
Variable costs:	See direct operational expenditure.
Variance:	The difference found when a comparison is made between actual results and budgeted results; the variance may be favourable or adverse to the interests of an organization.
Variance analysis:	To carry out an analysis of budgeted results and actual results.
Vehicles:	Any conveyance used for transporting people, goods, or supplies in the health service, such as ambulances, cold-chain motorbikes, mobile workshops, lorries, buses.
Walking aids:	Items used to aid mobility, such as wheelchairs, zimmer frames, crutches.
Waste treatment plant:	Any plant used to treat waste, including incinerators, septic tanks or biogas units.
Working group:	A group of people set up to be responsible for a particular subject area, such as a standing committee, select committee, sub-committee.
Workshop equipment:	Equipment used in a workshop, such as hand tools, bench tools or test instruments.
Your organization:	See health service provider.

BOX 34: WHO's Definition of the Technology Management Hierarchy

Equipment support:	undertaking maintenance and repair.
Equipment management:	using the equipment database (inventory and maintenance history) to help you make decisions for improving equipment support.
Asset management:	including cost and utilization information (life-cycle cost analysis) in the equipment database to help you make decisions on replacement and acquisition.
Technology assessment:	reviewing past, current, and future technologies to determine their efficacy and effectiveness, and to help you make decisions for capital planning and acquisition.
Technology management:	using: equipment equipment support equipment management asset management technology assessment to manage technology in healthcare from conception to retirement.

Source: Department of Health Service Provision, World Health Organization, 2000

ANNEX 2: REFERENCE MATERIALS AND CONTACTS

This Annex is in two parts, and provides information about:

Part i. Books, guidelines, databases, and websites

Part ii. Organizations, sources of publications in part i, resource and information centres.

i. Books, Guidelines, Databases, and Websites

The following books, guidelines, databases, and websites are listed in subject categories according to the topics found in Sections of this Guide. For each publication, a brief description of the content and the main source(s) are included. Contact details for the source organizations are included in *Part ii*. Readers should note that many of the publications are available at low cost. In some countries it may also be possible to obtain these publications from local bookstores, as publishers and distributors increase efforts to ensure wider availability. Published prices may be flexible depending on the order size, discounts available and distribution method.

Tip

- Many books and documents cover a variety of topics that apply to several Sections of this Guide. The first time they appear in this list they are described in full. For each subsequent entry only the basic details are provided.

Healthcare Technology Management Framework Issues

This material covers issues in *Sections 1 and 2*, such as healthcare technology management definitions, policy, regulation, guidance, and services. It is listed alphabetically by title. Further detailed information on this topic is provided in *Guide 1*.

Developing healthcare technology policy

Health care technology management No.1: Health care technology policy framework
Kwankam Y, Heimann P, El-Nageh M, and M Belhocine (2001). WHO Regional Publications, Eastern Mediterranean Series 24. ISBN: 92 9021 280 2
This booklet is the first in a series of four titles. It introduces the ideas of and behind health care technology management, defines terms relating to and sets objectives for health care technology management policy. It examines what should go in to such a policy, and the national policy framework and organization. Capacity-building and human resources issues are considered, as well as economic and financial implications. Attention is also given to legislation, safety issues, cooperation nationally and between countries, implementation, monitoring, and evaluation. See *Guide 1* for information on the three further titles in this Series covering regional strategies, policy formulation and implementation, and country situation analysis.
Available from: WHO

Interregional meeting on the maintenance and repair of health care equipment: Nicosia, Cyprus, 24-28 November 1986
WHO (1987). WHO document WHO/SHS/NHP/87.5
This document provides a comprehensive discussion of the problem of non-functioning equipment and of proposed solutions. The major policies, recommendations, and strategies proposed by the conference on the issue of maintenance and repair of health care equipment are presented. It includes four Working Papers that cover in detail: maintenance and management of equipment, the proposed health care technical service, manpower development, and training.
Available from: WHO

Management of equipment
DHSS, UK (1982). Health Equipment Information No. 98
The aim of this booklet is to recommend a system of equipment management that, if fully implemented, would ensure that all equipment used in the British National Health Service was suitable for its purpose, was maintained in a safe and reliable condition, and was understood by its users. Its recommendations and procedures are structured into sections on equipment selection, acceptance procedures, training, servicing (maintenance, repair, and modification), and replacement policy.
Available from: Her Majesty's Stationery Office (HMSO)

Medical equipment in sub-saharan Africa: A framework for policy formulation
Bloom G H, and C L Temple-Bird. (1988). IDS Research Report Rr19, and WHO publication WHO/SHS/NHP/90.7. ISBN: 0 903354 79 9
This book provides a good overview of the situation of medical equipment in Africa. Its approach to the analysis is to unpackage medical equipment technology into its component activities, such as planning, allocating resources, procurement, commissioning, operation, maintenance, training, etc. It provides good general policy formulation strategies to address the problems discussed.
Available from: WHO

Practical steps for developing health care technology policy: A manual for policy-makers and health service managers in developing countries
Temple-Bird C L (2000). Institute of Development Studies, University of Sussex, UK.
ISBN: 1 85864 291 4
This book is a practical step-by-step guide for developing health care technology policy. It can be used by health service providers, regional and district health authorities, health facility managers, and external support agencies. It describes a process for developing health care technology policy that is collaborative, participatory, iterative, and involves community stakeholders. Guidance is provided on underlying management concepts, undertaking a situation analysis, running an ideas workshop, formulating policy, developing an implementation plan and procedures manual, as well as the resources required to complete these tasks.
Available from: Ziken International Consultants Ltd

See *Guide 1* for further resources on, and examples of, developing healthcare technology policy.

Regulating relationships with external support agencies that provide equipment

Guidelines for health care equipment donations
WHO (1997). WHO document WHO/ARA/97.3
This document presents guidelines that aim to improve the quality of equipment donations, not to hinder them. They are not an international regulation, but intended to serve as a basis for national or institutional guidelines, to be reviewed, adapted and implemented by governments and organizations dealing with health care equipment donations. They provide detailed guidance and checklists for both the potential donor and recipient. The guidelines are based on extensive field experience and consultations with many experts internationally. They also merge together several earlier documents, including the one listed below.
Available from: WHO

Guidelines on medical equipment donations
Churches' Action for Health (1994). World Council of Churches' publication
This paper is a guide for those accepting and making donations, and is also useful for those planning to buy equipment. It clearly lays out in point form the responsibilities of the recipient and the responsibilities of the donor.
Available from: WCC

Understanding healthcare technology management

International seminar for hospital technicians/engineers: February 1998, Moshi, Tanzania
Clauss J (ed) (1998). FAKT
This document reports the results of intensive work by 38 national and international experts brought together from faith, public, and private agencies to strengthen equipment management measures in the health sector. It includes papers, with country examples, on healthcare technology management, financing maintenance, cash control, equipment standardization, networking, structures of health care technical services, and training.
Available from: FAKT

International workshop on healthcare technology management: 2-6 October 2000, Catholic Pastoral Centre, Bamenda, Cameroon
Clauss J (ed) (2000). FAKT
This document reports the results of intensive work by 35 national and international experts involved in setting up and operating systems for the sustainable management of healthcare technology. It includes papers, with country examples, on healthcare technology management, the role of stakeholders, public/private partnerships for providing HTM, cost-effective maintenance and repair services, and acquisition and utilization of healthcare technology.
Available from: FAKT

Physical assets management and maintenance in district health management
Halbwachs H (2000). GTZ document
This paper provides practical guidance to health workers involved in district health systems concerning health technology – one of the critical areas in managing health service delivery at district level. It presents the physical assets management approach, and elaborates on key strategies for maintenance, financing, quality control, and monitoring indicators.
Available from: GTZ

The effective management of medical equipment in developing countries: A series of five papers
Remmelzwaal B (1997). FAKT, Project Number 390
This document is aimed at the health workers, administrators, maintainers, and overseas aid workers who are involved in medical equipment management in developing countries. It examines the variation in performance with management of medical equipment in different countries, with the objective of identifying successful approaches. It addresses some of the managerial issues related to the conservation of equipment; allocation of human, financial and material resources; and acquisition and use. It looks at the structure for the HTM Service, and the HTM cycle.
Available from: FAKT

See *Guide 1* for more information on further relevant issues, such as health service definitions, the place of HTM in health systems, regulation, and standards.

Developing Skills, Managing Change, and Monitoring Progress

This material covers issues in *Section 2.1* on managing change, *Sections 3.2 and 9* on target-setting and monitoring progress, and strategies for developing staff skills when they are faced with a new role, such as financial management. It is listed alphabetically by title.

District health care: Challenges for planning, organization and evaluation in developing countries (2nd edition)
Amonoo-Larston R, Ebrahim G, Lovel H, and J Rankeen (1996). MacMillan. ISBN: 0 333 57349 8
This book contains practical support and advice intended for those in the planning, management and evaluation of health services at district level. It covers a wide range of topics based on country experience, including: staff motivation, teamwork, developing management skills, managing change, managing conflicts, and staff development; managing finances; monitoring and evaluation; as well as district health needs, plans, organization and management.
Available from: TALC

How to make and use visual aids
Harford N, and N Baird (1997). VSO
This booklet describes a number of useful and practical methods for making visual aids quickly and easily, using low cost materials.
Available from: TALC, VSO

Management support for primary health care: A practical guide to management for health centres and local projects
Johnstone P, and J Ranken, (1994). FSG Communications Ltd, Cambridge, UK. ISBN: 1 87118 02 4
This practical user-friendly book gives support and guidance to leaders in health centres and other local projects to help stimulate and maintain primary health care (PHC) in their surrounding communities. Aid workers, and others unfamiliar with PHC and basic management techniques, will also benefit. It includes sections which will assist with staff motivation, such as teamwork and team effectiveness; managing oneself, others and tasks; and managing change, as well as sections on planning and monitoring progress.
Available from: TALC

Medical administration for frontline doctors: A practical guide to the management of district-level hospitals in the public service or in the private sector (2nd edition)
Pearson C (1990). FSG Communications Ltd, Cambridge, UK. ISBN: 1 871188 03 2
This book provides information for doctors who combine wide clinical responsibilities with administration and support for primary health care services. It covers a wide range of topics, with country examples, including: handling money and training; as well as management structures; infrastructure and maintenance; buildings, support services, and equipment; hospital supplies; outreach programmes; and wider responsibilities in the district and above.
Available from: TALC

On being in charge: A guide to management in primary health care (2nd edition)
McMahon R, Barton E, and M Piot (1992). WHO.
This practical guide aims to improve the managerial skills of middle level health workers. The text is reinforced with practical examples, questionnaires and illustrations that help relate the information to health workers' own experiences. Topics include identifying health problems, assigning priorities to their solution, planning and implementing programmes, and evaluating results. It also serves both as a training and reference guide, covering all aspects of primary health care management including equipment and drugs.
Available from: WHO

Physical assets management and maintenance in district health management
Halbwachs H (2000). GTZ document

Transfer of learning: A guide for strengthening the performance of health care workers
Intrah/PRIME II/JHPIEGO (March 2002)
This book is for health care workers involved in training and learning interventions and enables them to transfer their newly acquired knowledge and skills to their jobs, resulting in a higher level of performance and sustained improvement in the quality of services at their facilities.
Available from: free online at http://www.prime2.org/prime2/section/70.html

Financial Management

This material covers issues in *Sections 3 to 9*, on all aspects of financial management. It is listed alphabetically by title.

Analysis of hospital costs: A manual for managers
Shepard D S, Hodgkin D, Anthony Y E (2000). WHO
This manual is intended to help managers at various levels of the health system understand how cost analysis can assist decision-making, as well as to help define and institutionalize relevant costing systems.
Available from: WHO

Businesslike budgeting: Training extras
Parsole E, and R Wright (1995). Institute of Personnel and Development. ISBN: 0 85292 589 1
A practical manual that will help you understand what budgets are, why they are important, how to present them, and above all, how you can use them to manage more effectively.
Available from: Chartered Institute of Personnel and Development

Cost-benefit calculation models for optimizing technology management in healthcare facilities
Raab M (1999). Swiss Centre for International Health
This paper presents a set of tools for evaluating the costs related to clinical engineering services (whether in-house, externally contracted, or a mixture of both). These costs are balanced against the benefits reaped by the health service provider. The method of analysis used has been tested in a number of countries (mainly those in transition).
Available from: SCIH

District health care: Challenges for planning, organization and evaluation in developing countries (2nd edition)
Amonoo-Larston R, Ebrahim G, Lovel H, and J Rankeen (1996). MacMillan. ISBN: 0 333 57349 8

Finance for non-financial managers: Teach yourself
Ramsden P (2003). Hodder Headline Ltd, London, UK. ISBN: 0 340 84515 5
Highly practical manual that provides easy to understand information on financial management.
Available from: www.teachyourself.co.uk

Financial management for self-reliance: A manual on managing the finances of a non-profit organization
Shapiro J (1995). Olive (Organization, Development and Training). ISBN: 0 640 19536 3
This manual has been written for people in leadership positions in non-profit organizations in South Africa, who need to understand and implement financial management.
Available from: Olive (Organization, Development and Training)

How to run a health care technical services business: Set of two – manual and working paper
Stritzel S, Flessa S, and W Kawohl (1997). FAKT publication
Much of the working paper in this Set has been reproduced in this Guide. However, the manual provides greater detail and further worked examples of accounting, budgeting, and marketing for a Zonal Health Care Technical Service.
Available from: FAKT

Improve your business: Set of two – handbook and workbook
Dickson D E N (1986). International Labour Office

ISBN: 92 2 105341 handbook, ISBN: 92 2 105340 7 workbook, ISBN: 92 2 105342 3 complete set
The underlying purpose of this material is to encourage active and creative thinking and motivate entrepreneurs to take action to improve their businesses. It covers: the aims of business, buying and selling, manufacturing and service operating, bookkeeping, costing and pricing, marketing, management accounting, office work, and planning.
Available from: ILO

International seminar for hospital technicians/engineers: February 1998, Moshi, Tanzania
Clauss J (ed) (1998). FAKT

Management controls for development organizations: Set of two – checklist and reference manual
Collins R (1994). Stephen Sims and Partners

ISBN: 0 9523764 1 5 part one, ISBN: 0 9523764 2 3 part two, ISBN: 0 9523764 0 7 complete set
This two-part manual is a valuable reference work for those involved in the financial management of medium sized development organizations. Part one is a checklist with over 300 points to help you evaluate your management procedures and identify weaknesses in your organization. Part two is a reference manual with 100 pages packed with case studies, illustrations of accounting records and proformas, and notes on many management topics. It is a useful tool for staff training or self-help in the workplace.
Available from: Richard Collins

Management of the clinical engineering department: How to convert a cost center into a profit center
Fennigkoh L (1987). Quest Publishing Company Inc. ISBN: 0 930844 19 X
This book looks at how to convert a cost center into a profit center in order to increase operational efficiency and effectiveness. It looks at the range of healthcare technology services, how to market them, price them, and control their quality.
Available from: Quest Publishing Company Inc

Medical administration for frontline doctors: A practical guide to the management of district-level hospitals in the public service or in the private sector (2nd edition)
Pearson C (1990). FSG Communications Ltd, Cambridge, UK. ISBN: 1 871188 032

Medical equipment management in hospitals
American Hospital Association (1982)
This book contains an informative section on determining productivity. Its main contents is scheduled preventive maintenance procedures and tables of estimated annual maintenance costs for labour and parts for a large number (over 200) of the medical equipment items found in a typical modern hospital (in the USA). It also contains information on how to make use of the tables to set up your own maintenance program, calculations of the feasibility of an in-house maintenance system, evaluation checklists which include financial and performance considerations for a biomedical maintenance programme, and a manufacturer's service contact.
Available from: AHA

NGOs engaging with business: A world of difference and a difference to the world
Heap S (2000). INTRAC Publication, INTRAC NGO Management and Policy Series No 11.
ISBN: 1 897748 53 1
Many organizations have to make strategic and operational decisions about the nature of their relations with external business partners. This book's analysis of the issues is of key importance to both NGOs and the private sector.
Available from: INTRAC

Productivity: Standard terminology and definitions
Bauld T J (1987). In *Journal of Clinical Engineering*, Vol 12, No 2, March/April 1987
This paper presents some concepts from industrial engineering concerning productivity. It also provides descriptions of staff labour and financial terms. Definitions for productivity and other measures of departmental performance are also developed.
Available from: Quest Publishing Company Inc

Accessing Information

These websites are sources of information concerning many aspects of health service delivery. They are locations where there is, or may be, information about healthcare technology management and financial management.

Africa online health website: http://bamako.africaonline.com/afol/index.php
Provides links to health information sites related to Africa. The links are organized into the following categories: health information, health news, events, African organizations, international organizations, schools and hospitals in Africa, projects, publications and health services.

AFRO-NETS (African networks for health research and development) website: www.afronets.org
Forum for exchanging health research information in and between East and Southern Africa.

AJOL (African journals online) website: www.inasp.org.uk/ajol
Offers free online access to tables of contents and abstracts of over 70 journals published in Africa.

FIN: Free International Newsletters: www.healthlink.org.uk
Healthlink produces this publication that lists over 130 print and electronic health-related newsletters and magazines which are available free to readers in developing countries.

GATE (German Appropriate Technology Exchange): www5.gtz.de/gate/
The GATE Information Service seeks to improve the technological knowledge of organizations and individuals involved in poverty alleviation projects and to develop information and knowledge management systems of organizations.

Health exchange website: www.healthcomms.org
Explores issues, ideas and practical approaches to health improvement in developing countries and provides a forum for health workers and others to share viewpoints and experiences in this area.

HIF-net at WHO discussion group
Discussion list dedicated to issues of improving access to reliable health information in resource-poor settings. To join, email your name, affiliation and professional interests to: health@inasp.info

HINARI (Health inter-network access to research initiative) website: www.healthinternetwork.net
WHO initiative offering free/discounted access to journals from six leading publishers.

HNP flash website: www.worldbank.org/hnpflash
A free monthly electronic newsletter dedicated to sharing knowledge regarding the latest technical developments in the fields of health, nutrition, population, and reproductive health.

IAASB website: www.ifac.org/IAASB/
The International Auditing and Assurance Standards Board (IAASB) can be contacted on the website of the International Federation of Accounts (IFAC).

IASCF website: www.iasb.org
The International Accounting Standards Committee Foundation (IASCF) can be contacted on the website of the International Accounting Standards Board (IASB).

ID21 health website: www.id21.org/health
An internet based development research reporting service for health policy makers and development practitioners on global health issues. Latest research summaries are provided on a searchable website, by email and in a quarterly publication.

INFRATECH discussion group
WHO forum for global exchange of information on infrastructure and health care technology issues
To subscribe send an email to LISTSERV@LISTSERV.PAHO.ORG enter in text: subscribe infratech 'your full name.'

KAR (Knowledge and research programme on disability and healthcare technology) website: www.kar-dht.org, and for the latest projects being funded use website:www.disabilitykar.net/
This is the Knowledge and Research Programme on disability and healthcare technology of the UK government's Department for International Development (DFID). It supports a range of projects on development and use of appropriate disability and healthcare technologies in developing countries. The website also provides links to:

- **Disability and healthcare technology newsletter** produced every six months describing the progress and findings of the projects funded
- **KaR global database** on healthcare technology publications, organizations, manufacturers, training institutions, etc.

MANGO website: www.mango.org.uk
MANGO provides financial management services to relief and development organizations. Publications available include:

- **Financial management health check**
- **Basic accounting for small groups**, by John Cammack.

The manager's electronic resource center website: http://erc.msh.org
The ERC website is an electronic information resource and communication service for health managers, containing more than 150 ready-to-use management tools in various languages. A key feature is:

- **The health manager's toolkit**, includes spreadsheet templates, forms for gathering and analyzing data, checklists, guidelines for improving organizational performance, and self-assessment tools that allow managers to evaluate their organizations. Tools cover areas such as financial management, allocating hospital costs, cost and revenue analysis, and sustainability.

WHO: Management of health services (MAKER) website: www.who.int/management
This WHO site provides information, publications, and country experiences on all types of management issues for health services, such as facility management, resource management, and district management.

ii. Organizations, Sources of Publications in Part i, Resource and Information Centres

For the following institutions we have included the name, address, contact details, a brief description of the various services they offer, and additional contact details for further relevant activities.

AfriAfya
AMREF Building, PO Box 30125, Nairobi, Kenya
Tel: 254 2 609520, fax: 254 2 609518, email: info@afriafya.org, website: www.afriafya.org
Established by Kenya-based health agencies, AfriAfya provides community access to relevant and appropriate health knowledge and information in an interactive manner. As well as a section on HIV/AIDS there is a news centre, message board and discussion forum on their website.

AFTH (African Federation of Technology in Healthcare)
PO Box 19070, Tygerberg 7505, South Africa
Email contacts: ykwankam@cht.uninet.cm, and pheimann@mweb.co.za
For information use website: http://ifmbe-news.iee.org/ifmbe-news/may1998/mrc.html, and look up the South African Medical Research Council (SA MRC).

Amazon Bookshop
PO Box 81226, Seattle, Washington 98108-1226, USA
Website: www.amazon.com or www.amazon.co.uk
Internet bookshop

American Hospital Association
Clinical Engineering Section, 840 North Lake Shore Drive, Chicago, Illinois 60611,USA
Website: http://aharc.library.net/
Their documents are published by HealthForum, use website: www.ahaonlinestore.com

AMREF International (African Medical and Research Foundation)
Resource Centre, AMREF Headquarters, Langata Road, PO Box 00506 – 27691, Nairobi, Kenya
Tel: 254 2 501301/2/3, fax: 254 2 609518, e-mail: amref.info@amref.org, website: www.amref.org
Publishes practical books, journals and other literature for health workers, and provides advice on primary health care. Runs training courses and seminars.

BOND (British Overseas NGO's for Development)
Website: www.bond.org.uk
A network of more than 260 UK based voluntary organizations working in international development and development education. BOND works to promote the exchange of experience, ideas and information by acting as a broker for a variety of relationships and by collating and distributing information.

Chartered Institute of Personnel and Development
CIPD House, Camp Road, London, SW19 4UX, UK
Website: www.cipd.co.uk
CIPD is the UK's leading professional body for those involved in the management and development of people.

DFID (Department for International Development)
Website: www.dfid.gov.uk
UK government's department for international development assistance.

ECHO International Health Services Ltd
ECHO International Health Services is no longer trading as it used to. Its services can be accessed as follows:

i the charitable foundation can be contacted at:
ECHO, Ullswater Crescent, Coulsdon, Surrey, CR5 2HR, UK
Tel: 44 208 6602220, fax: 44 208 6680751, website: www.echohealth.org.uk/intro2.html

ii the trading branch of the business (wholesale providers of medical supplies and equipment) is now:
Durbin PLC, 180 Northholt Road, South Harrow, Middlesex, HA2 0LT, UK
Tel: 44 208 8696500, fax: 44 208 8696565, email: cataloguesales@durbin.co.uk, website: www.durbin.co.uk

iii. ECHO publications are still available from TALC (see below).

ECRI (Emergency Care Research Institute)
5200 Butler Pike, Plymouth Meeting, Pennsylvania 19462-1298, USA
Tel: 1 610 825 6000 ext 5368, fax: 1 610 834 1275, website: www.ecri.org
Offers guidance and advice on health care technology, planning, procurement and management; and health technology assessment and assistance.

Elsevier Health Science
Elsevier Books Customer Services, Linacre House, Jordan Hill, Oxford, OX2 8DP, UK
Tel: 44 1865 474110, fax: 44 1865 474111, email: eurobkinfo@elsevier.com, website: www.us.elsevierhealth.com
Books published by WB Saunders, Mosby, Churchill Livingstone, and Butterworth-Heinemann are now all members of the Elsevier Science, Health Sciences Division.

European Union (EU)
http://europa.eu.int/comm/development/index_en.htm
EU site for international development and aid.

FAKT (Consultancy for Management, Training, and Technologies)
Gansheidestrasse 43, D-70184 Stuttgart, Germany
Tel: 49 711 21095/0, fax: 49 711 21095/55, email: fakt@fakt-consult.de, website: www.fakt-consult.de
Non-profit consultancy firm, that provides information on appropriate hospital and medical equipment and training in healthcare technologies. FAKT is not a supply organization.

Global Directory of Health Information Resource Centres
Health Information for Development (HID) Project, PO Box 40, Petersfield, Hants, GU32 2YH, UK
Tel: 44 1730 301297, fax: 44 1730 265398, email: iwsp@payson.tulane.edu,
website: www.iwsp.org/directory.htm
A directory of health information resource centres that is arranged alphabetically by country.
Between January 2000 and May 2001, Health Information for Development (HID) compiled a Global Directory of Health Information Resource Centres (HIRCs). This is available from their website. The Directory is updated on an ongoing basis.

GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit – German government technical aid agency)
Division of Health and Education, PO Box 5180, D-6236, Eschborn, Germany
Tel: 49 6196 791265, fax: 49 6196 797104, email: Friedeger.Stierle@gtz.de
Website: http://www.gtz.de/de/4030.htm
Friedeger Stierle is the contact for the GTZ's healthcare technology management programme, and any articles or documents on HTM.

Healthlink Worldwide
Cityside, 40 Adler Street, London, E1 1EE, UK
Tel: 44 20 7539 1570, fax: 44 20 7539 1580, email: info@healthlink.org.uk, website: www.healthlink.org.uk
Publishes a range of free and low-cost newsletters, resource lists, briefing papers and manuals about health and disability.

HEART Consultancy
Quadenoord 2, 6871 NG Renkum, The Netherlands
Tel: 31 317 450468, fax: 31 317 450469, email: jh@heartware.nl, website: www.heartware.nl/
Consultancy firm working in all aspects of healthcare technology management in developing countries. It also produces and supplies the PLAMAHS software package for managing the inventory, model lists, maintenance, and procurement needs for your healthcare technology stock.

HMSO (Her Majesty's Stationery Office)
Website: www.hmso.gov.uk
Publishers of material produced by departments of the UK government.

INTRAC (International NGO Training and Resource Centre)
PO Box 563, Oxford OX2 6RZ, UK
Tel: 44 1865 201851, fax: 44 1865 201852, email: info@intrac.org, website: www.intrac.org
INTRAC supports NGOs and civil society organizations around the world by exploring policy issues, and strengthening management and organizational effectiveness. For information about their publications, email: publications@intrac.org.

Management Sciences for Health (MSH)
Development Office, and/or Publications Office, 165 Allandale Road, Boston MA 02130-3400, USA
Tel: 1 617 524 7799, fax: 1 617 524 2825, email: development@msh.org, website: www.msh.org
MSH undertakes consultancies with health care policy-makers, managers, providers, and clients to seek to increase the effectiveness, efficiency, and sustainability of health services by improving their management. MSH also publishes and distributes practical, experience-based books and tools in multiple languages for health and development professionals, managers and policy makers. Email: bookstore@msh.org, website: www.msh.org/publications

MANGO
Tel: 44 1865 423818, fax: 44 1865 423560, email: ajacobs@mango.org.uk, website: www.mango.org.uk
MANGO provides financial management services to relief and development organizations, including training, financial consultancies, networking opportunities, a register of accountants, and resources.

Medical Research Council South Africa (MRC-SA)
PO Box 19070, 7505 Tygerberg, South Africa
Tel: 27 21 9380911, fax: 27 21 9380200, email:info@mrc.ac.za, website: www.mrc.ac.za
The MRC-SA's mission is to improve the nation's health status and quality of life through relevant and excellent health research aimed at promoting equity and development. They have a WHO Collaborating Centre for Essential Technologies in Health, at website: www.mrc.ac.za/innovation/whocollaborating.htm

Olive (Organization, Development and Training)
21 Sycamore Road, Glenwood, Durban 4001, South Africa
Tel: 27 31 2061534, fax: 27 31 2052114, email: olive@oliveodt.co.za, website: www.oliveodt.co.za
Olive is an organizational development and training not-for-profit development organization. Olive publishes and produces a comprehensive range of publications and periodicals covering various aspects of organizational development, management and change.

PAHO (Pan American Health Organization)
Pan American Sanitary Bureau, Regional Office of the World Health Organization, 525 Twenty-third Street, N.W. Washington, D.C. 20037, USA
Tel: 1 202 974-3000, fax: 1 202 974-3663, website: www.paho.org/
The Pan American Health Organization (PAHO) is an international public health agency working to improve health and living standards of the countries of the Americas. It also serves as the Regional Office for the Americas of the World Health Organization. Antonio Hernandez is the contact for healthcare technology issues, email: 1hernana@paho.org

Quest Publishing Company Inc
1351 Titan Way, Brea, California 92621, USA
Tel: 1 714 738 6400, fax: 1 714 525 6258

Richard Collins
Tel: 44 1395 225202, fax: 44 1395 225204

Source (International Information Support Centre)
The Wellcome Trust Building, Institute of Child Health, 30 Guildford Street, London, WC1N 1EH, UK
Tel: 44 20 7242 9789 ext 8698, fax: 44 20 7404 2062, email: source@ich.ucl.ac.uk, website: www.asksource.info
The Source Centre has a unique collection of over 20,000 health and disability related information resources. These include books, manuals, reports, posters, videos, and CD-Roms. Many materials are from developing countries and include both published and unpublished literature.

Swiss Centre for International Health (SCIH)
Swiss Tropical Institute, Socinstrasse 57, PO Box, CH-4002 Basle, Switzerland
Tel: 41 61 284 82 79, fax: 41 61 271 86 54, email: martin.raab@unibas.ch,
website: www.sti.ch/francais/scih/scih.htm
Undertakes consultancies in healthcare technology management in developing countries and countries in transition.

TALC (Teaching Aids at Low Cost)
PO Box 49, St. Albans, Herts, AL1 5TX, UK
Tel: 44 1727 853869, fax: 44 1727 846852, email: talc@talcuk.org website: www.talcuk.org/
UK registered non-profit charity specialising in supplying affordable books, slides and teaching aids on health and community issues in developing countries, with a particular focus on materials for primary health care and district levels.

Third World Network
Email: twnet@po.jaring.my, website: www.twnside.org.sg
The Third World Network is an independent non-profit international network of organizations and individuals involved in development issues. Its website offers articles and position papers on a variety of subjects related to developing countries, including trade, health, biotechnology and bio-safety.

Transaid (Transport for Life)
137 Euston Road, London, NW1 2AA, UK
Tel: 44 20 7387 8136, fax: 44 20 7287 2669, email: info@transaid.org, website: www.transaid.org
A charity working in the field of international transport management. Thus unique organization works with many sectors, including health, to ensure that transport resources are efficiently and effectively used. Their aim is to develop local capacity in transport and logistics management. They produce a newsletter **Hub and spoke**, and have developed the **Transaid transport management handbook**.

Voluntary Service Overseas (VSO), and **VSO Books**
317 Putney Bridge Road, London, SW15 2PN, UK
Tel: 44 20 8780 2266, email: webteam@vso.org.uk, website: www.vso.org.uk
A UK-based charity with worldwide experience of providing skilled volunteers for work overseas, including workers in the fields of medicine, hospital engineering, and associated technical services. VSO Books publishes practical books about specific areas of development, using the professional experience of volunteers.

World Bank (WB)
Website: www.worldbank.org
One of the world's largest sources of development assistance including health, nutrition and population projects

World Council of Churches (WCC)
PO Box 2100, 1211 Geneva, Switzerland
Tel: 41 22 791 6111, fax: 41 22 791 0361, email: info@wcc-coe.org, website: www.wcc-coe.org
International fellowship of churches that produces publications and newsletters. Recent publications include **Guidelines on medical equipment donations**.

World Health Organization (WHO)
20 Avenue Appia, CH-1211 Geneva 27, Switzerland
Tel: 41 22 791 2476 or 2477, fax: 41 22 791 4857, website: www.who.int/en/
WHO offers advice, and undertakes programmes, on all aspects of health care. Contact your regional or field office for advice on all aspects of health care and WHO materials – the addresses of the regional offices worldwide are available on the website.

- WHO has programmes and literature on many aspects of healthcare technology management. Andrei Issakov, Coordinator of Health Technology and Facilities Planning and Management, is the contact, and source of WHO literature on healthcare technology management that is not available as published documents, email: issakova@who.int.
- WHO produces and distributes books, manuals, journals, practical guidelines and technical documents, several include aspects of healthcare technology management. The Distribution and Sales Office is the contact point for information on WHO publications, email: publications@who.ch, website: www.who.int/publications/en/. To order WHO publications use email: bookorders@who.int.
- WHO has a comprehensive library and information service on international public health literature. Contact email: library@who.int. The WHO library catalogue has electronic access to more than 4000 technical documents, use website: www.who.int/library.
- WHO produces many newsletters, for a list contact website: www.who.int/library/reference/information/newsletters/index.en.shtml

Ziken International Consultants Ltd
Causeway House, 46 Malling Street, Lewes, E.Sussex, BN7 2RH, UK
Tel: 44 1273 477474, fax: 44 1273 478466, email: info@ziken.co.uk, website: www.ziken.co.uk
A consultancy organization working worldwide in many aspects of health care development, including healthcare technology management.

ANNEX 3: FINANCIAL FITNESS TEST

How financially fit is your HTM Team?

Please use this questionnaire to test your understanding and practice of financial management.

Answer the questions by using the following options:

1. Never
2. Occasionally
3. Frequently
4. Always

1.

HTM Teams make long-term equipment plans and budgets

1 **2** **3** **4**

2.

HTM Teams make annual equipment plans and budgets

1 **2** **3** **4**

3.

We consider our strengths and weaknesses as well as future risks and opportunities when making our operational plans

1 **2** **3** **4**

4.

HTM Teams use annual operational plans and budgets as their key financial planning tool for the provision of maintenance and consultancy services

1 **2** **3** **4**

5.

The HTM Team is aware of the importance and benefits of budgeting and budget controls

1 **2** **3** **4**

6.

The format of our budget is designed to meet the requirements of the HTM system

1 **2** **3** **4**

7.

We use our knowledge of direct and indirect expenditure when budgeting for future expenditure

1 **2** **3** **4**

8.

We organize effective budget review committee meetings at regular intervals

1 **2** **3** **4**

9.

We follow the Financial Management Cycle (operational planning, budgeting, accounting, monitoring, reporting, decision-making and taking action)

1 2 3 4

10.

We select a set of useful variances and financial performance ratios

1 2 3 4

11.

We consider budgeting and budget-monitoring as a learning process for continuous improvement

1 2 3 4

12.

Administrative and technical staff have opportunities to acquire financial management skills

1 2 3 4

13.

We keep an inventory (of our tools, equipment, vehicles, etc) and have effective control systems to ensure the safekeeping and proper use of all assets

1 2 3 4

14.

We follow government regulations, generally accepted accounting principles, and relevant tax laws when preparing our accounts

1 2 3 4

15.

We understand the operational result (surplus, deficit) and know how to analyze it

1 2 3 4

16.

We consider an operational surplus as a potential for growth and financial self-reliance

1 2 3 4

17.

We understand the difference between operational surplus, and cash and bank balances

1 2 3 4

18.

We accept that we will need to seek advice on financial management issues

1 2 3 4

19.

We realize that we should use financial criteria and indicators to make well-informed financial decisions

1 **2** **3** **4**

20.

We seek to improve our financial management tools in order to raise our level of productivity

1 **2** **3** **4**

21.

Our governing body (board, committee) reviews the present financial sitution before making any decisions

1 **2** **3** **4**

22.

Our governing body (board, committee) makes decisions promptly and acts immediately to solve problems

1 **2** **3** **4**

23.

We implement recommendations by external and internal auditors and financial consultants at once

1 **2** **3** **4**

24.

We make our decisions at the right time based on accurate and relevant information

1 **2** **3** **4**

25.

We try to identify the root-causes of identified problems

1 **2** **3** **4**

26.

We follow up decisions by keeping a list of pending issues

1 **2** **3** **4**

27.

We make sure we learn from wrong decisions systematically

1 **2** **3** **4**

28.

We share our experience and findings with other partners in our HTM system

1 **2** **3** **4**

29.

We document our decisions and actions for transparency, accountability, and future use

1 **2** **3** **4**

30.

We use restricted funds (donor, government) according to the agreed purpose

1 **2** **3** **4**

Add up your points and check your diagnosis…

Diagnosis

30 to 60 Your financial fitness is endangering the financial performance of your organization. Your understanding of how to manage the finances of an HTM Team is not as good as it should be. Study this Guide now!

61 to 89 Your financial fitness is pretty good, but there are still a few significant weaknesses. Make new efforts to improve the identified areas marked with option 1 and 2, in order to achieve better operational results.

90 to 120 Your financial fitness is very good. Keep on improving!

ANNEX 4: RESOURCES REQUIRED TO RUN TRAINING COURSES

The HTM Team requires a variety of resources when it decides to run training courses for clients. *Box 35* shows the type of resources that can help the HTM Team to provide effective training, and to plan the expenditure required.

BOX 35: Resources Required When Running Training Courses Yourselves

Information	about the training required (background and needs assessment) and the training sources available.
Training materials	appropriate to the piece of equipment to be studied.
Space	suitable for carrying out the training in.
Equipment	to be practised on during the training courses.
Test and calibration instruments	in order to verify technical conditions and safety during training.
Spare parts and materials	appropriate for maintenance training.
Supplies	for operation and user training, such as consumables, medical supplies, and cleaning materials.
Manuals	to refer to, such as the manufacturer's operator and service manuals.
Test method and certificate	a formal way of testing trainees and issuing them with a certificate at the end of the training course, as a quality control and motivating factor (depending on the extent of the training).
Recognition	a formal way of ensuring that the additional skills attained by staff are reflected in their promotion chances and job grades by the Human Resources Department.
Additional expenses	possible room hire, overnight accommodation, travel and subsistence, trainers' fees, visual aids, teaching equipment, etc.
Records	a system for keeping a record of the specific training that a staff member has received.

ANNEX 5: CHART OF ACCOUNTS

The account numbers in this example have been designed for an HTM Team that manages up to 99 major service, repair, or consultancy jobs per year. The reference number has six digits in three sections that are determined as follows:

The first digit indicates the category of the account. There are seven categories in this chart of accounts.

Category 1	Administration expenses
Category 2	Non-operational income
Category 3	Customers of technical services, training and consultancy
Category 4	Fixed assets
Category 5	Current assets
Category 6	Current liabilities
Category 7	Funds

The next two digits indicate the job or training programme to which the account belongs. It is therefore possible to record up to 99 jobs/customers/training workshops, etc per year.

3.**01**.001	Hospital A
3.**02**.001	Hospital B
3.**03**.001	Clinic A
3.**04**.001	Clinic B

The final three digits indicate the type of income or expenditure.

1.00.**101**	Salaries
1.00.**114**	Insurance
2.00.**201**	Donations
3.02.**101**	Expenditure for hospital B

Tip

- Any individual number, such as 101 in the examples above, can signify different things in different places.

Example of a Chart of Accounts

(Adapted from: Collins R, 'Management controls for development organizations', Stephen Sims and Partners)

Note: Inconsistencies in the numbering of the examples is included to demonstrate that a variety of numbers are available for each section and can be utilized according to the logic of your local situation

Category 1:	Administration expenses
Account number	Account title
	Personnel expenses
1.00.101	Salaries
1.00.102	Social security – employer's contribution
1.00.103	Allowances
1.00.104	Insurances
1.00.105	Staff training
1.00.106	Protective clothing
1.00.107	Travelling
1.00.108 & 109	Available for opening new accounts

	General administration
1.00.111	Communications: fax, phone, postage
1.00.112	Subscriptions
1.00.113	Seminars/meetings
1.00.114	Insurance
1.00.115	Bank charges
1.00.116	Interest paid
1.00.117	Audit and accountancy
1.00.118 &119	Available for opening new accounts
	Office supplies
1.00.121	Paper
1.00.122	Stationery
1.00.123	Computer supplies
1.00.124	Sundry expenses
1.00.125 to 129	Available for opening new accounts
	Transport expenses
1.00.131	Fuel
1.00.132	Maintenance/repairs
1.00.133	Insurance
1.00.134 to 139	Available for opening new accounts
	Facilities
1.00.141	Rent
1.00.142	Electricity
1.00.143	Furniture
1.00.144	Maintenance
1.00.145	Insurance
1.00.146 to 149	Available for opening new accounts
	Depreciation
1.00.151	Depreciation – motor vehicle
1.00.161	Depreciation – equipment
1.00.171	Depreciation – buildings

Category 2:	Non-operational income
Account number	Account title
2.00.201	Donations
2.00.202	Grants
2.00.203	Bank interest
2.00.205	Project administration contributions

Category 3:	Customers of services, training and consultancy	
Account number	Account title	
3.01.001	Hospital A balance b/fwd	Note that 3.01.101 + 3.01.201 are transferred to 3.01.001 at the year end.
3.01.101	Expenditure for hospital A	
3.01.201	Income from hospital A	
3.02.001	Hospital B balance b/fwd	Note that 3.02.101 + 3.02.201 are transferred to 3.02.001 at the year end.
3.02.101	Expenditure for hospital B	
3.02.201	Income from hospital B	
3.03.001	Clinic A balance b/fwd	Note that 3.03.101 + 3.03.201 are transferred to 3.03.001 at the year end.
3.03.101	Expenditure on training for clinic A	
3.03.201	Income from training	
3.04.001	Clinic B balance b/fwd	Note that 3.04.101 + 3.04.201 are transferred to 3.04.001 at the year end.
3.04.101	Expenditure on training for clinic B	
3.04.201	Income from training	

Category 4	Fixed assets
Account number	Account title
4.00.401	Buildings
4.00.402	Motor vehicle
4.00.403	Workshop equipment
4.00.404	Tools

Category 5:	Current assets
Account number	Account title
5.00.501	Debtors
5.00.502	Prepayments
5.00.503	Staff – advances
5.00.504	Staff – loans
5.00.505	Stock – spare parts
5.00.506	Stock – materials
5.00.507	Bank deposit
5.00.508	Bank account
5.00.509	Cash
5.00.510	Petty cash
5.00.511	Imprest

Category 6:	Current liabilities
Account number	Account title
6.00.601	Creditors and accruals
6.00.602	Loans received

Category 7:	Shareholders' funds
Account number	Account title
7.00.001	Share capital
7.00.002	Retained profit
7.00.003	Endowment fund

ANNEX 6: SOURCE MATERIAL/BIBLIOGRAPHY

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