

Health care technology management

The provision of equitable, high-quality and efficient health care requires an extraordinary array of properly balanced and managed resource inputs. Physical resources such as fixed assets and consumables, often described as health care technology, are among the principal types of those inputs. Required equipment may range from sophisticated life-support equipment in a tertiary hospital setting to simple equipment needed for effective diagnosis and safe treatment of patients in a primary health care setting. However, the basic requirements are the same across all settings: clear policies, technical guidance, and practical tools for effective and efficient management of health care technology.

Identification of appropriate technology, and its acquisition and utilisation, 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.

The life cycle for health care technology management covers:

- Planning and assessment
- Budgeting and financing
- Technology assessment and selection
- Procurement and logistics
- Installation and commissioning
- Training and skill development
- Operation and safety
- Maintenance and repair
- Decommissioning and disposal.

Health Partners International and its experience in health technology management

Health Partners International (HPI) advises on technology management as part of strengthening routine health service management activities as well as part of major development projects, such as upgrading of health facilities. HPI and our sister companies, Health Partners Denmark, HEART Consultancy, and Ziken International have considerable experience of hospital appraisals, health facility design, and providing detailed upgrading needs and plans for facilities and their contents, and they regularly deploy multi-disciplinary teams of consultants.

HEART, for example, provides support in the sterilization of medical supplies including: training users and technicians, publishing of training materials, and support to health facilities with limited resources, including guidance in steam sterilization. HEART also carries out energy assessments of health facilities including assessing requirements and the feasibility of traditional and renewable energy sources, providing energy awareness training for staff, and advising on and installing health technology driven by renewable energy sources.

Of course, effective health care technology management goes beyond organisations that provide health services. In many countries, the state and use of equipment within health facilities is greatly affected by the operations of organisations such as ministries of construction (which may be responsible for buildings and service supply installations) and colleges that train health and technical personnel. HPI often works with these other stakeholders. We also review health care technology programmes for national and donor organisations in order to identify successes, constraints, and the need for change. In terms of procurement of health technology, HEART provides assistance with quantification and specification of substantial procurement projects, logistical support, distribution lists and installation inspections and contributes to procurement aspects of technical and commercial tenders.

Development of a computerised physical asset management tool

Ministries of health, health planners and managers, as well as donor agencies, often lack the information they need on which to make decisions regarding resource allocation and procurement. HEART Consultancy has developed a computerised management and planning tool, Planning and Management of Assets in Health Services, known as 'PLAMAHS'. PLAMAHS software can be used to:

- hold complete inventories and perform technical and financial analysis
- generate standard lists of appropriate equipment up to specification level
- hold defined model facilities for each health care level
- generate capital and recurrent budgets for all assets at the different health care levels
- support the appropriate procurement of health care technology
- support the maintenance process of health care technology.

The system has been field tested on projects in Uganda, Kenya, Ethiopia, Mozambique, Nigeria, Senegal, Laos and Cape Verde and is in the process of being introduced to projects in Malawi and Burkina Faso.

Publications

HPI believes that the availability of clear guidance for health staff on working practices is crucial, and HEART Consultancy, HPI and Ziken have developed a range of such materials, both as part of particular projects' activities and as published books. These include:

Practical steps for developing health care technology policy (Caroline Temple-Bird/Institute of Development Studies, 2000)

This book provides guidance on underlying management concepts, how to perform a situation analysis, running an ideas workshop, formulating policy, developing an implementation plan and procedures manual, and the resources required to complete these tasks. Copies are available from HPI – please email info@healthpartners-int.co.uk.

How to manage series for health care technology (Ziken International/TALC, 2005)

This is a set of six procedure manuals covering:

- 1: How to organise a system of health care technology management
- 2: How to plan and budget for health care technology
- 3: How to procure and commission health care technology
- 4: How to operate health care technology effectively and safely
- 5: How to organise the maintenance of health care technology
- 6: How to manage the finances of health care technology management teams.

The guides are applicable at all levels of health service delivery, for all types of health care provider organisations, and encompass the role of health workers and all relevant support personnel. The series is available from HPI – please email info@healthpartners-int.co.uk.

Sterilization of Medical Supplies by Steam, Volume 1 (European Society for Hospital Sterile Supply, Revised edition 2004)

This book focuses on the most common and most safe method used for sterilization in the sterile service departments in health care institutions: sterilization by pressurised high temperature steam. Topics covered include: introduction to microbiology, general infection prevention; methods used for disinfection and sterilization; general physics of steam, technology of steam sterilizers and sterilizer control systems; international standards related to sterile supply. This volume is available in English,

French, Spanish, and Dutch, and can be ordered from Jan Huijs at jh@heartware.nl. Volume 2 is currently in preparation.

Projects

Examples of projects in which HPI and our sister organisations have been involved include:

District hospitals' expansion requirements study, Botswana

A multi-disciplinary group of Ziken and HPI consultants (health planners, architects, engineers, equipment managers, and economists) assisted the Botswana Ministry of Health to draw up detailed options available for upgrading its seven district hospitals. Site surveys, usage statistics, facility designs, architectural briefs and engineering requirements were developed. Standard equipment lists were developed for each building/health discipline, and detailed management guidelines provided on the specifications, tender adjudication process, construction and shipment consolidation timetable, commissioning, training, handover procedures, and maintenance personnel and operational implications.

Support to the KANDO Project, Zambia

The KANDO (Kitwe and Ndola Hospital Reform) project, funded by the UK Department for International Development, was established to support Zambia's Ministry of Health hospital reform efforts. Ziken worked with three central referral hospitals to strengthen their management capabilities in order to run their own affairs as semi-autonomous Boards. The project contained many management components for different aspects of health care provision, with one major component being health care technology management. Over five years, various Ziken and HPI consultants worked with managers, maintainers, equipment users, procurement and stores personnel to develop their skills in managing the life-cycle of equipment. The work involved developing systems and management 'tools', such as inventories, equipment development plans and budgets, equipment specifications, a maintenance record system, and planned preventative maintenance schedules. The work also included assistance with procurement, installation, commissioning, operation and maintenance training, workshop development, and spare parts management.

Development of a health care technology policy, Namibia

Over several years, Ziken consultants worked with senior planners and technical staff in the Ministry of Health and Social Welfare (MOHSS) in Namibia to develop a health care technology policy appropriate to the country. The process involved undertaking a situation analysis of the state of equipment and its management, and presenting

the results to a national workshop of health staff and equipment suppliers, which drew out the main constraints and recommended actions for change. Ziken and HPI consultants then worked with senior MOHSS staff to turn these recommendations into a national equipment policy and its implementation plan, a five-year expenditure plan, a human resources development plan, and a draft procedures manual.