

EHTP MATRIX:

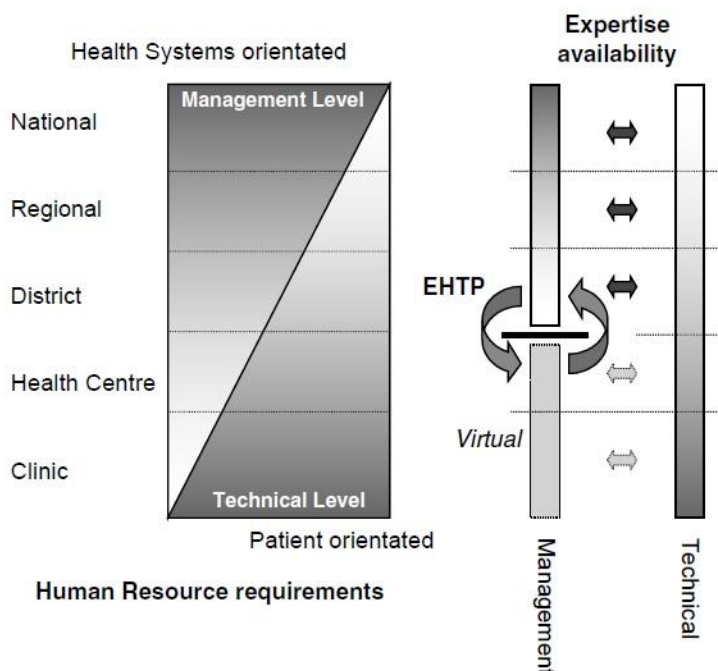
The **Essential Health Technology Package (EHTP) matrix** is a tool that helps health planners and decision makers allocate resources effectively.

The EHTP matrix is like a **map or table** that shows:

- For each **disease** → what **interventions** are required
- For each **intervention** → what **technologies** (medical devices, drugs, staff, facilities) are needed
- It also shows **costs (capital and running)**, utilization, and interdependence of these technologies

Usually, resources are linked to human resources, infrastructure, drugs, and medical devices. But there is often **not enough clear information** about how these resources actually reduce disease burden. This is a weak point in traditional health care planning. The **EHTP matrix helps overcome this problem** by showing the direct relationship between diseases, interventions, and the health technologies required.

It also helps decision makers identify which technologies (staff, drugs, devices, and facilities) should be prioritized. Importantly, the matrix shows the **balance between recurrent costs** (like salaries and maintenance) and **capital costs** (like new equipment and buildings).



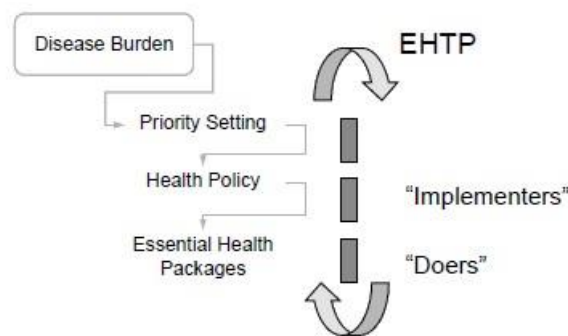
Connection with Other Health Initiatives

The formulation of the EHTP concept includes,

- Tie into existing health planning and management tools .
- Disease burden has been recognized as a fundamental indicator .
- Disease burden indicators have been linked to disease classifications and diagnostic codes.

thus making the disease classification and codification an ideal point of entry for the **EHTP**.

The latest version, ICD 10, is a revision of the widely distributed ICD 9 codes, which classified the majority of curative diseases. These codes,also include specialty areas such as neurology, mental health, dentistry, and anesthesiology.



Advantages and Applications of EHTP

The EHTP is most useful in **planning and managing health technologies** (equipment, drugs, staff, and facilities). Different levels of the health system (district, regional, central) have different needs, so planning is important.

Health technologies have a **life cycle**:

1. **Provision** (research, testing, manufacturing, distribution)
2. **Acquisition** (assessment, procurement, installation)
3. **Utilization** (use, training, maintenance, disposal)

The EHTP supports all these phases by giving both **data** and **simulations**.

What the EHTP provides:

- Maps diseases to promotive, preventive, and rehabilitative procedures
- Lists the technologies needed for each disease

- Lists health interventions and the time required
- Creates **dynamic essential lists** (equipment, staff, drugs, facilities) based on diseases or care levels
- Estimates both capital and running costs
- Provides management and economic data
- Simulates how technologies affect each other in different scenarios

Essential Equipment Lists

Traditional equipment lists are **static** (fixed) and often outdated. The EHTP creates **dynamic equipment lists**, which can be updated as medical practices or technologies change.

Advantages:

- Equipment can be directly linked to interventions
- New technologies can be tested for usefulness before adoption
- Shared staff skills and equipment needs can be identified
- Regional disease patterns can be considered
- Input comes from a **wide range of experts** (not just a few)
- Facilities, staff, and equipment are planned together, avoiding waste

Scientific Basis of EHTP

Health planning is difficult because of:

- Rapid changes in disease patterns
- Fast technological progress
- Economic challenges

Old planning methods based on past data often fail. EHTP provides **evidencebased and scientific planning**. It helps measure the **impact of health technologies** on disease management, which donor agencies and governments have often struggled to do.

Promotive, Preventive, and Curative Care

Currently, the EHTP mostly focuses on **curative care** (treating diseases), using ICD codes. But it is designed to also include **promotive and preventive interventions** (health promotion and disease prevention).

Dynamic System

Diseases and health needs change quickly. Traditional Essential Health Packages are **static** and hard to update. The EHTP is **flexible**, allowing easy additions or removals of interventions without reworking the entire package.

IMPACT ANALYSIS

There are many issues contributing to health in developing countries.

- Availability of appropriate health technology (HT)
- Proper management of HT
- Integrating HT needs and supportability of HT resources
- The World Health Organization (WHO) defines HT resources as including human resources, pharmaceuticals, equipment, and facilities
- HT management (HTM) activities providing cost benefits and improved quality of care and patient outcomes

Effects of Health Care Technology Management

Economics and Health

- Developing countries spend about 7% of their Gross Domestic Product Purchasing on health.
- The investment in health should consider
 - the major health needs,
 - would assist in improving health and status
 - would improve life expectancy (LE)
- Example include cardiovascular disease and cancer for adults, Intestinal, nutritional, and respiratory conditions for infants and children under five years of age

Impact of HT on Health

Proper use of HT resources can reduce

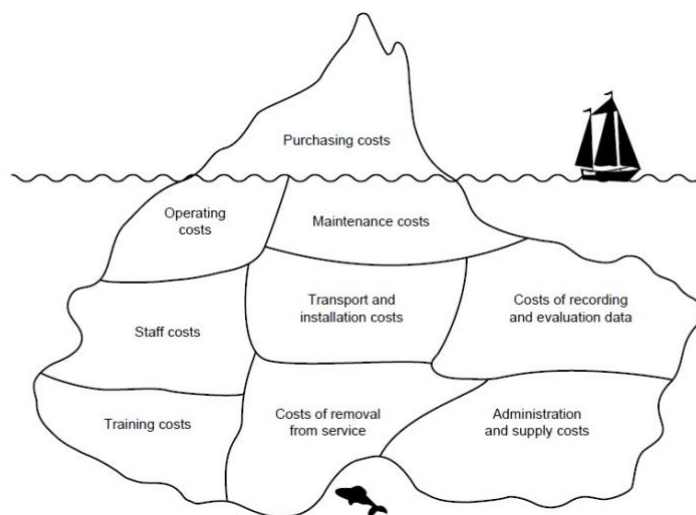
- Reduce risk of disease, shorten duration of disease,
- improve patient care,

- Technical innovation in health care, provides a wide range of positive treatments in the prevention and cure of illness.

The discipline of clinical engineering (CE) has emerged in the last quarter of the 20th century, to assist health professionals in various health settings with the effective use and management of medical devices, processes, and health facilities that are currently available .

Health System Structure Issues

- Health care is delivered through both the public and the private health sectors.
- Local, provincial, and national health authorities interact in any country.
- Training these authorities should be one objective of health care reform



Assessment of Impact

Health indicators are needed in order to measure the effect of HTM practices. Such effects of HTM practices include those listed below:

- Better HTM helps people live healthier and longer lives by reducing illness and disability
- Better HTM helps plan medical equipment and resources to meet the health needs of different regions
- Spending less on unnecessary or harmful medical services by reducing overuse.

- Improving safety and quality of care in all healthcare settings.

Quantitative Evidence of HTM Impacts

HTM Case Studies

USA—Medical Equipment Management

HTMs for equipment resources were conducted in seven geographic areas with 21 hospitals, whose average size was of 225 beds (David and Judd, 1993). The seven HTM teams of 10 technicians each provided equipment management services to a wide range of medical equipment including general biomedical, laboratory, and radiology equipment for each three of these hospitals. Three years after program start-up, there was a 30% cost savings for internal equipment management versus external manufacturer

Success for internal equipment maintenance led to involvement in other HTM activities such as the following, accomplished by the staff:

- Moved and reinstalled X-ray rooms.
- Upgraded CT scanner systems.
- decision-makers involved in new purchase, and assisted in improving equipment replacement decisions.
- Improved quality and cost-effectiveness while purchase.
- Developed processes to identify risk-related trends in equipment use and maintenance.
- planning is done based on utilization of equipment or Technology.

HTM Workshops

The American College of Clinical Engineering (ACCE), World Health Organization(WHO), and Pan American Health Organization (PAHO) have conducted Advanced Health Technology Management Workshops (Judd et al., 1991). Globalised areas include Latin America (1991, 1994, 1997, and 1998), Eastern Europe, and the former Soviet Union (1993), the People's Republic of China (1995), the Middle East (1996), Russia (1999, 2000),

ACCE developed a syllabus for these workshops, under contract for WHO

Some content of syllabus are ,

Section 1 Introduction

1.1 Advanced Clinical Engineering Workshops

1.2 Health Care Technical Services

1.3 Guide for the Formulation of a National Health care Equipment Policy

1.4 WHO Essential Health care Technology Package (EHTP)

1.5 Maintenance in Remote Areas and Mobile Maintenance Units

1.6 Clinical Engineering Department Management