Arab republic of Egypt
Ministry of Health and Population

Nasser Institute for Research
and Treatment

Nasser Institute for Research & Treatment

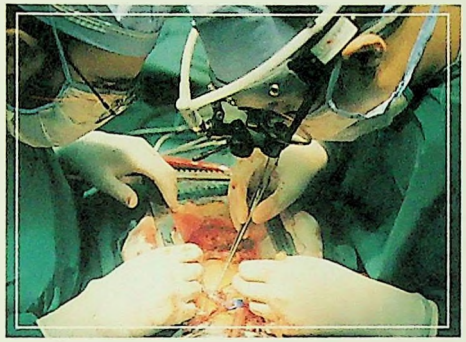
Nasser Institute for Research and Treatment

- A unique medical institution with an exquisite group of physicians and medical experts.
- A highly-skilled nursing team with the highest level of training and experience.
- Providing quality controlled healthcare through a system of policies and procedures developed with partnered American and European centers.
- Regular visits by eminent universal figures in different medical subspecialties
- Radiology department equipped with MRI, CT scanner, Gamma Camera for nuclear studies in addition to traditional options as Ultrasound, Doppler and x- rays.
- Advanced critical care unit equipped to monitor postoperative cardiothoracic, spine and advanced brain surgery cases.

Cardiothoracic Surgery Unit

An advanced center with high survival rates by international standards, collaborating and exchanging expertise with major cardiothoracic centers all over the world.

The average of major cardiac operations (CABGs, Valve Replacements, Congenital anomalies) done in the unit per year is around 2000 cases / year with a survival rate of 97%.



Bone Marrow Transplantation and Hematology Unit

Established in 1997, has 20 rooms equipped with laminar flow technique for bone marrow transplantation patients.

The unit witnesses an average of around 120 BMT cases / year with a survival rate of 90% for autologous BMT and 65%for donor BMT.

Interventional Catheter Unit

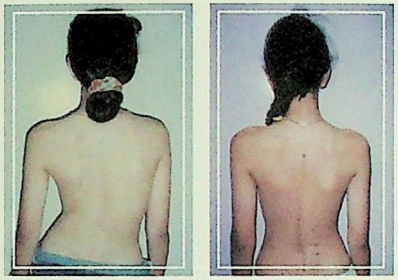
The unit serves to:

- Diagnose and treat arterial malformations in the brain, face and limbs.
- Inject chemotherapy locally.
- Dilate and install stents for renal artery, carotid artery and limb arteries stenosis.
- Inject osteoporotic vertebrae with bone cement.

Spine Surgery Unit

A specialized unit in correcting malformations of the spine, vertebral fractures and tumors with high success rates.
The unit has exchange programs with several spine surgery centers in Europe and the United States.

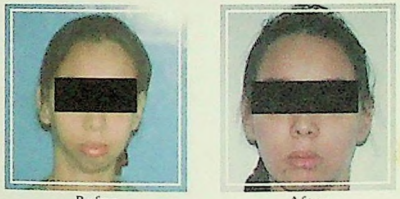
The work team in the unit has done an average of 1100 major spine surgery / year, about 130 of them are scoliosis and their success rates exceeded 95%.



Befor After

Maxillofacial Surgery Unit

The unit has achieved high results in the treatment of cases of facial and mandibluar fractures and tumors.



Befor After

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Cardiac Electrophysiology Unit

The unit serves to diagnose and treat cases of cardiac arrhythmias and also to install cardiac pacemakers.

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Cancer Treatment Unit

It serves both diagnostic and treatment purposes for all cancer cases through chemotherapy, surgery and radiotherapy (through the linear accelerator). MRI, CT, Nuclear Imaging are also available in the unit.

Gamma Knife Unit

A specialized unit to treat inoperable and inapproachable brain tumors, supervised by a Swedish expert in this medical specialty.

Hand and Upper Arm Microscopic Surgery Unit

This unit is specialized in microscopic surgery as artery grafts, nerve grafts, hand and finger re-implanting and also, upper arm and shoulder trauma

Kidney Transplant and Dialysis Unit

The unit is specialized in the diagnosis and treatment of renal diseases with an accessory renal dialysis unit and renal transplant unit as well.

Accommodation Services

Provided in suites and both single and double rooms overlooking Cairo Nile by expert team supervised by specialized dietitians.

Nasser Institute for Research and Treatment

Welcomes patients from all over the world since the moment they arrive to Egypt and provides all the facilities through its patient reception office in Cairo airport.

Provides arrangements for ambulance, accommodation of relatives, reservation and confirmation of air tickets.

Free medical consultations and inquiries are available through fax, email or Nasser institute website

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World Health Organization

ESSENTIAL HEALTH TECHNOLOGIES

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HEALTH TECHNOLOGIES
- THE BACKBONE OF HEALTH SERVICES

Health technologies range from the tongue depressor to magnetic resonance imaging equipment, from blood transfusion to emergency surgical procedures.

Health technologies are everywhere.

From the simplest of health care systems to the most advanced. In rich and poor countries alike, they form the backbone of health services.

Yet access to health technologies is at the same time one of the most distinct differences between rich and poor countries - far more so than access to technologies associated with basic medical education. Young medical doctors educated in Bangladesh may have been taught by the same or virtually the same textbooks as their colleagues educated in Great Britain. After their graduation, thanks to internet access, they probably read the same medical journals and continue to read the same kind of medical literature. And the most important factor for this is access to health technologies. But the preventive measures, diagnostic procedures and therapeutic interventions they are able to offer their patients are a long way from being of the same magnitude and variety.

Strong health systems invariably rely heavily on access to and use of health technologies. Together, they form a dense mesh throughout the health services into which they are interwoven. A strong mesh of health technologies is one of the most fundamental prerequisites for the sustainability and self-reliance of health systems.

Essential health technologies actively supported by EHT:

- Blood transfusion safety
- Blood products and related biologicals
- Diagnostic imaging
- District hospital surgery
- Laboratory services
- Medical devices and equipment
- Transplantation services

Health technologies are essential when they:

- Meet basic needs for health services
- Have been proven to be cost-efficient
- Are evidence-based

Health technologies are evidence-based when they meet well-defined specifications and have been validated through controlled clinical studies or rest on a widely accepted consensus by experts

Health technologies are solutions to health problems

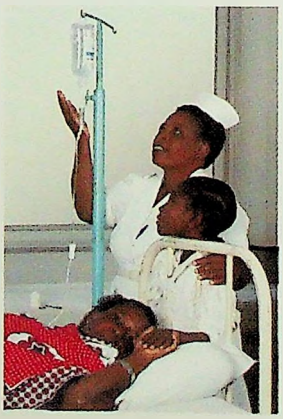
Health technologies are not developed as an end in themselves and should never be promoted as such. They evolve or are invented as solutions to perceived health problems and are initially evaluated and applied for that purpose.

As experience in their use accumulates, health technologies may come to be used, either directly or after slight modifications, to address many other problems than those for which they were initially developed. The strategic use of technologies with multiple applications has become one of the most cost-efficient tools in the creation of strong health systems.

The use of each technology calls for carefully evaluated procedures and the availability of well-trained personnel. Some technologies are inherently safe, but the vast majority are not and require systematically established quality assurance and quality control measures if undesired effects are to be avoided in their application.

Indeed, for many technologies, it is desirable to ensure that any adaptation coordinate under national legislation and their application under supervision by regulatory authorities.

The mesh of technologies that countries in transition can afford obviously cannot be as dense as that of a developed country. But if the elements that make up the mesh are carefully chosen, a country may still be able to offer its citizens a safe and reliable health service to its citizens, even where resources are limited. The basic operational frameworks that EHT has established define such a level for the above aspects of access, use, safety and policy. This is the level of health service WHO recommends its Member States to reach as an important milestone on their road towards development.



Over the last four years, perhaps the greatest achievement of EHT has been to provide norms, standards, guidelines and training material that match a substantial number of the elements that are now included in the Basic Operational Frameworks. These products form the basis for inputs to capacity building projects that WHO can offer in response to requests by countries for help in meeting the requirements defined by the Frameworks.

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COUNTRY FOCUS

The most prominent strategic change in the programme of the WHO Department of Essential Health Technologies (EHT) for 2004-2007 is the shift to a dedicated country focus.

All technical cooperation activities of the programme will eventually be needs-driven in that an increasing proportion of resources will be allocated to the implementation of country-prepared project proposals that aim to take countries to a safe and reliable level of health services in relation to the health technologies that are actively supported by the programme. To achieve this, EHT is introducing the following mechanism.

1. EHT is developing lists of basic requirements (basic operational frameworks) for each technology, covering policy, quality and safety, access and use. These frameworks, if implemented comprehensively within a country, will result in a safe and reliable level of service for the technology.
2. EHT will review the lists with Member States to identify any gaps in their services.
3. Member States will be invited to submit project proposals to EHT, requesting assistance in closing the gaps.
4. Subject to the availability of resources, EHT will give priority to projects that are supported by the infrastructure of the country, have direct end-user benefit and have government commitment and support.
5. EHT will continue to develop norms, standards, guidelines, training material and other tools to support its capacity building efforts to meet the requests in the country-prepared proposals.

How to apply for support

A Member State (or institutions in Member States) wishing to submit a project proposal should do so in collaboration with and through its Ministry of Health.

A standard applications form is available on the EHT homepage at www.who.int/eht.

The Ministry of Health should indicate on the form how the proposal will address identified gaps in the basic operational framework and specify the government's commitment.

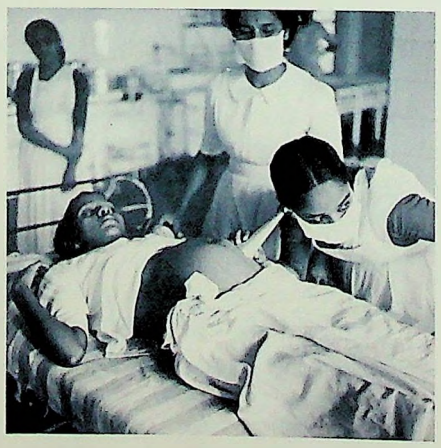
Applications should be forwarded, through the WHO Country Office (or national liaison officer), to the WHO Regional Office for appraisal.

Currently, EHT is devoting more than 70 % of its extrabudgetary resources to Headquarters-based activities. Over the next four years, EHT will gradually reallocate at least 40% of its extrabudgetary funding to countries and regions so that, by 2007, at least 70% of all extrabudgetary funding will be spent at regional and country level to finance projects proposed by Member States. Any extrabudgetary funding increase during this period will be used 100% for this purpose.

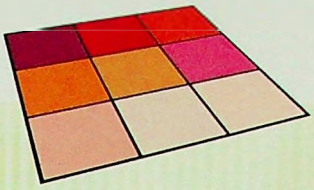
Objective for 2004

To start implementing country focused activities for selected countries (1-3 countries in each WHO region) for the following technologies:

- **Blood transfusion safety**
- **Blood products and related biologicals**
- **Laboratory services**
- **Diagnostic imaging**
- **Medical devices and equipment**
- **District hospital surgery**



The Department of Essential Health Technologies (EHT) has arisen out of what was formerly the Department of Blood Safety and Clinical Technology (BCT).



BASIC OPERATIONAL FRAMEWORK

THE CENTRAL TOOL IN EHT'S COUNTRY FOCUS

WHO DEPARTMENT OF ESSENTIAL HEALTH TECHNOLOGIES

BASIC OPERATIONAL FRAMEWORK

COUNTRY REVIEW

BLOOD TRANSFUSION SAFETY

THEME		REQUIREMENTS	IN PLACE			WHO PRODUCTS AND SERVICES	
			Yes	No	In progress		✿
1 POLICY							
1.1		**National coordination of blood transfusion services**					
	1.1.1	National blood policy and plan				Aide-Mémoire: Blood Safety	
	1.1.2	Legislation/regulation				Recommendations: Establishing a Nationally Coordinated BTS	
	1.1.3	National blood commission (or equivalent)				Examples of legislation	
	1.1.4	Specific organization responsible for blood transfusion services				Technical cooperation in establishing nationally coordinated BTSs	
	1.1.5	Standards for blood transfusion services				Guidelines: Minimum Requirements for BTSs	
	1.1.6	Assessment of blood requirements				Needs assessment model	
	1.1.7	Blood stock management system				Strengthening of collaborations and partnerships	
1.2		**Adequate resources**					
	1.2.1	Financial				Manual/software: Costing Blood Transfusion Services	
	1.2.1a	Fiscal allocation					
	1.2.1b	Cost recovery					
	1.2.2	Technical resources					
	1.2.2a	Adequate functioning equipment				Manual: Guide to Procurement of Blood Cold Chain Equipment	
	1.2.2b	Reliable supply of test kits and reagents				HIV, HBV and HCV test kit bulk procurement scheme	
	1.2.2c	Stock control system					
	1.2.3	Adequate number of trained staff					
1.3		**National data collection system**					
	1.3.1	Capacity for computerization of BTS				Global Database on Blood Safety	
	1.3.2	Tools for assessment of blood safety situation				Blood safety assessment tool	
	1.3.3	Data for national decision-making for policy formulation				Studies on cost-effectiveness and burden of disease	
1.4		**Information technology for blood transfusion services**					
	1.4.1	Computerization of blood transfusion services				Guidelines: Computerization of the BTS	
	1.4.2	E-learning programmes				Technical cooperation and infrastructure support	

☐ = Completed by BCT

☐ = Completed at country level

Comments

of the frameworks, EHT has therefore made available a series of products (including norms, standards, guidelines, training material and technical cooperation) that can be requested by Member Sates for capacity building in the areas that are addressed by the frameworks.

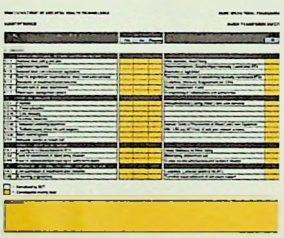
Thus, in addition to defining a desirable level of health service in relation to each technology, the basic operational frameworks provide guidance to countries on how to achieve this level.

Lists of essential equipment

One element that is shared by the basic operational frameworks is the recommendation that countries should develop their own lists of essential equipment.

Lists of essential equipment have very direct practical applications. They can be used as guidance for countries that are in the early stages of use of a particular health technology or by countries that plan to take a technology from national to provincial or district level. They are indispensable for countries needing to rebuild programmes after an emergency that has damaged or destroyed the existing infrastructure.

In order to assist Member States in establishing lists of essential equipment, EHT has initiated a project to create and maintain lists for all the technologies that are actively supported under its programme.



Extract from a Basic Operational Framework - the central tool in EHT's country focus

www.who.int/eht/bof

HOW THE BASIC OPERATIONAL FRAMEWORKS WORK

The table on the left shows a concrete example of what a basic operational frameworks looks like in practice. It is an extract from the quality and safety part of the basic operational framework for Blood Transfusion Safety. Other parts of that framework (not shown below) include policy, use and access. The full frameworks for all health technologies supported by EHT are available on the EHT homepage at www.who.int/eht/.

The left column is the core part of the framework. It consists of the basic list of requirements for quality and safety in relation to blood transfusion that WHO recommends that Member States should meet.

The three narrow columns in the centre have been provided for countries to use when reviewing the list to identify elements that are already in place, not yet in place or partly in place.

The column to the right provides a list of WHO products and services that are immediately available to support countries in meeting the basic requirements in the left column. The products also form the basis for inputs to capacity building projects that WHO can offer in response to requests from Member States to establish the elements contained in the left column.

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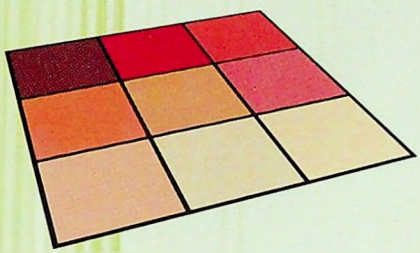
ESSENTIAL HEALTH TECHNOLOGIES

STRATEGY 2004-2007



BLOOD TRANSFUSION SAFETY
BLOOD PRODUCTS AND RELATED BIOLOGICALS
LABORATORY SERVICES
DIAGNOSTIC IMAGING
MEDICAL DEVICES AND EQUIPMENT
DISTRICT HOSPITAL SURGERY
TRANSPLANTATION

MODEL LIST OF ESSENTIAL MEDICAL DEVICES
PREVENTION OF HEALTH CARE ASSOCIATED HIV INFECTIONS
INFORMATION TECHNOLOGY IN HEALTH CARE

World Health Organization

November 2003. Draft for comments by Member States

ESSENTIAL HEALTH TECHNOLOGIES

– Taking basic health solutions to countries

STRATEGY 2004-2007

A needs-driven programme increasingly based on country-prepared proposals

World Health Organization

EXECUTIVE SUMMARY

Essential health technologies are evidence-based technologies that provide cost-effective solutions to health problems.

Health technologies are used at every level of the health care system. From the simplest to the most advanced, they form the backbone of the services medicine can offer in the prevention, diagnosis and treatment of illness and disease.

The Department of Essential Health Technologies (EHT) has arisen out of what was formerly the Department of Blood Safety and Clinical Technology (BCT). The renaming of the department does not mean that WHO will give less priority to blood safety activities than in the previous four years. Rather, it reflects the recognition that many other health technologies play equally important roles as blood transfusion in prevention and health care and so also deserve to be given priority.

Consequently, the strategy proposed by EHT for 2004-2007 will build on BCT's 2002-2003 strategy while at the same time reflecting more clearly the department's role as WHO's programme on health technologies.

EHT will strengthen its emphasis on blood transfusion and biological products of human origin, diagnostic imaging, laboratory services, medical devices and surgical and anaesthetic procedures at the district hospital.

EHT will also launch new key initiatives, including the establishment of a WHO model list of essential medical devices, the prevention of health care-associated HIV infection and e-health.

The most profound differences, however, will be two major operational changes that will take EHT effectively towards a strongly dedicated country focus.

The first is the creation of sets of basic operational frameworks defining achievable requirements for safe and reliable health services at country level.

The second will be a progressive reallocation of resources in support of country-prepared proposals for projects that aim to meet these requirements in their health services.

As a result, EHT will evolve to become a needs-driven, project-based unit in the sense that most of its activities will develop out of proposals generated by Member States rather than by WHO staff members.

As WHO's health technology programme, EHT will continue to provide authoritative advice on norms, standards and guidelines for the use of essential health technologies and to work in close collaboration with its partners.

BLOOD TRANSFUSION SAFETY
BLOOD PRODUCTS AND RELATED BIOLOGICALS
LABORATORY SERVICES
DIAGNOSTIC IMAGING
MEDICAL DEVICES AND EQUIPMENT
DISTRICT HOSPITAL SURGERY
TRANSPLANTATION

MODEL LIST OF ESSENTIAL MEDICAL DEVICES
PREVENTION OF HEALTH CARE ASSOCIATED HIV INFECTIONS
INFORMATION TECHNOLOGY IN HEALTH CARE

BACKGROUND

Health technologies are everywhere

Health technologies are the backbone of all health systems. They are essential tools in solving health problems. Even the most simple health system cannot function without at least some of them.

Health technologies are essential when they:

- Meet basic needs for health services
- Have been proven to be cost-efficient
- Are evidence-based.

Health technologies are evidence-based when they meet well-defined specifications and have been validated through controlled clinical studies or rest on a widely accepted consensus by experts.

The WHO Commission on Macroeconomics and Health has documented how heavy investment in building basic health systems in developing countries will result in huge returns.

Today, the majority of the world's population is suffering from poverty and is denied adequate, safe and reliable access to the solutions that health technologies can offer.

There is a vast shortage of diagnostic radiology and laboratory services in developing Member States while, at the same time, about half of the available equipment does not function. About 6 million of some 80 million units of blood donated annually are not tested in accordance with WHO recommendations on screening for infectious pathogens and 22 million cases of hepatitis B, 2 million cases of hepatitis C and 260 000 cases of HIV/AIDS are caused by unsafe injections.

Clearly, health technologies should not be promoted as an end in themselves. They should only be chosen when they meet an evident need and are cost-effective.

Some technologies address only one health problem, whereas others are uniquely designed to address many problems simultaneously. Effective health sector systems calling for optimal resource allocation consistently rely on strong elements of cross-cutting technologies with multiple applications.

Which essential health technologies are supported by EHT?

Technologies are supported when they are:

- **The only ones available**
- **The cheapest ones available for comparable quality**
- **The best ones available for comparable price.**

Diagnostic radiology services, clinical laboratory services and surgical services are examples of health care services that typically make use of technologies that have multiple applications. A vast number of health problems can be dealt with where there is access to an X-ray machine, a laboratory, a blood bank and a simple surgical operating room.

Objectives

Focusing on country impact

The objectives of EHT are to:

- **Strengthen the ability of Member States to address health problems through the use of essential health technologies**
- **Assist Member States in establishing safe and reliable services for essential health technologies through the adoption of basic operational frameworks covering policy, safety, access and use**
- **Develop norms, standards, guidelines, information and training material and foster research on essential health technologies in support of the establishment of effective health services by Member States.**

HOW DOES EHT ACHIEVE ITS OBJECTIVES?

Targeting technologies that have multiple applications at a realistic level

CHOICE OF TECHNOLOGIES AND INITIATIVES

The main thrust of EHT's activities will be to assist Member States in establishing and optimizing the use of medical technologies with multiple applications for health services in the fields of:

- Blood transfusion safety
- Blood products and related biologicals
- Laboratory services
- Diagnostic imaging
- Medical devices and equipment
- District hospital surgery
- Transplantation.

The establishment of each of these technologies poses separate challenges to which EHT is offering its distinctive solutions (see Challenges and Solutions on pages 12-17).

In addition, EHT is giving priority to three key initiatives that cut across these technologies:

- Development of a list of essential medical devices
- Prevention of health care-associated HIV infections
- Use of information technology in preventive and curative health care.

TOWARDS AN ACHIEVABLE LEVEL OF SELF-RELIANCE

EHT is committed to helping countries to attain a safe and reliable level of health service that is realistically achievable, even in economies that are developing or in transition. To this end, EHT has created the concept of **basic operational frameworks** which define the key requirements for achieving this level of service.

Fundamentally, basic operational frameworks are sets of elements that, if implemented collectively, will confer a safe and reliable level for health **policy**, **quality** and **safety**, **access** and **use** of the technology or service that is covered by the relevant framework.

What are basic operational frameworks?

Basic operational frameworks are lists of operational elements that collectively define the requirements for a basic level of health service, thus proposing to each Member State:

- **A milestone to be reached**
- **Guidance on how to reach the defined level**
- **A framework for EHT to fill out with products and services that form the basis of technical cooperation in response to requests for assistance.**

Clearly, the requirements for the establishment of a technology differ between technologies and, accordingly, there is a certain distinctive variation between the EHT frameworks for each technology. But they all share fundamental qualities in requirements such as efficacy, efficiency and timeliness.

The full EHT basic operational frameworks are available on the EHT homepage at www.who.int/eht.

EHT, WHO'S AUTHORITATIVE ARM FOR HEALTH TECHNOLOGIES

The support provided by EHT relates directly to the normative work of setting standards, and providing guidelines, training material and other products that EHT is expected to undertake under the WHO Constitution.

This statutory work will progressively be refocused to ensure that EHT products and services provide more tailored support to countries aspiring to establish the level of health service that is defined by each of the basic operational frameworks.

THE COUNTRY FOCUS OF EHT

Reallocating resources to support country-prepared proposals

The country focus of EHT will progressively form an increasing and integral part of its programme, from the development stage through to delivery and implementation. It will consist of four main elements:

- Identification of gaps in services in Member States
- Call for project proposals from Member States
- Selection of proposals to be included in EHT's programme
- Implementation of the selected projects.

EHT PROGRAMME DEVELOPMENT

During the 2002-2003 biennium, EHT devoted 30% of its extrabudgetary resources to activities at regional and country levels. In 2004-2007, there will be a progressive shift to regional offices and country offices in decision-making on the allocation of these resources. The target for 2007 is that 70% of extrabudgetary resources will be spent at country level in funding the implementation of country-prepared project proposals.

Progressively, a system will be established to initiate programme development at country level, starting with selected pilot countries in the different regions.

First, Member States, together with WHO Representatives and representatives from the regional offices, will be invited to use the basic operational frameworks to identify gaps in their health services and to write a short summary of their observations.

Next, Member States (Ministries of Health, in collaboration with relevant national authorities and professionals) will prepare project proposals requesting WHO for help to close identified gaps in the frameworks and send the proposals, through the WHO country offices, to their regional office. A template for project proposals can be downloaded from the EHT homepage. In preparing their proposals,

countries will set priorities regarding the identified gaps they wish to close first and focus their proposals on those needs.

Regional offices and headquarters will jointly appraise received proposals and select the projects that can be financed from WHO resources. Priority will be given to project proposals that demonstrate high levels of government commitment and direct end-user benefit.

Funding for high quality project proposals that WHO is not in a position to finance will be sought through dedicated applications to external donors and partners.

REFOCUSING THE WORK OF EHT IN RESPONSE TO COUNTRY NEEDS

As countries increasingly benefit from WHO assistance in bridging gaps in the basic operational frameworks, WHO headquarters, in collaboration with regional and country offices, will identify gaps in the EHT portfolio of products that must similarly be filled to provide effective support for each element of the frameworks; these include norms, standards, guidelines, procedures and training materials. The identified gaps will form the central criteria for the selection of support products and services to be developed by EHT in 2004-2007.

Guided by the frameworks, EHT will also refocus its network and database activities as well as its agreements with collaborating centres and collaboration with other partners.

EHT'S PROGRAMME

As the number of country-prepared project proposals gradually grows, EHT's programme will increasingly focus on those project proposals that can be supported.

Regional offices, in collaboration with headquarters and country offices, will coordinate the implementation of the projects that are included in the programme. Delivery mechanisms include training courses and workshops, expert missions, fellowships and the provision of equipment.

Headquarters, in collaboration with regional offices, will as in previous years continue to develop and update the norms, standards, guidelines and training material that have been selected for inclusion in the programme.

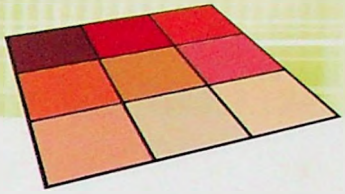
Likewise, headquarters and regional offices will continue to coordinate the networks and agreements with collaborating centres and the development and maintenance of databases and other information material.

Mission

What EHT does

Being WHO's programme on health technologies, EHT

- **Develops and maintains basic operational frameworks for safe and reliable health services and technologies**
- **Assists Member States in filling out the basic operational frameworks through country-prepared project proposals**
- **Develops norms, standards, guidelines, training materials, reference materials and estimation of the burden of disease**
- **Has a particular focus on the diseases of poverty.**



IMPLEMENTATION OF THE COUNTRY FOCUS

EHT aims:

- By early 2004, to have started reviewing its work with Member States to identify gaps in their health services that can be filled through dedicated projects in pilot countries.
- By mid-2004, to have received at least 10 project proposals from Member States so that project implementation can start in early 2005 in selected countries and by mid-2005 on a broader base in a larger number of countries.
- Annually through 2005-2007, to implement an increasing number of projects proposed by Member States, targeting at least 30 per year by the end of 2007.
- By the end of each year, to have produced a solid number of norms, standards, guidelines and training material in support of the basic operational frameworks.
- By 2007, through annual review of the basic operational frameworks with Member States, to be able to demonstrate that expected outcomes have been achieved.

CHALLENGES AND SOLUTIONS

What EHT can offer to fill the gaps

The Department of Essential Health Technologies offers specific solutions to various challenges and concrete inputs when responding to project proposals developed by Member States. In spite of the diversity of the technical disciplines, each area of work is structured through its basic operational framework and has the same four main strategic objectives for the level of health service:

- Policy
- Quality and safety
- Access
- Use

As part of its **policy** objective, EHT assists countries to benchmark, assess, plan, implement and evaluate national policies and plans for the area of work. As part of its **quality and safety** objective, EHT contributes to the establishment of comprehensive systems to ensure the quality and safety of products and services. As part of the **access** objective, EHT develops mechanisms to promote universal and equitable access to health technologies. Finally, as part of the **use** objective, EHT formulates guidance on the rational, appropriate and cost-effective use of health technologies.

BLOOD TRANSFUSION SAFETY

Challenges

While blood transfusion is an essential and life-saving support within the health care system, the safety of transfusion is not assured globally, particularly in those countries without developed health care systems where around 80% of the world's population lives. Threats include lack of access to blood and blood products; the risk of transmission of infections such as HIV and viral hepatitis through unsafe transfusion; technical and clerical errors in the processing and testing of blood, inappropriate use of blood and errors in the administration of blood and blood components which may result in severe or fatal reactions.

Solutions

EHT supports the establishment of well-organized, nationally coordinated blood programmes with quality systems including the development of a national blood policy and plan, legislation and regulation and the establishment of a national blood commission.

EHT assures the availability of national or international standards needed for the development of a quality system and an effective and accurate documentation system to ensure the traceability of all blood transfusion safety activities.

EHT supports countries in establishing a well-organized blood supply structure and a programme for the recruitment and retention of voluntary non-remunerated blood donors. EHT supports the provision and correct use of appropriate equipment and a reliable and adequate supply of blood bags, reagents, test kits and other materials.

EHT promotes strategies to ensure the appropriate prescribing and safe administration of blood and blood products to minimize unnecessary and unsafe transfusions. EHT maintains a database on the situation of blood transfusion services in Member States, maintains collaborative partnerships in global blood safety and serves as the secretariat for the Global Collaboration for Blood Safety (GCBS).

■ BLOOD PRODUCTS AND RELATED BIOLOGICAL PRODUCTS

Challenges

"Biological products", which include "biological medicines" such as vaccines, animal sera, haematological products (blood, blood products and related substances), cell regulators, somatic cells and tissues, as well as "biological based *in vitro* diagnostic medical devices" are essential to the achievement of the WHO mission. Yet many countries lack an appropriate regulatory framework to assure the quality and safety of these biopharmaceutical products. Because of the special quality and safety issues associated with blood products and related biological products, Medicines Regulatory Authorities and Control Laboratories in developing countries need to acquire technical expertise to assure the compliance of these products with national and international regulations on quality and safety.

Solutions

EHT is committed to strengthening the technical capacity of regulatory authorities for medical devices, assisting national authorities to identify gaps, set priorities, plan and implement activities to ensure the quality and safety of the blood products and related biologicals used in human medicine.

EHT supports the establishment of regional networks of National Regulatory Authorities to develop their technical capacity and expertise in the evaluation and control of blood products and related biological products and *in vitro* medical devices.

EHT coordinates the development and establishment of biological reference materials of application in this field.

At country level, EHT promotes the appropriate use of International Biological Reference Preparations through training and technical support carried out with international collaboration.

DIAGNOSTIC IMAGING

Challenges

Diagnostic radiology, ultrasound, magnetic resonance and nuclear medicine are some of the most powerful medical technologies available to address clinical problems. Yet, globally, diagnostic imaging services are still insufficiently available. There is a depressing lack of equipment, inadequate types of equipment, non-functioning equipment and incorrect handling of equipment. It is estimated that some three-quarters of the world's population have no access to such services.

Solutions

EHT helps countries to establish national policies and programmes for diagnostic imaging services as an integral part of all health care and strictly adapted to local needs and levels of care.

EHT focuses especially on the need to improve the skills and knowledge of end-users at first referral (district hospital) level through the development and implementation of training programmes and educational material.

EHT develops norms and standards for diagnostic imaging services in collaboration with the Global Steering Group for Education and Training in Diagnostic Imaging, relevant nongovernmental organizations, WHO collaborating centres and UN organizations, such as the International Atomic Energy Authority.

EHT collaborates with manufacturers of imaging equipment to seek solutions to the need for efficient and modern imaging equipment at affordable prices. EHT is committed to supporting possible digital solutions that are affordable and suitable for facilities in remote locations with a poorly developed infrastructure.

DIAGNOSTIC SUPPORT AND LABORATORY SERVICES

Challenges

Diagnostics and laboratory technologies in haematology, microbiology (including parasitology) and pathology (histology and cytology) play a critical role in surveillance, prevention efforts and the diagnosis and monitoring of treatment of major diseases including HIV/AIDS, tuberculosis and malaria. However, many countries have weak national systems, suffer from rudimentary procurement and supplies systems, present inequities between urban and rural areas and lack a suitable infrastructure and human resources. As a result, the quality of laboratory performance is variable and equipment is often either inappropriate or not maintained.

Insufficient numbers and a high turnover of skilled staff are a reality in many countries. Hence, there is a continuous need for training.

Solutions

EHT develops tools for benchmarking laboratory and diagnostic services to assist in the development of national policies and guidelines on laboratory and diagnostic services and in planning, implementation and evaluation.

EHT assists in the strengthening of the National Regulatory Authorities and National Reference Laboratories. EHT supports the establishment of mechanisms to monitor the quality of performance of laboratory and diagnostic services, including external quality assessment schemes, audits and accreditation.

Information and guidelines on the selection of high quality diagnostics and laboratory equipment are made available to countries. The WHO bulk procurement scheme is facilitating wider access to these products through lower prices.

MEDICAL DEVICES AND EQUIPMENT

Challenges

Despite the billions of dollars spent each year on an ever-increasing array of medical devices and equipment, the majority of countries still do not recognize the management of devices as an integral part of public health policy. Around 95% of medical technology in developing countries is imported, much of which does not meet the needs of national health care systems. Over 50% of equipment is not being used, either because of a lack of maintenance or spare parts, because it is too sophisticated or in disrepair, or simply because the health personnel do not know how to use it. This has far-reaching implications for the prevention of disease and disability and invariably leads to a deplorable waste of scarce resources.

Solutions

EHT offers assistance in the establishment of national systems for the selection, procurement, use and disposal of medical devices that meet

international quality and safety standards. Such systems must be based upon needs assessment. In particular, the National Regulatory Authority must be effective, with legislation and policies to cover each stage in the life span of a medical device. This includes, as a priority, both the development of a database of authorized products and suppliers and a requirement that all medical devices meet international standards.

EHT encourages the establishment of national management of medical devices programmes to ensure that trained personnel, facilities and standard operating procedures are in place, with systems for preventive maintenance and repair of equipment. EHT products include policy and procurement guidelines, rapid assessment tools and training programmes for different types of health professional. Among medical devices, injections have been the focus of special attention because of the burden of disease associated with the unsafe use of syringes and needles.

DISTRICT HOSPITAL SURGERY

Challenges

Essential surgical care at the first referral level of health facility is a major priority. Injuries and pregnancy-related complications are the two leading causes of death, accounting for 12% and 18% of the global burden of disease, respectively. Worldwide, 60% of pregnant women and about 43% of children under 5 years of age are anaemic, with the highest estimated prevalence in Africa and Asia, resulting in serious consequences for surgical and anaesthetic care. The majority of the world's poor live in rural areas. Death and disability due to injuries and pregnancy-related complications often result from a lack of facilities and trained human resources to give prompt appropriate care in rural health facilities.

Solutions

EHT assists countries to develop national policies and plans for basic requirements to be in place for essential emergency surgical services and with health education and training for doctors, nurses and paramedical staff on best practices and effective methods of intervention in the management of trauma, pregnancy-related complications and anaesthesia.

EHT develops best practice guidelines, protocols and e-learning tools to monitor and evaluate the appropriate use of essential emergency procedures and equipment for patient safety. EHT has already issued guidance on the procurement and maintenance of essential emergency equipment for procedures at the first referral level of health facility.

TRANSPLANTATION

Challenges

Cell, tissue and organ transplantation have the capacity to save lives and restore essential functions in circumstances when no medical alternative of comparable effectiveness exists. The procurement of human material for transplantation raises ethical concerns such as the risk of commodification of the human body. Access to basic transplantation, such as cornea or kidney, needs to be developed in many countries. Given the potential risk of transmission of animal pathogens, the promises of xenotransplantation need to be confirmed through carefully monitored trials involving international cooperation.

Solutions

EHT helps countries in implementing care using transplantation adapted to their needs following internationally recognized principles on ethics, safety and efficacy.

EHT assists Member States to develop evidence-based national policies on cell, tissue and organ transplantation.

EHT provides standards and principles of good practices and quality management systems to ensure the safety and quality of human material for transplantation.

EHT helps countries to develop surveillance mechanisms for the safety of the living donor and the success of transplantation in the long term for the recipient.

EHT supports vigilance mechanisms to ensure that, in particular, xenotransplantation trials are carried out under the oversight of health authorities.

KEY INITIATIVES FOR ESSENTIAL HEALTH TECHNOLOGIES

Cutting across technologies

At one extreme, technologies can be chosen to address one specific cluster of health problems (such as conditions associated with infectious diseases) while, at the other extreme, a technology can serve as a tool to address virtually all problems (e.g. information technology). Regardless of the problem or the technology, when a country wishes to engage in the use of a technology, it faces the challenge of how to get started.

For 2004-2007, EHT has chosen three examples of how technologies may span public health issues as key initiatives for its advocacy work and the development of support products.

LISTS OF ESSENTIAL MEDICAL DEVICES

Background

Medical equipment represents a significant proportion of national health care expenditure. However, many facilities, such as district hospitals, continue to lack the basic technologies they need to provide quality care to their patients, invariably because equipment is unavailable, inoperative, misused or simply inappropriate. Appropriate procurement policies and practices are fundamental to ensuring access to medical devices and to guide their rational use. In the same way that the WHO model list of essential medicines has been the keystone of the development of national medicine policies, EHT will develop a model list of essential medical devices.

Activities

Model lists of essential equipment will be developed to address various country needs, including the level of health care (from primary care to referral hospital) and the discipline (e.g. surgery, blood transfusion). Guidance will be offered to assist countries in establishing their own national lists of medical devices to support appropriate use.

PREVENTION OF HEALTH CARE-ASSOCIATED HIV INFECTIONS AND OTHER NOSOCOMIAL INFECTIONS

Background

Approximately 10% of all new HIV infections may be caused by the transfusion of infected blood, unsafe injections or other unsafe skin-piercing procedures. These infections are preventable with simple, effective interventions.

Activities

In 2004-2007, EHT will offer countries a toolbox of materials and technical support to strengthen their capacity to prevent the transmission of HIV and other nosocomial infections in health services. Key interventions address the establishment of nationally coordinated blood transfusion services that can provide safe and adequate supplies of blood, the safe and appropriate use of injections and universal/standard precautions. Essential procedures for these interventions also form part of the Essential Health Technologies information package. In addition, EHT serves as the secretariat for the Safe Injections Global Network (SIGN).

INFORMATION TECHNOLOGY FOR HEALTH CARE

Background

The need to develop and organize new ways of providing more efficient health care services and major advancements in information and communications technology have resulted in the increased use of e-health applications over the past decade. The availability of e-health technology to facilitate medical care, irrespective of distance and the availability of medical specialists on site, makes it attractive to the health care sector.

Activities

EHT's information communication technology activities are managed under its information technology resource centre (ITRC) with the purpose of strengthening access to health information management through improved information systems. It maintains the EHT website which provides comprehensive access to EHT products and activities, including EHT's packages of standards, guidelines and training materials. Much of this material is supported by a wide variety of multimedia products. EHT is specifically dedicated to meeting Member States' requests for e-learning tools.

RESOURCES AND THREATS

EHT is staffed by highly motivated individuals. However, for several of its core activities, it is, unfortunately, thinly staffed. This, together with rather weak extrabudgetary funding for the department up to 2003, sets a clear limit to the number of country-prepared proposals that can be funded and supported under the programme if the resources available are unchanged during the implementation of the 2004-2007 strategy. Successful resource mobilization is a prerequisite, as well as an overriding challenge, for the programme to achieve its planned outcomes.

EHT's anticipated budget and resources for 2004-2007 are shown below, based on a projection of current allocations and donations (Figure 1). Figures 2 and 3 show how the current budget is spent. Figure 4 shows the expected effect of an annual 10% reallocation (40% over four years) of extrabudgetary resources towards the regions and Member States as a result of the new country focus of the EHT strategy.

Figure 1 EHT Resources 2004–2007

Percentage and US$ thousand

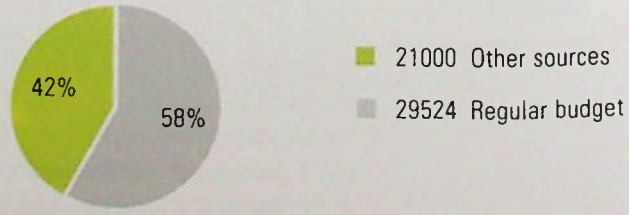


Figure 2

EHT Resources 2004–2005: Regular Budget
Level at which estimated percentage spent

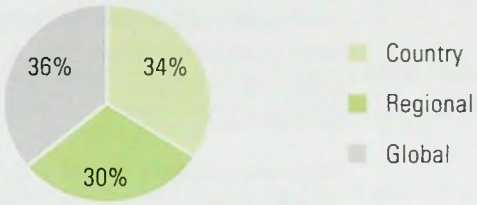


Figure 3

EHT Resources 2003 – Other Sources
Level at which estimated percentage spent

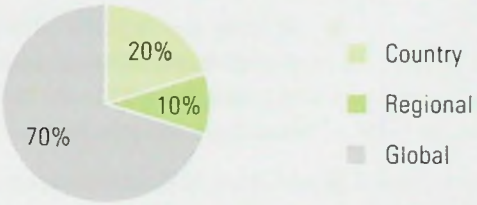
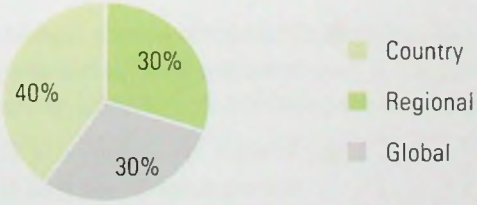


Figure 4

EHT Resources 2007
Level at which estimated percentage to be spent



WHAT WILL EHT HAVE ACHIEVED BY 2007?

The EHT vision

Today there is a fairly low and unarticulated perception in many Member States of the role that health technologies can play in prevention, health care and the establishment of cost-effective health systems.

By 2007, EHT expects to have assisted Member States to reach or partly reach a safe and reliable level of health service, as defined in the EHT basic operational frameworks, and to set and achieve clear, concrete goals and milestones for their health services that fall under EHT's programme.

Important outcomes of EHT activities will be that countries will have closed a substantial number of gaps in their health care services. Key indicators of these outcomes include the following.

- At least six additional countries will have established nationally coordinated blood transfusion services with quality systems in all areas.
- At least two regional networks will have been established to strengthen the technical capacity of National Regulatory Authorities to assure the quality and safety of blood products and related *in vitro* diagnostic procedures.
- At least 10% of the countries in each WHO Region will have strengthened their technical capacity and improved the quality and safety of, and access to, appropriate diagnostic support and laboratory services.
- At least one training centre for improving diagnostic imaging services will be operational in each WHO Region.
- At least one country in each WHO Region will have completed an assessment of the National Regulatory Authority in the area of medical devices and developed a follow-up strengthening plan.
- At least two countries in each WHO Region will be using EHT training materials and tools to improve the technical skills of health personnel in the safe use of essential emergency procedures and equipment at first referral level.

- 10% of countries in each WHO Region will have implemented a national policy and developed legislation to assure the ethics, safety and quality of cell tissue and organ transplantation practices.
- At least one country in each WHO Region will have piloted the WHO model list of essential medical devices.
- At least one country in each WHO Region will be implementing a national plan for the prevention of health care-associated HIV infection.
- At least 10 countries will have established appropriate e-health components in their health care systems.

As a result of the changes of the way in which EHT will be operating:

- **There will be a progressive reallocation of resources in support of country-prepared project proposals, aiming at achieving this level**
- **EHT will evolve as a needs-driven project-based unit in the sense that most of its activities will come out of proposals generated in Member States and not by WHO staff members.**

EHT will be one coherent programme across all levels in WHO and will have achieved improved efficacy through harmonized, transparent and streamlined procedures, focusing particularly on direct end-user benefits.

TOWARDS THE 2007 VISION: YEAR-BY-YEAR EHT MILESTONES AND INDICATORS

Pending the concrete submission of project proposals by Member States and projected activities for the development of support products, specific annual EHT milestones (targeted outputs) and indicators of the adoption of these outputs by Member States (indicators of outcomes) are shown on pages 24-31.

2004

BLOOD TRANSFUSION SAFETY	Milestones	Implementation of the Quality Management Programme in at least six additional countries
	Indicators	Number of countries meeting defined criteria for basic quality systems
BLOOD PRODUCTS AND RELATED BIOLOGICALS	Milestones	Initiation of at least one Regional Network project to provide technical assistance to National Regulatory Authorities (NRAs) for control of blood products and related biologicals
	Indicators	Number of National Regulatory Authorities involved in Regional Network activities

2005	2006	2007
Training programmes in all WHO Regions on establishing blood donor programmes based on voluntary non-remunerated donation	Training strategies and materials on testing for transfusion-transmissible infections introduced in 24 additional countries	Introduction of guidelines and tools to support the national coordination of blood transfusion services in at least six additional countries
Number of countries with 50% voluntary non-remunerated blood donation	Number of countries with 100% testing for HIV and HBV and 50% testing for HCV	Number of countries meeting defined criteria for national coordination of blood transfusion services
WHO requirements for the collection, processing and quality control of blood, blood products and plasma derivatives updated	Second Regional Network of NRAs for control of blood products established	At least one WHO International Biological Reference Material established for blood safety and related *in vitro* diagnostic clinical technology or blood products and related substances used in the therapeutic field
Number of countries adopting the WHO Requirements	Number of NRAs for blood products involved in Regional Network activities	Number of countries involved in WHO collaborative studies and using WHO International Biological Reference Materials

2004

LABORATORIES	Milestones	Development of training materials and provision of training therapy in all regions on CD4 technologies for monitoring HIV/AIDS ARV
	Indicators	Number of countries implementing CD4 technologies for monitoring HIV/AIDS ARV
DIAGNOSTIC IMAGING	Milestones	Initiation of research and development project with industry on digital World Health Imaging System for Radiology (WHIS-RAD)
	Indicators	
MEDICAL DEVICES AND EQUIPMENT	Milestones	Assessment of at least one National Regulatory Authority in the area of medical devices
	Indicators	Number of countries with completed assessments and follow-up plans

2005	2006	2007
Technical information and guidelines on selection and procurement of diagnostics and equipment disseminated in all WHO Regions	Updated agreement for bulk procurement of HIV/AIDS and other diagnostic technologies at affordable prices	Expansion of external quality assessment schemes (EQAS) to an additional 30% of countries
Number of countries using the information and guidelines	Percentage savings made in US$ as compared to general market prices	Percentage of laboratories with improved performances in EQAS and other assessment tools
Designation and support of at least three training centres for diagnostic imaging	Feasibility study on teleradiology systems undertaken in WPRO and AFRO	Introduction of training manuals in all WHO Regions
Number of countries meeting defined criteria for diagnostic imaging services	Recommendations on use of teleradiology	Number of countries using the manuals in training programmes
Piloting of Essential Healthcare Technology Package (EHTP) in selected countries in each WHO Region to match evidence-based interventions with equipment needs	Piloting of Essential Healthcare Technology Package (EHTP) in one additional country in each WHO Region	Completion of an assessment of the National Regulatory Authority in the area of medical devices and a follow-up strengthening plan
Number of countries using the EHTP	Number of countries using the EHTP	Number of countries with completed assessments and follow-up plans

2004

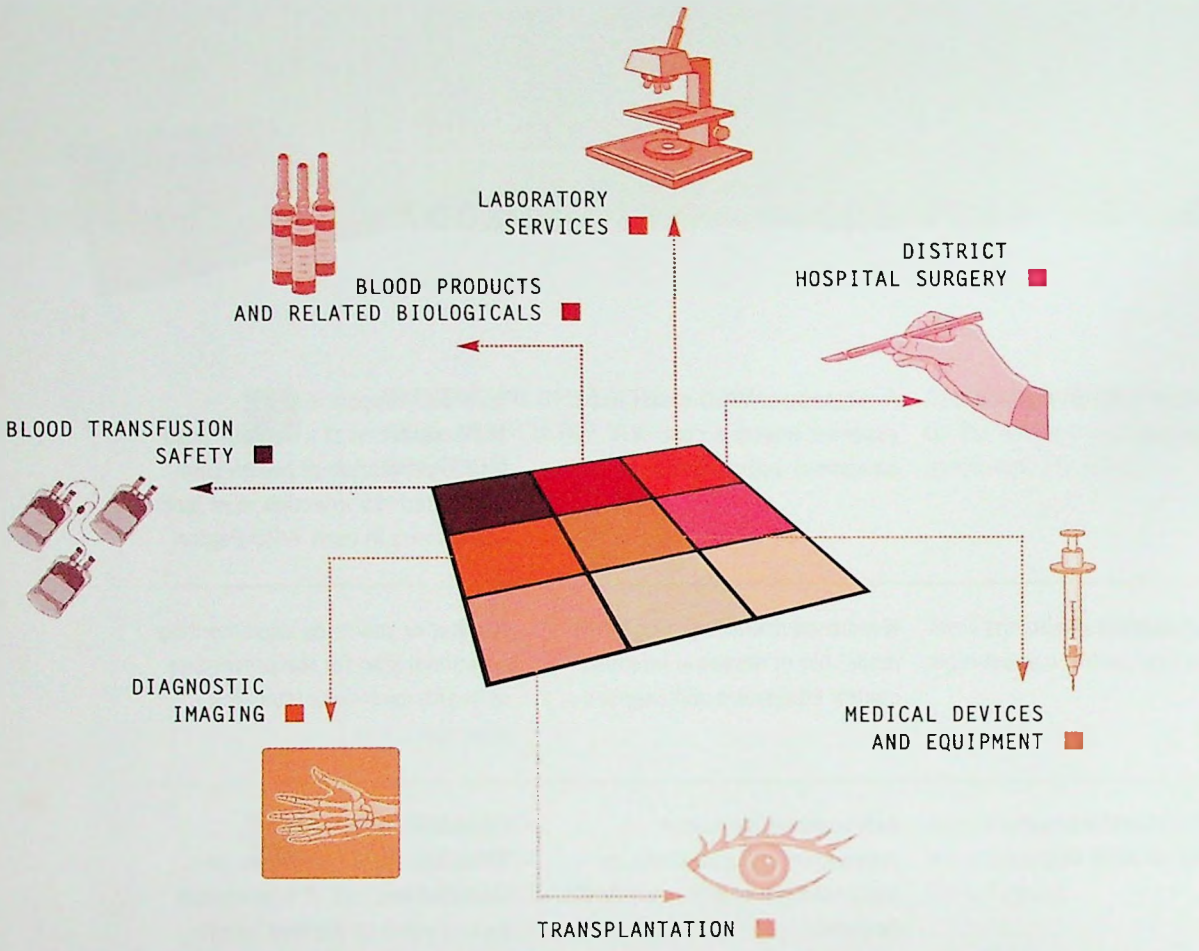
DISTRICT HOSPITAL SURGERY	Milestones	Introduction of training tools, including list of basic essential emergency equipment, in at least three countries
	Indicators	Number of countries using training tools
TRANSPLANTATION	Milestones	Essential tools for a global network for surveillance of xenotransplantation in place
	Indicators	Number of countries involved
LISTS OF ESSENTIAL MEDICAL DEVICES	Milestones	Completion of systematic review of existing lists of medical devices
	Indicators	Evaluation report on existing lists

2005	2006	2007
Introduction of training materials for emergency care (including oxygen) at first referral level of care in at least three additional countries	Introduction of emergency care training materials in at least three additional countries	Introduction of revised manual on surgery and anaesthesia in district hospitals in at least six countries
Number of countries using training materials	Number of countries using training materials	Number of countries using revised manual on surgery and anaesthesia in district hospitals
Development of guidance material for legal framework, policy making, regulatory oversight and technical aspects of basic transplantation activities in low-income countries	Development of guiding principles for ethics, safety and quality in transplantation and core standards for cell tissue and perfusable organ transplantation	Significantly increased number of countries with access to basic transplantation
Number of countries using guidance material	Number of countries using core standards as a basis for national standards	Number of countries with access to basic transplantation
Availability of the draft WHO model list of essential medical devices	Availability of final WHO model list of essential medical devices	Piloting of WHO model list of essential medical devices in at least one country in each WHO Region
Review of draft model list by a meeting of experts	WHO model list of essential medical devices adopted by interested parties	Number of countries piloting the WHO model list of essential medical devices

2004

PREVENTION OF HEALTH CARE-ASSOCIATED HIV INFECTION	Milestones	Development of WHO model policy for the prevention of health care associated HIV infection
	Indicators	WHO model policy approved by all regions
INFORMATION TECHNOLOGY FOR HEALTH CARE	Milestones	Availability of toolkit of EHT materials in CD-ROM format in all WHO Regions
	Indicators	Number of countries using EHT Toolkit

2005	2006	2007
Availability of a WHO infection control manual	Availability of WHO model list of essential infection control equipment and supplies	Technical support in the implementation of a national plan for the prevention of health care-associated HIV infection in at least one country in each WHO Region
Number of countries using the WHO infection control manual	Number of countries using WHO model list of essential infection control equipment and supplies	Number of countries implementing a national plan for the prevention of health care-associated HIV infection
Availability of EHT e-health package in all WHO Regions	Availability of technical information and guidelines on establishing e-health in all WHO Regions	Availability of technical information and guidelines on selection and use of information technologies to improve health care in all WHO Regions
Number of countries using EHT e-health package	Number of countries adopting e-health	Number of countries using guidelines



MODEL LIST OF ESSENTIAL MEDICAL DEVICES

PREVENTION OF HEALTH CARE ASSOCIATED HIV INFECTIONS

INFORMATION TECHNOLOGY IN HEALTH CARE

World Health Organization

Essential Health Technologies
E-mail: eht@who.int
Fax: +41 22 791 48 36
www.who.int/eht

TOWARDS A WHO MODEL LIST OF ESSENTIAL MEDICAL DEVICES

THE NEED FOR A POLICY

Medical devices cover a wide range of consumables and equipment, from simple tongue depressors to complex haemodialysis machines, although they exclude infrastructure, such as buildings or power supplies. They are used at all levels of health services and often require substantial capital investment. The right choice of medical devices is crucial to health services and has implications in terms of patient care and in the prevention of disease, disability and death. Yet the management of medical devices is too often relegated to a procurement issue rather than a public health policy requirement.

THE EFFECTS OF INAPPROPRIATE MANAGEMENT

The absence of policy and mismanagement of medical devices can result in infection, injury or death to the patient – or the user – of medical devices. The importance of ensuring patient safety was the focus of World Health Assembly resolution WHA 55.18. Safety of services is an integral part of the quality management of health systems. Safety is also needed for health products, namely medicines, vaccines, blood and medical devices.

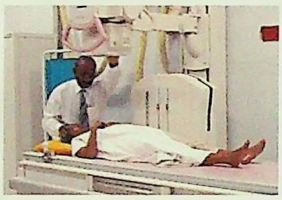
Department of Essential Health Technologies

A WASTE OF PRECIOUS HEALTH CARE RESOURCES

To fight major diseases of poverty, ministries of health are faced with the challenge of scaling up close-to-client services to deliver essential health procedures. The gap between the rich and the poor is also a gap within many developing countries. Medical devices represent a high proportion of health care expenditure[1] and are frequently too expensive for the poor. Despite this investment, information may be unavailable regarding their use and their maintenance and ministries of health often lack a standardized development plan or even an awareness of the medical devices available in the country.

[1] *The global market for medical devices is estimated to reach US $260 billion by 2006 (WHO internal document, 1998 estimation)*

WHAT IS AN ESSENTIAL MEDICAL DEVICE?



Essential medical devices are those that meet the priority health care needs of the population. They are selected with respect to their public health relevance based on their efficacy, safety and cost-effectiveness. A static list of medical devices is neither feasible nor useful. Nonetheless, evidence shows that a template list of essential medical devices can assist countries to plan and manage their needs for health care delivery. The relevance and public health benefit of this approach has been documented through 25 years of implementation of the WHO model list of Essential Medicines.

AN EVIDENCE-BASED PUBLIC HEALTH CONCEPT

The framework to define a model list of essential medical devices is to

1) start from major diseases of poverty;
2) define appropriate health interventions; and
3) list the essential medical devices that will be required for these interventions.

In summary, this is an evidence-based, public health concept where health conditions define which devices are needed, rather than a marketing approach where the availability of new devices justifies new markets.

Selection criteria

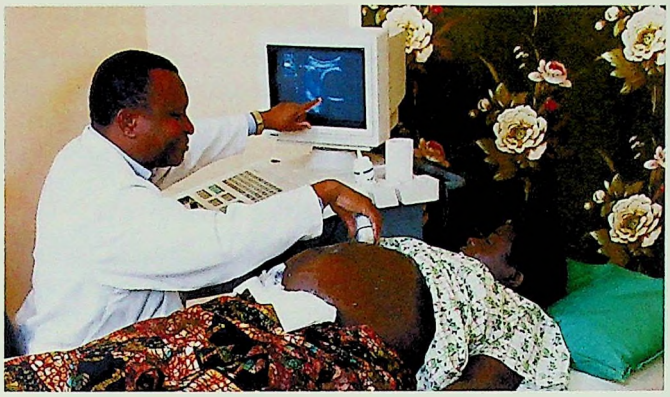
The following criteria will guide the development of an evidence-based list of essential medical devices.

- Devices should be **necessary** to the implementation of a cost-effective health intervention
- Devices should be **effective**
- Devices should be **safe**

Levels of health care and specific health programmes

The WHO model list of essential medical devices will take into account both the level of health care service delivery (e.g., primary care, district hospital and referral centres); and specific public health programmes and initiatives (e.g., safe motherhood, district surgery, immunization, blood transfusion services). These will be addressed in various subgroups of the master list.

List of essential medical devices as an integral element in the national strategy for medical technology



A list of essential devices at the heart of a national policy on medical devices

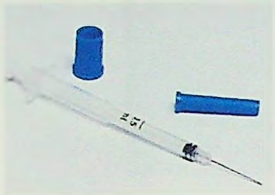
A national strategy for medical devices should be based on a strong policy, within an adapted regulatory framework. Once consensus has been reached over what set of medical devices is essential, assistance can be focused to:

1) Ensure the quality and safety of the devices through norms and standards enforced through national regulations and global vigilance systems;
2) Increase access through tools that facilitate procurement and supply management;
3) Improve safe, cost-effective and rational use through technical guidance and training.

Process to formulate a WHO model list of essential medical devices

The process used to formulate the list will be explicit, transparent and consultative through an engagement of key partners (e.g., UNICEF, World Bank and non-governmental organizations). This list will be based on evidence, linked to health outcomes, operational at different levels of health care, include complementary sections (e.g., infection control package) and be adaptable to the morbidity profile of each country.
Key steps include:

1. **Formulation and review of existing lists**
   Lists that exist in WHO (e.g., WHO emergency health kit, medical devices for surgical procedures at first referral level of health care facility) or with selected partners (e.g., WHO/UNDP Compendium of Basic Specifications for Emergency Relief Items, UNICEF Supply Catalogue 2003) will be reviewed for audience, content and the process used to develop them. First, the Department of Essential Health Technologies will create a repository of all these lists. Second, mechanisms to update them will be explored.
2. **Development and discussion of a blueprint of essential lists**
   A blueprint will be prepared of medical devices required at various levels and categories of health care provision and circulated for peer review. The result will be a draft list of essential medical devices that includes interventions of special public health importance.
3. **Monitoring and evaluation**
   WHO will organize annual meetings of experts to review the lists for comments and suggestions before their official clearance and publication.



THE WHO BASIC OPERATIONAL FRAMEWORK

The WHO Department of Essential Health Technologies assists countries to achieve a safe and reliable level of health services in a variety of health technologies through its Basic Operational Frameworks. Below is a summary of the requirements for countries to attain this level of health service for Medical Devices and Equipment, and the products and services that WHO can make available to support this goal.[2]

It is easy to overlook how medical devices accompany us daily throughout our lives. Whether to monitor the development of an unborn child, protect an infant from measles, diagnose and treat today's killer diseases or to perform keyhole surgery, virtually no health intervention can take place without recourse to a medical device.

Despite huge investment, the majority of developing countries do not recognize the management of medical devices as a public health priority. This often means that products are unwittingly produced and procured that do not meet international standards of efficacy, quality and safety. It is also why over 50% of the medical equipment in developing countries is not functioning, not used correctly or not maintained. Some equipment is even unnecessary or inappropriate to fulfil its intended purpose. The misuse of medical devices is another major concern. Each year, for example, unsafe injection practices cause an estimated 260,000 new – and avoidable – HIV infections.

EHT will focus on strengthening national capacity to regulate medical devices so that they meet high quality and safety standards and are used appropriately. Efforts will also concentrate on making appropriate devices and equipment more available and affordable.

Policy

TO BE IN PLACE IN COUNTRIES

Medical devices and equipment are often seen as a mere procurement issue, while they are at the core of public health interventions for the prevention of death or disability or for managing the diseases of poverty. To broaden this vision, a clear policy on medical devices and equipment is required. Key elements include:

- National policy and plan for medical devices
- National policy for the safe and appropriate use of injections
- National Regulatory Authority functional in medical devices, empowered with legislation
- National coalition for injection safety and infection control
- National budget for devices and injection safety, using costing, budgeting and financing
- Assessment of needs
- Inventory of suppliers and medical devices in use

[2] *The Basic Operational Framework for Medical Devices and Equipment can be found on the Internet at www.who.int/eht*

WHO PRODUCTS AND SERVICES TO SUPPORT POLICY REQUIREMENTS

- Aide-Mémoires on Medical Devices
- Medical Device Regulations: Global Overview and Guiding Principles
- *Managing an Injection Safety Policy* document
- Rapid Assessment Tools and Global Databases
- National Regulatory Authority Assessment and Strengthening Tools
- Secretariat of Safe Injection Global Network (SIGN) Alliance
- Documentation on global burden of disease and cost-effectiveness studies
- Costing tools, including maintenance, spare parts, accessories and replacement

Quality and safety

TO BE IN PLACE IN COUNTRIES

Medical devices and equipment need to be of adequate quality and safety to bring public health benefits without harming patients, health care workers or the community. Thus, regulations should mandate that all devices and equipment, whether imported or locally produced, meet international norms and standards (or WHO specifications in the absence of standards). In addition, the coordination of global and local vigilance networks ensure the management of adverse events. Key elements include:

- Good Manufacturing Practices and quality control for local production of devices
- National procedure for licensing/market clearance
- Pre-qualification of suppliers
- National regulations based on ISO standards or WHO specifications
- Post-market surveillance/vigilance system for alerts, notifications and recalls
- National technology assessment centre
- Introduction of syringes with reuse prevention feature

WHO PRODUCTS AND SERVICES TO SUPPORT QUALITY AND SAFETY REQUIREMENTS

- WHO pre-qualification procedures for medical devices
- ISO standards and WHO performance specifications
- Standardized procedures for alerts, notification and recalls
- Participation in the work of the Global Harmonization Task Force
- Standardized assessment protocols for new medical devices

Access

TO BE IN PLACE IN COUNTRIES

Access to medical devices is not only about adequate resources. It is about managing the supply chain from procurement to local distribution. A list of essential equipment and devices is the keystone of a national system that can ensure appropriate access. Key elements include:

- National list of essential medical devices and equipment
- National procurement procedures
- Joint procurement of injectable substances and injection devices
- National policy for acceptance of donations
- Negotiated pricing
- In country production of essential technologies

WHO PRODUCTS AND SERVICES TO SUPPORT ACCESS REQUIREMENTS

- WHO Essential Healthcare Technology package
- WHO model list of essential medical devices and equipment
- Procurement guidelines
- Guidelines on good donation practices
- Collaboration with industry on fair pricing, R&D and technology transfer

Use

TO BE IN PLACE IN COUNTRIES

Health technologies are only effective if they are used in a safe, appropriate and cost-effective manner. Key elements include:

- National guide for management and use of medical devices
- Standard operating procedures and best practices that cover every stage in the life span of a medical device
- Regular training in the management, use and maintenance of medical devices
- National recommendations for injection safety and infection control
- Communication strategy for safe and appropriate use
- Behaviour change for injection safety and infection control

WHO PRODUCTS AND SERVICES IN SUPPORT OF USE REQUIREMENTS

- Assistance and tools on the management and rational use of devices and equipment
- IEC materials and resource toolboxes
- Best practices standards

BLOOD COLD CHAIN

Blood transfusion is an essential therapeutic intervention. We all may need blood in an emergency, and some of us need regular transfusions. Safe blood, used correctly, saves lives.

The blood cold chain is a series of interconnected activities involving equipment, personnel and processes that are critical for the safe storage and transportation of blood from collection to transfusion. Like any process, the chain is only as strong as its weakest link, and a failure of a link will result in the collapse of the chain. This has potentially fatal consequences for the recipient of the blood, and is why each link must be carefully maintained.

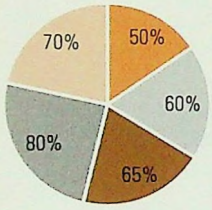
Blood is collected at body temperature, i.e. 37°C. But in order to maintain its vital properties, it must be cooled to below 10°C to be transported, and stored at refrigeration temperatures of around 4°C until use. Hence the term, *blood cold chain*. If blood is stored or transported outside of these temperatures for long, it loses its ability to transport oxygen or carbon dioxide to and from tissues respectively upon transfusion. Other factors of serious concern are the risk of bacterial contamination if blood is exposed to warm temperatures. Conversely, blood exposed to temperatures below freezing may be damaged, and the transfusion of such blood can be fatal.

There are many health workers involved in the establishment and maintenance of the blood cold chain, each playing a vital role to protect the safety of the blood. They include the managers responsible for procuring the equipment, implementing quality control systems and the training of all staff. They also include the many users of the blood cold chain. Among these are blood donor collection staff, clerks packing the blood bags, drivers transporting the batches, laboratory technical staff assuring quality control of the product, engineers and technicians maintaining the equipment, staff trainers, and hospital clinic staff operating blood warmers and ensuring safe blood transfusion to the patient.

The major items of blood cold chain equipment for whole blood are refrigerators and transport boxes. Freezers are also essential for transfusion centres that store plasma. Other vital devices and accessories include standby generators and temperature monitors that can be fitted in refrigerators to warn health personnel as soon as the blood stock approaches unacceptable temperatures.

Breaks in the cold chain happen for many reasons. Far too often, the equipment does not meet standards of quality and safety, is unsuitable for blood storage – common examples are domestic refrigerators and picnic

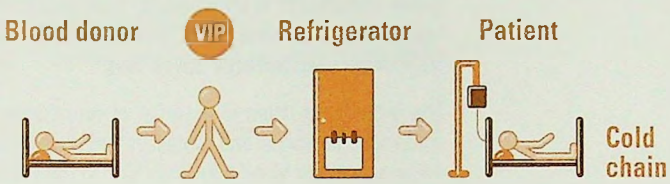
Survey on the status of national blood cold chains shows poor information and resources as major constraints



- BCC not coordinated 50%
- Domestic equipment in use 60%
- No preventive maintenance in place 65%
- Picnic cooler boxes in use 80%
- Scarce information on BCC 70%

boxes, both in wide use in developing countries – or is not properly maintained or repaired. Preventive maintenance prolongs the life of the equipment and significantly decreases safety risks, yet many countries still do not have a cost-effective equipment maintenance programme.

It is estimated that 2% of donated blood is discarded because of a poor blood cold chain. If a unit of safe blood costs US$40, this means a waste of US$80 for every 100 blood bags donated. Preventive maintenance and more appropriate use of the equipment will reduce replacement costs by 50%.



Domestic refrigerators and picnic boxes – unsuitable for storing blood – are still in common use in developing countries

An effective blood cold chain makes blood safer for patients, and reduces the unnecessary waste of donated blood and scarce financial resources.

Bridging the Gap:

EHT TOOLKIT

A selection of tools developed by the WHO Department of Essential Technologies to address country needs for a safe blood cold chain include:

- Guidelines on management and maintenance systems for cost-effective blood cold chain programmes
- International quality standards for all essential equipment in different environmental settings through collaboration with global organizations and industry
- Selection and procurement guidelines on blood cold chain equipment and accessories, including WHO performance specifications
- Development of new technologies, such as a carrier especially designed to transport blood
- Toolkit for preventive maintenance and care of blood cold chain equipment
- Training materials for the appropriate use and preventive maintenance of equipment
- Technology transfer where feasible to improve access to essential equipment and spare parts

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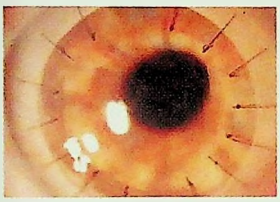
WHY SHOULD WHO BE INVOLVED IN TRANSPLANTATION?

Transplantation is a sophisticated and expensive form of treatment requiring multidisciplinary collaborative work of experts and long-term follow-up. Transplantation would be seen as the least of WHO priorities had it not an unrivalled therapeutic effectiveness and had it not given rise to serious concerns regarding ethics, safety and access at global level.



Corneal transplantation

TRANSPLANTATION, A UNIQUE THERAPEUTIC RESOURCE

Transplantation of human organs, tissue or cells saves many lives and restores essential functions in circumstances where no medical alternative of comparable effectiveness exists.

With progress in immunosuppression over the last 15 years, transplantation has become established as a standard therapy. The shortage of human material for transplantation, however, is a major and growing limiting factor. Today, approximately 70 000 solid organs are transplanted annually, 50 000 of these are kidney replacements and more than a third of these occur in low- or medium-income countries.

Likewise, human tissue transplantation is increasing in both developed and developing countries. In Europe, hundreds of thousands of tissue transplants are performed each year and in 1999 an estimated 750 000 United States citizens received human tissue, twice as many as in 1990. Globally, it is estimated that 120 000 corneal transplantations and 18 000 allogeneic haematopoietic progenitor cell transplantations took place in the year 2000.

CHALLENGES IN TRANSPLANTATION

Meeting patient needs

Patients' needs for transplantation are far from being met in almost all countries and all settings. A very important reason for this is an insufficient supply of human donor material. Procurement practices from deceased donors have failed to achieve widespread acceptance due to limitations caused by cultural and religious beliefs, but also by a lack of public information and education. As a consequence there is a trend to rely increasingly on living donors and an extensive international circulation of tissue for transplantation has emerged.

The case of xenotransplantation

The possibility of using cells, tissue and organs of animal origin is explored as a way of overcoming the shortage of human organs/tissue for transplantation. Clinical trials of xenotransplantation are currently taking place in several countries. This raises public health concerns, for example the risk of transmission of known – or as yet unidentified – animal infections to the public (potentially worldwide). Recommendations from WHO/OECD consultations in 2000 need to be pursued. For example, there is an urgent need for regulatory oversight of xenotransplantation trials at the national level and for international cooperation in xenotransplantation surveillance.

Maintain ethical principles

Improvements in immunosuppression have reduced the need for living donors to be genetically related to the recipient resulting in an increased reliance on unrelated living donors. This calls for greater attention to informed and voluntary consent. Remuneration for material of human origin for transplantation and traffic concerning exploitation of the human being is growing worldwide. Paying for human organs and tissues leads to commodification of the human body and entails misuse. Safeguards need to be established and maintained to ensure that transplantation does not involve commercialization or exploitation.

Reinforce safety

Transplantation carries many risks of transmission of pathogens and diseases. During the last decade several reports have demonstrated transmission of pathogens previously not identified in the context of transplantation, including parasites, bacteria, viruses and prions. Safety measures need to be redefined. Internationally-agreed standards, good practices and quality management systems are essential to maximize not only the safety of the recipient but also of the living donor.

Develop access to transplantation

The immediate cost and complexity of transplantation have often hindered its development in countries with limited resources but, in the absence of transplantation, patients with problems that can be addressed with no other available technologies are left unattended. Basic transplantation, such as cornea or kidney transplantation, can be successfully carried out by countries with limited resources at the national or provincial levels in reference teaching hospitals.

THE CASE OF KIDNEY TRANSPLANTATION

The estimated global incidence of end-stage renal disease is 1.8 million persons/year. The ability to correctly identify these patients is rapidly improving in many countries. Kidney transplantation may make sense in countries with limited health resources for several reasons: epidemiological (younger patients), technical (simplest organ transplantation procedure, fosters tertiary health care improvement and collaborative networks in care) and economic. Indeed kidney transplantation not only yields survival rates and a quality of life far superior to other treatments for end-stage renal disease, such as haemodialysis, but is also less costly in the long run. There is clearly room for progress and better use of health resources.

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PREVENTION OF HEALTH CARE-ASSOCIATED HIV INFECTION

Medical treatment is intended to save life and improve health. For many patients throughout the world, however, the treatments that are prescribed to benefit them actually cause them direct harm and may even result in their deaths.

UNAIDS estimates that, worldwide, there will be 45 million new HIV infections by 2010 if efforts to fight the pandemic are not stepped up. Without efforts to scale up the prevention of health care-associated HIV transmission, up to 4 million of these infections will result from unsafe blood transfusions, unsafe medical injections and other procedures performed in the absence of universal precautions.

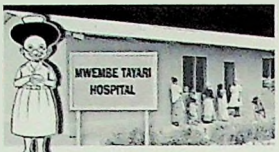
Further, basic universal precautions are required to protect both patients and health workers because, as the SARS outbreak demonstrated, health care facilities become disease amplifiers in the absence of effective infection control measures. Every new infection will, in turn, contribute to a widening pool of infection in the general population.

Each health care-associated infection is preventable - and therefore unacceptable.

WHO has launched the 3 by 5 initiative to provide antiretroviral treatment for three million people living with HIV/AIDS by 2005. The effectiveness of this strategy will be directly undermined without interventions of proven effectiveness to prevent the health care-associated transmission of HIV.

[Photocredit] Lysiane Mauriac

Protecting the vulnerable from HIV infection



SAFETY FIRST

PREVENTING HIV TRANSMISSION DUE TO UNSAFE BLOOD TRANSFUSION

In the absence of any blood safety interventions, up to 300 000 HIV infections could be transmitted annually through unsafe transfusions in the 34 countries with the highest burden of HIV/AIDS, given the prevalence of HIV in the general population (data extrapolated from the WHO Global Database on Blood Safety, 2000-2001).

The majority of these 34 countries require continuing support to meet achievable targets for blood safety. Only 8 have blood programmes based entirely on voluntary non-remunerated blood donation, only 9 achieve 100% screening of donated blood for HIV and, in the remaining 25 countries, the regularity and quality of testing is not assured. Many others require similar support to develop safe blood programmes.

Countries that have implemented well-defined strategies for blood safety have shown how it is possible to prevent the transmission of infection through transfusion, including countries with a high seroprevalence of infection.

Zimbabwe, where 33.4% of the adult population are HIV positive, faces major challenges in ensuring a safe blood supply. Despite extreme constraints, the national blood transfusion service's policy to recruit only blood donors who are at low risk for HIV transmission, coupled with stringent donor selection procedures, results in only 0.25% of units of blood testing positive for HIV among regular donors and 0.89% among new donors. These units are discarded and the donors are excluded from further donation. The risk of HIV transmission through blood is therefore minimal in Zimbabwe.

The strategies used to ensure blood safety in Zimbabwe could be applied in every country if sufficient resources were available to ensure that blood is collected only from donors who are at low risk transmitting HIV, every unit of donated blood is correctly tested for HIV and blood and blood products are given safely and only when no alternatives are available.

PREVENTING HIV TRANSMISSION DUE TO UNSAFE INJECTIONS

In developing and transitional countries, 16 billion health care injections are administered each year - an average of 3.4 injections per person, per year. This high figure, along with evaluation reports indicating the inappropriate use of injections, suggests excessive use of injections to administer medications. Injections are not only overused, but also unsafe because of shortages of single use injection equipment. As a result, the reuse of injection devices accounts for about 260 000 new HIV infections in developing and transitional countries each year (5% of the total).

HIV infections associated with unsafe injections could be prevented if all injectable substances were supplied with matching quantities of single-use injection equipment.

In the early 1990s, world headlines told of Romanian orphans dying of AIDS due to unsafe injection practices. The resulting outcry, both nationally and internationally, created a high level of awareness about the need for injection safety. By 1998, 98% of the population were knowledgeable about the risks of HIV transmission through unsafe injections and the reuse of dirty injection equipment was eliminated. Injection-associated HIV infection is no longer reported from Romania.

Simply increasing the availability of safe injection equipment can stimulate demand and improve practice. Because the cost of safe disposable syringes is low (less than 5 US cents per unit) when compared to the fee paid for receiving an injection (50 US cents, on average), patients are usually willing to pay a little extra for safety once they personalize the risks. In Burkina Faso, a revised supply policy that increased the availability of disposable injection equipment through community pharmacies contributed to a 92% decrease in the reuse of non-sterile equipment without major side-effects in terms of waste management or injection overuse.

PREVENTING HIV TRANSMISSION DUE TO UNSAFE HEALTH CARE PROCEDURES

Worldwide, health workers receive an estimated 170 000 exposures to HIV infection through needlestick injuries each year. These injuries may result in up to 500 HIV infections, mostly in developing countries. Cleaners, waste collectors and others involved in handling blood-contaminated items are also at risk.

Universal precautions are a simple set of effective practices designed to protect health workers and patients from infection with a range of pathogens, including bloodborne viruses. They should be followed in the care of every patient, regardless of their diagnosis and should be applied universally.

COST-EFFECTIVE INTERVENTIONS

The prevention of the transmission of HIV infection in health care settings can be accomplished with only a modest shift in the allocation of resources because blood safety, injection safety and universal precautions are highly cost-effective interventions. Some of the poorest countries in the world have made substantial progress through implementing safe blood strategies, ensuring that all injectable medications are made available with sufficient quantities of single-use syringes and needles and training all staff in universal precautions. A spin-off benefit is that patients are also protected from infection with other bloodborne pathogens, including hepatitis B virus and hepatitis C virus.

A failure to prevent health care-associated HIV transmission not only causes human suffering, but directly increases the number of patients requiring expensive antiretroviral treatment.

EHT'S RESPONSE

EHT has identified the prevention of health-care associated HIV as a key initiative that cuts across the work of the department and supports the work of other WHO departments and agencies such as UNAIDS. In addition to strengthening its existing activities in blood safety and injection safety, it will support Member States in developing and implementing comprehensive national plans for the prevention of health care-associated HIV infection.

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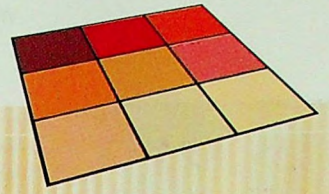


ESSENTIAL DIAGNOSTIC IMAGING

THE DIAGNOSTIC WORK-UP

A systematic and organized approach to a patient leading to a conclusion is what in medical terms is called a *diagnostic work-up*, and is a prerequisite before any medical treatment or intervention can be prescribed.

An incorrect diagnosis, or treatment in the absence of any diagnosis, can have serious, even fatal consequences for the patient. It is therefore in the interests of the patient, the medical profession and the general public that diagnostic conclusions are as correct as possible and that the final diagnosis is based on adequate and reliable medical and scientific procedures.

In the majority of cases, a diagnosis is based on a combination of "patient history" and a medical examination without the need for additional diagnostic procedures. The accuracy of this diagnosis, however, depends on the knowledge, skills and experience of the person making the judgement, i.e. the health staff establishing the diagnosis.

CAUSES OF INADEQUATE DIAGNOSIS

Although no reliable documentation exists, it is generally assumed that in some 20%-30% of cases worldwide, clinical considerations alone are not sufficient to make a correct diagnosis. A child with severe cough and fever, for example, is often diagnosed to have pneumonia, although an X-ray examination may uncover information to indicate a different condition and avoid the expensive and potentially dangerous antibiotics that would otherwise be prescribed.

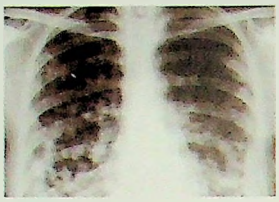
Similarly, sometimes a correct diagnosis is insufficient to prescribe appropriate treatment. For example, it is normally easy to diagnose a limb fracture when combining patient history and clinical signs, but it may be difficult to give proper treatment without an X-ray examination revealing anatomical details such as the position of fragments, distortion etc.

Why is a medical diagnosis necessary?

Medical treatment – and global disease surveillance – depends on a correct diagnosis. This is nothing more than a summary of the patient's complaint, objective clinical signs such as fever or pallor, and physical, social or environmental conditions which may have an influence on the patient's condition.

WHAT IS DIAGNOSTIC IMAGING?

Diagnostic imaging is a means to take pictures of the structure and processes in the body and make them visible or "accessible" to the human eye.



It encompasses the use of so-called ionizing radiation (i.e. X-ray based examinations including CAT scan (computed tomography), or nuclear medicine procedures or "scintigraphy"), ultra-sound, magnetic resonance and a few other highly sophisticated procedures. Practically, however, some 80%-90% of diagnostic problems can easily be solved using "basic" X-ray examinations and/or ultrasound examinations, regardless of the type of hospital or medical setting.

Unfortunately, two-thirds of the world's population has no access to this type of service. When it is available, both the quality and safety of the procedures may be questionable or even dangerous, both to the patient, the health care worker and the public.

In general, such conditions are most prominent in low-income countries with insufficient infrastructure, an unstable political environment and a considerable burden of disease. This is compounded by the need of these countries to allocate scarce resources to basic life-saving issues such as the supply of safe, clean water and nutrition.

Appropriate policies for diagnostic imaging services are therefore rarely seen as a global health priority, or integrated into the national health plan. National health authorities are often simply unaware of the problem. On the other hand, basic diagnostic imaging services are invariably taken for granted in the modern world, leading to insufficient aid and support being channelled to diagnostic capacity in the developing world.

WHO'S IMMEDIATE RESPONSE

Increased political and financial awareness from all sides will have a tremendous impact on the health of all, particularly those in greatest need. Much could be achieved rapidly and effectively by working with countries to improve the skills and capacities of those working in difficult conditions, often using inadequate, old and unreliable equipment in a questionable way. The key to success is *education adapted to local needs.*

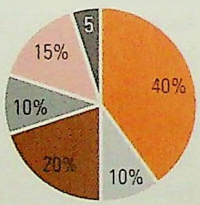
The WHO Team of Diagnostic Imaging, in collaboration with the Global Steering Group for Education and Training in Diagnostic Imaging, is responding to immediate needs for improving quality, safety, quantity and equity of diagnostic imaging services for small and mid-size hospitals in remote areas by:

- assessing short- and long-term needs
- improving medical and technical capacity through centres of excellence to train trainers according to local needs
- supporting local and regional experts to develop and implement train trainers programmes adapted to local needs.
- supporting research into the availability of modern technology for resource-poor settings, such as digital imaging facilities

THE WHO BASIC OPERATIONAL FRAMEWORK

The WHO Department of Essential Health Technologies assists countries to achieve a safe and reliable level of health services in a variety of health technologies through its Basic Operational Frameworks.[1]

Estimated needs for diagnostic imaging



Chest problems	40%
Musculoskelatal problems	10%
Accidents and injuries	20%
Abdominal problems	10%
Pregnency-related problems	15%
Other	5%

Below is a summary of the requirements for countries to attain this level of health service for Essential Diagnostic Imaging, and the products and services that WHO can make available to support this goal.

Diagnostic imaging – the most common and most needed procedures of which are X-ray and ultrasound examinations – plays a critical role in surveillance, prevention and diagnosis of disease as well as in monitoring treatment.

Scaling-up health services in a country implies that essential diagnostic imaging services are available nationwide. However, countries face major challenges in achieving this goal. These include weak national systems, rudimentary procurement and supplies procedures, great disparity between urban and rural areas, a lack of infrastructure and human resources, variable quality of laboratory performance and equipment that is either inappropriate or ill-maintained.

Policy

TO BE IN PLACE IN COUNTRIES

National policies and guidelines related to diagnostics services need to be based on an assessment of the current situation. Such assessments, or benchmarking, are largely missing in developing countries. Road maps for planning, implementation and evaluation of national systems also need to be developed. Key elements include:

- Formalization of government commitment to diagnostic imaging services.
- Development of a national plan to include and implement accreditation.
- National regulations on radiation protection
- National staff training programme
- Commitment of capital and resources to set up, maintain and further develop nationwide diagnostic imaging services according to local needs.

WHO PRODUCTS AND SERVICES TO SUPPORT POLICY REQUIREMENTS

- Aide Mémoire on Diagnostic Imaging
- Essential requirements for imaging technology
- Policy guidelines for diagnostic support for surveillance and treatment
- Tools for assessing diagnostic imaging services

Quality and safety

TO BE IN PLACE IN COUNTRIES

National systems need to monitor the quality, safety and performance of diagnostic imaging technologies appropriate for their country.
Key elements include:

- National regulatory authority on radiation protection.
- Curricula for radiologists and radiological technologists
- Harmonized procurement of equipment and consumables, such as films and chemicals.

[1] *The Basic Operational Framework for Essential Diagnostic Imaging can be found on the Internet at www.who.int/eht*

- Regular measurement of laboratory performance against international standards
- Establishment, implementation and monitoring of quality control programmes adapted to local needs and conditions

WHO PRODUCTS AND SERVICES TO SUPPORT QUALITY AND SAFETY REQUIREMENTS

- Assessment of the quality of diagnostic technologies
- Guidelines on establishing a national quality system
- Training of health care staff in quality and safety standards

Access

TO BE IN PLACE IN COUNTRIES

Access to high quality diagnostic imaging products should be based on an essential list of services and equipment. Key elements include:

- National policy including support to the management of injuries and disease according to needs and medical capacity.
- Nationally negotiated prices through WHO and partner institutions
- Reliable and timely distribution of equipment and consumables
- Lightened tax levies on imports of equipment

WHO PRODUCTS AND SERVICES TO SUPPORT ACCESS REQUIREMENTS

- Guidelines for procurement and supply management systems for equipment and supplies
- Essential equipment list for hospitals at various levels
- Training in equipment maintenance and basic repair
- Negotiations with industry and guidelines on donations
- Facilitated technology transfer
- Training of medical and technical staff according to national guidelines
- Training in handling equipment safely and appropriately
- Upgrading medical and diagnostic knowledge of users

Use

TO BE IN PLACE IN COUNTRIES

Insufficient and high turnover of skilled staff is a reality in many countries. In addition, national curricula for a degree related to diagnostic imaging services may not be up to date with the rapidly evolving diagnostic technologies. Continuous training is therefore essential, especially for those actually carrying out diagnostic imaging activities. Key elements include:

- National and regional Centres of Excellence for Education and Training in Diagnostic Imaging
- Train-the-Trainers programmes adapted to national and local needs
- Train the users of the equipment and services to increase their medical and technical knowledge

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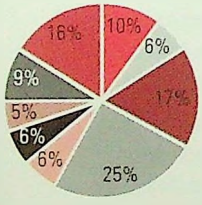
EMERGENCY AND SURGICAL PROCEDURES AT THE FIRST REFERRAL HEALTH FACILITY

Each year one million people are losing their lives because of road traffic accidents and more than half a million women are dying from pregnancy-related complications. In these situations and in many others the ability to apply the correct emergency clinical procedures at the first referral hospital is vital. Young people between the ages of 15 and 44 years account for almost 50% of world's injury-related mortality.

Road traffic injuries in men aged 15-44 years constitute the second highest cause of ill health and premature death worldwide, second only to HIV/AIDS.

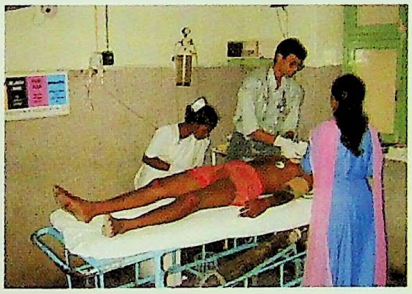
Estimated needs for emergency clinical procedures



Interpersonal violence	10%
War	6%
Other	17%
Road traffic injury	25%
Poisoning	6%
Falls	6%
Fires	5%
Drowning	9%
Self-inflicted violence	16%

For women in low- and middle-income countries, the leading causes of death are haemorrhage, hypertension, sepsis, abortion and obstructed labour. Worldwide, 60% of pregnant women and about 43% of children under 5 years of age are anaemic, with the highest estimated prevalence in Africa and Asia.

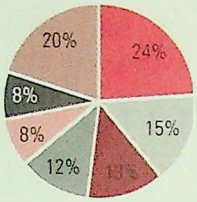
Often, these conditions require life-saving, basic surgical and anaesthetic care that cannot be safely postponed until the patient can be transferred to a distant level of health facility.



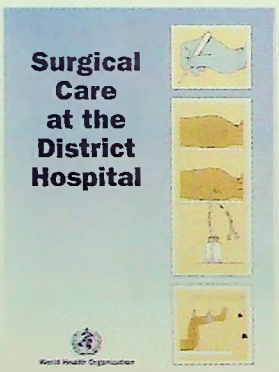
A LACK OF TRAINED STAFF AND EQUIPMENT

Many first referral level (district or rural) health facilities in developing countries have no specialist surgical teams. The few medical, nursing and paramedical staff available have to perform a wide range of clinical procedures, often with inadequate training. Moreover, essential surgical procedures, such as those to treat fractures, caesarean section, appendectomy, abdominal and genital trauma, require anaesthesia services.

Estimated needs for emergency clinical procedures: causes of maternal death worldwide



Severe bleeding	24%
Infection	15%
Unsafe abortion	13%
Eclampsia	12%
Obstructed labour	8%
Other direct causes	8%
Indirect causes	20%



"... Indispensable manual for outlying health centres."
- International Federation of Surgical Colleges

Electronic format: The file is available at: http://whqlibdoc.who.int/publications/2003/9241545755.pdf

The quality of essential surgical care is frequently constrained by inadequate basic equipment to perform simple but vital interventions such as resuscitation, the provision of oxygen, assessment of anaemia, suctions, chest drains, airway support, etc. Anaemia is highly prevalent in developing countries and must be appropriately assessed, as anaemia lowers a patient's resistance to infection and presents a serious risk during an operation. Facilities, as well as basic supplies (e.g. gloves, soap, water) and intravenous fluids are also too frequently lacking.

The fact that the majority of the world's poor live in rural areas with limited access to these facilities, is a serious challenge to public health. For example, a recent survey in a developing country found that 75% of hospitals had an oxygen supply for less than three months of the year.

COST EFFECTIVENESS OF ESSENTIAL SURGICAL PROCEDURES

The economic costs and consequences of traffic injuries are enormous. Some 50% of road traffic fatalities worldwide involve the most economically productive segment of the population, namely young adults. Road casualties threaten to take up about 25% of hospital beds in developing countries.

Two simple and cost-effective measures can drastically reduce the incidence of death and disability due to injuries from road traffic accidents, violence, and complications due to pregnancy. The first measure is to increase the availability of trained human resources. The training of existing rural health facility personnel to perform relatively straightforward, life-saving procedures promptly, safely and appropriately is a crucial element. The second is to ensure that certain inexpensive yet essential equipment is available at the first referral care facility.

BASIC OPERATIONAL FRAMEWORK

The WHO Department of Essential Health Technologies assists countries to achieve a safe and reliable level of health services in a variety of health technologies through its Basic Operational Frameworks. Below is a summary of the requirements for countries to attain this level of health service for Surgical Services at the First Referral Level, and the products and services that WHO can make available to support this goal.[1]

[1] *The Basic Operational Framework for Surgical Services at the First Referral Level can be found on the Internet at www.who.int/eht*

Health personnel at the district or rural health centre are often unable to carry out essential surgical procedures or emergency care, either because of untrained staff, or due to inadequate facilities, equipment and supplies – or a combination of both. Essential equipment is invariably missing, too sophisticated for local needs or not functioning due to disrepair or lack of spare parts.

EHT is focusing on two activities that will have a sustainable impact on the safety and quality of surgical services at the first referral level. Firstly, training to deal safely and promptly with emergency surgical and anaesthesia care; and secondly a model list of essential emergency equipment and supplies to enable countries to channel their resources where they are needed most.

Policy

NEEDED TO BE IN PLACE IN COUNTRIES

A national policy and plan needs to include emergency surgical services to be carried out at the first level of health care for the population.
Key elements include:

- National policy and plan for basic requirements for emergency surgical services.
- Commitment to education and training of health care providers in essential procedures for surgery, obstetrics and anaesthesia.

WHO PRODUCTS AND SERVICES

- Aide-Mémoire on Essential Surgical Care
- Needs assessment tools on procedures and equipment safety

Quality and safety

NEEDED TO BE IN PLACE IN COUNTRIES

To ensure patient safety at all levels, health systems need appropriate infrastructure, training of health personnel and best practice guidelines and protocols to monitor and evaluate services and equipment.
Key elements include:

- Assessment of safety of emergency equipment
- Assessment of intervention of emergency procedures
- Standard operating procedures and records
- Monitoring and evaluation of the quality of procedures and equipment

WHO PRODUCTS AND SERVICES

- Technical cooperation and guidelines for quality systems
- Tools to monitor and evaluate quality and safety of procedures and equipment

Access

NEEDED TO BE IN PLACE IN COUNTRIES

Access to recommendations on basic requirements for essential surgical services need to be available, as well as guidance on the procurement and maintenance of essential emergency equipment. Key elements include:

- Generic list of essential emergency equipment
- Adequate functioning equipment and trained staff at first referral health facility
- Disaster plan for trauma care

WHO PRODUCTS AND SERVICES

- Generic list of essential equipment for resuscitation, acute care and emergency anaesthesia at various levels of health facility
- Guide to procurement and maintenance of equipment
- Best practice protocols on essential emergency clinical procedures, oxygen therapy, anaemia, infections, waste disposal

Use

NEEDED TO BE IN PLACE IN COUNTRIES

Continuous education and training on best practices is central to a well-functioning health facility. Effective interventions in the management of trauma, pregnancy-related complications and anaesthesia will significantly reduce mortality and morbidity in the rural areas of developing countries. Key elements include:

- Training, education and e-learning tools on best practice protocols on emergency procedures
- Preventive maintenance of essential equipment
- Assessment of impact of training

WHO PRODUCTS AND SERVICES

- Comprehensive training manual on *Surgical Care at the District Hospital*
- Guidelines on *Clinical Use of Oxygen and Essential Trauma Care*
- Tool to detect anaemia in resource-poor settings
- E-learning tool on best practices and effective interventions for essential procedures
- Training videos on clinical procedures: wound and injuries management, fractures in adults and children

Publications

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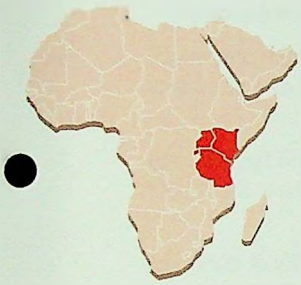
World Health Organization

LABORATORY SERVICES AT THE DISTRICT LEVEL



Laboratory services are essential to health care delivery. They address both preventive and curative activities, i.e. patient diagnosis, and the selection of drugs for treatment. They are also an indispensable tool in the surveillance and control of diseases, since improved disease recognition will improve the accuracy of statistical reporting, and thus effective national health planning.

In countries with limited resources, even rural health facilities can manage the most common diseases and those with outbreak potential by carrying out simple laboratory tests.

Regrettably, a lack of adequate diagnostic laboratory services leads to unnecessary, inappropriate or wrong treatment. This results in longer hospitalization and/or recovery time. The monetary repercussions of this are wide ranging, both from the national and the personal perspective.

The underlying causes of a faulty diagnosis are many. One reason is a general shortage of skilled staff. Other reasons include substandard infrastructure and facilities, and obsolete laboratory procedures due to lack of awareness of current advances.

Similarly, modern equipment is ineffective unless staff are trained to use it, the reagents are affordable and it is properly maintained.

QUALITY MANAGEMENT

Without a quality management programme, the likelihood of a faulty laboratory result – due to a clerical or technical error – is much greater. In addition, poor biosafety procedures may cause hazards to both laboratory staff and the community at large.

Another serious impediment to effective laboratory services is the lack of sustained financing. Annual government funding is often insufficient to meet all running costs. Although user fees have been introduced for clinical and laboratory services at some levels of health care, uncertainties over levels of funding prevent proper planning. Conversely, opportunities for more cost-effective running of laboratory services may not be fully investigated.

AN EAST AFRICAN INITIATIVE

One project which is aiming to overcome these problems involves three countries in East Africa, namely Kenya, Uganda and United Republic of Tanzania.

Based on a review of their laboratory services at district level, they drew up comprehensive National Laboratory Policy Guidelines that address the administrative structure, essential tests, techniques, equipment, facilities, staffing, supply systems and training needs.

In each country, a national quality assurance advisory body has been established, as well as a legal framework to regulate both laboratory premises and laboratory staff. A standard list of essential laboratory procedures is supported by generic standard operating procedures for use in district health services in all four countries.

Key to effective laboratory services are qualified staff. Training on new laboratory tests and updating skills, including record keeping, good laboratory practice, maintenance of equipment and biosafety are envisaged.

Monitoring laboratory performance is another important component, which includes the training of laboratory inspectors and external quality assessment of the essential laboratory tests.

The harmonized approach taken by these countries will facilitate the collection of meaningful data that can be used to monitor the burden of diseases in the region.

The project has already had a great impact on the quality of laboratory services and has allowed the countries to achieve goals that would have been difficult to achieve individually.

Strengthening of laboratory services merits support as it ensures safe and adequate patient care worldwide.

BASIC OPERATIONAL FRAMEWORK

The WHO Department of Essential Health Technologies assists countries to achieve a safe and reliable level of health services in a variety of health technologies through its Basic Operational Frameworks. Below is a summary of the requirements for countries to attain this level of health service for laboratory services at the district level, and the products and services that WHO can make available to support this goal[1].

With the scaling up of interventions against the major diseases of poverty – HIV/AIDS, TB and malaria – the need for diagnostic and laboratory services has never been greater. These technologies play a critical role in surveillance, prevention efforts, diagnoses and the monitoring of treatment. Scaling-up implies that health services are able to deliver essential laboratory and diagnostic support nationwide. However, major challenges need to be faced at country level, including weak national systems, rudimentary procurement and supply systems, disparity between urban and rural areas, lack of infrastructure and human resources, the variable quality of laboratory performance, and equipment that is either inappropriate or ill-maintained.

In addition, scarce resources are often used to buy "high-tech" laboratory equipment that is never used, either because staff are unable to operate it, or due to lack of affordable reagents or spare parts. Conversely, obsolete and less reliable techniques can still be seen, resulting in substandard patient care.

[1] *The Basic Operational Framework for Laboratory Services at the District Level can be found on the Internet at www.who.int/eht*

Policy

TO BE IN PLACE IN COUNTRIES

Tools for benchmarking laboratory and diagnostic services will have to be developed. National policies and guidelines related to laboratory and diagnostics services may have to be reviewed in light of these tools. Road maps for planning, implementation and evaluation of national systems will be developed. Important activities include:

- Government commitment to laboratory and diagnostic support services.
- Development of a national plan
- Registration, regulation /accreditation of laboratory services and staff
- Capital and resources for a national reference laboratory
- Establish laboratory networks for monitoring major diseases
- Professional associations
- Ensure minimum laboratory infrastructure at national and district level (at least one central laboratory).

WHO PRODUCTS AND SERVICES TO SUPPORT POLICY REQUIREMENTS

- Essential requirements for laboratory technology
- Policy guidelines for diagnostic support for monitoring HIV/AIDS ARV therapy
- National diagnostic testing guidelines

Quality and safety

TO BE IN PLACE IN COUNTRIES

National systems need to identify the diagnostic reagents, technologies and equipment that are appropriate for their country. Basic laboratory procedures and testing strategies for specific markers need to be validated and standardized at national level. Quality systems are vital at each level of laboratory services, including mechanisms to monitor the performance of laboratory and diagnostic services. Key elements are:

- Mechanisms to assess and validate diagnostic reagents and procedures
- National Regulatory Authority
- National Reference Laboratories
- National guidelines on basic laboratory procedures and testing strategies
- Quality systems, including standard operating procedures
- Regular measurement of laboratory performance against international standards

WHO PRODUCTS AND SERVICES TO SUPPORT QUALITY AND SAFETY REQUIREMENTS

- Assessing the quality of diagnostic technologies and laboratory procedures
- Standard procedures for laboratories
- Quality management guidelines
- Support to external quality assessment schemes for different laboratory disciplines

Access

TO BE IN PLACE IN COUNTRIES

Access to high quality diagnostic and laboratory procedures and equipment is increased through bulk procurement. Technology transfer and use of local products should be encouraged. Key elements are:

- National selection and validation procedures for diagnostics and equipment
- Standardized national procurement mechanism
- Streamlined procurement and distribution channels
- Negotiated prices through WHO and partner institutions
- Procurement Committee including all key players
- Reduced tax levies on imports of diagnostic reagents and equipment

WHO PRODUCTS AND SERVICES TO SUPPORT ACCESS REQUIREMENTS

- Guidelines for procurement and supply management systems for commodities, including donations and technology transfer
- Essential equipment list for laboratories and diagnostic support
- Bulk procurement at reduced costs

Use

TO BE IN PLACE IN COUNTRIES

Insufficient and high turnover of skilled staff is a reality in many countries. Also national curricula for educational degrees related to laboratory and health care services may not be adapted to the rapid evolution in diagnostic technologies. Hence there is a continuous need for additional training. Key elements are:

- Training of medical and technical staff, including biosafety procedures
- Clinical use of essential laboratory tests
- Appropriate use of laboratory technologies and equipment, including maintenace and quality assurance

WHO PRODUCTS AND SERVICES IN SUPPORT OF USE REQUIREMENTS

- Training of medical and technical laboratory staff in basic procedures
- Training in good laboratory practice and biosafety

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BLOOD PRODUCTS AND RELATED BIOLOGICALS

Since the middle of the 20th century, medical science has found ways to prepare therapeutic products derived from human blood and plasma for the treatment of many life threatening diseases, as well as for complex surgical procedures. Blood consists of cells and fluid, or plasma. Plasma contains a variety of proteins, including albumin, immunoglobulins, clotting factors and protein inhibitors, which have a wide range of important therapeutic functions. Processing blood into various types of medicines – or products – is a highly complex process because unlike conventional pharmaceutical products (which are produced and controlled using highly reproducible physicochemical techniques), blood products and other biologicals are inherently variable due to the nature of the source materials and the methods to test them.

An example of a blood product with essential therapeutic characteristics is anti-haemophilic factor, which is present in large quantities during the freezing and thawing of plasma, and without which people with haemophilia would not survive.

VALIDATED QUALITY ASSURANCE SYSTEMS

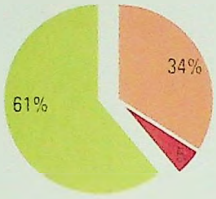
Blood and plasma screening, along with viral inactivation procedures during manufacture and strict adherence to Good Manufacturing Practices, are essential to control the viral safety of blood-derived medical products. With regard to quality assurance systems, difficulties in comparing biological activity at the global level require the use of International Biological Reference Preparations (IBRPs) as essential tools in the validation and assessment of medical products and *in vitro* diagnostic tests.

IBRPs serve throughout the world as a source of defined biological potency expressed in an internationally agreed unit. They are intended to assist regulatory authorities (national control laboratory authority or reference laboratories) and manufacturers in the quality control of specific biological activities and in ensuring the consistency of the production processes.

More generally, they allow a uniform reporting system, helping physicians and scientists involved in patient care, regulatory authorities and manufacturing settings to communicate in a common language.

A single contaminated blood donation can spread infections (HIV, Hepatitis) throughout the world

Assured quality **Risk**



77 million donations

Stringent safety regulations	61%
Deficient regulatory system	34%
Not tested	5%

NATIONAL REGULATORY AUTHORITY

Only blood products and related biologicals of demonstrated quality, safety and efficacy should be used, which is the overall goal of the National Regulatory Authority (NRA). Yet experience gained from regulatory systems worldwide indicates that many countries have significant difficulties in fulfilling their tasks in this field.

NRAs need to be independent with strong political backing and have clear authority to develop and enforce appropriate regulations. They also need to interact closely with medical and scientific institutions and civil society organizations representing health care users and professionals in the countries.

Unfortunately, National Regulatory Authorities in developing countries often do not have access to this type of professional structure. When the structure is available, the technical capacity and expertise may be questionable, or completely absent.

Such conditions are most prominent in unstable political conditions and where there is a considerable burden of disease. National health authorities are often unaware of the problem. On the other hand, the lack of development of appropriate infrastructure is invariably taken for granted in the modern world, leading to insufficient aid and support being channelled to regulatory capacity in the developing world. Yet biological products do not respect national borders.

WHO activities

(SEE BASIC OPERATIONAL FRAMEWORK OPPOSITE)

WHO is responding to immediate needs to improve the quality and safety of blood products and related biologicals by:

- **assessing short- and long-term needs**
- **improving technical capacity of National Regulatory Authorities**
- **promoting the development of regional networks of regulatory authorities, and supporting local and regional experts to implement Train-the-Trainers programmes**
- **providing specific information and International Reference Materials to assure the compliance of manufacturers to quality and safety measures.**

THE WHO BASIC OPERATIONAL FRAMEWORK

The WHO Department of Essential Health Technologies assists countries to achieve a safe and reliable level of health services in a variety of health technologies through its Basic Operational Frameworks. Below is a summary of the requirements for countries to attain this level of health service for Blood Products and Related Biologicals, and the tools and standards that WHO can make available to support this goal.[1]

Blood products and related biologicals used as medicines and *in vitro* diagnostics in human medicine play a major role in improving and sustaining health. These products require specialized expertise of the National Regulatory Authority and coordination across national boundaries.

[1] *The Basic Operational Framework for Blood Products and Related Biologicals can be found on the Internet at www.who.int/eht*

The importance of an appropriate regulatory framework to assure the quality and safety of blood products and related *in vitro* biological diagnostic procedures is unanimously recognized. The control of the quality, safety and consistency of production of these products involves the evaluation of starting materials, production processes and test methods to characterize batches of the product.

Policy

TO BE IN PLACE IN COUNTRIES

A regulatory system supported by adequate legislation and independent from manufacturers is required to ensure that only blood products and related biologicals of proven quality, safety and efficacy are available in the country, whether imported or manufactured locally. Key elements include:

- National Regulatory Authority with a statutory mandate
- Standard setting and controls
- Access to independent laboratory facilities
- Recourse to relevant scientific and medical expertise
- Adequate human and financial resources
- Adoption of internationally recognized recommendations and guidelines

WHO PRODUCTS AND SERVICES TO SUPPORT POLICY REQUIREMENTS

- Aide-Mémoire on National Regulatory Authorities
- WHO Guidelines on Regulation and Licensing of biological products
- International Conference of Drug Regulatory Authorities
- Assessment of regulatory and technical capacity of National Regulatory Authorities

Quality and safety

TO BE IN PLACE IN COUNTRIES

The transmission of blood-borne pathogens such as hepatitis and HIV is of particular concern in the manufacture of human blood plasma products. Safety of these products depends on validated quality assurance systems. The growing exchange of products between countries and continents requires that internationally agreed standards are available. Key elements include:

- Licensing of products, manufacturers and distributors
- Adherence to Good Manufacturing Practices from collection of starting materials to manufacture of final product
- Regular inspection of production and distribution sites
- Laboratory testing and/or lot release
- Assessment of relevant technologies and methods for production and control
- Regional/national biological reference materials for standardization of biological measurements
- Control of clinical trials
- Post-marketing safety monitoring

WHO PRODUCTS AND SERVICES TO SUPPORT QUALITY AND SAFETY REQUIREMENTS

- Aide-Mémoire on Blood Products and related Biologicals
- WHO Requirements, Guidelines and Recommendations to assess quality and safety of blood products and *in vitro* related diagnostic medical devices
- Guidelines on Good Manufacturing Practices
- WHO International Biological Reference Materials (IBRMs) and Reference Panels for the standardization and quality control
- WHO Guidelines for safety monitoring of medicinal products

Access

TO BE IN PLACE IN COUNTRIES

The provision of safe and relevant blood products and related biologicals to meet the needs of populations requires well-designed technical and economical support. A careful assessment of the clinical needs and a clear definition of the type of products required for the appropriate diagnosis and treatment of patients is essential. Key elements include:

- Consensus guidelines, using evidence-based principles, on product needs
- National policy that addresses the clinical needs of the health care system
- National policy on donations
- Oversight through a national authority involving all stakeholders

WHO PRODUCTS AND SERVICES TO SUPPORT ACCESS REQUIREMENTS

- Lists of essential medicines and *in vitro* diagnostic medical devices
- Fact Sheets on Plasma Contract Fractionation programmes and regulatory requirements
- Advice on national strategies for the provision of medicinal products derived from human blood and plasma

Use

TO BE IN PLACE IN COUNTRIES

Regional and international collaboration of regulatory authorities to protect consumers from unsafe and ineffective products and biologicals is a priority. National authorities need to identify areas of weakness, define priorities, and plan and implement corrective measures. Key elements include:

- Needs oriented training based on sound technical advice
- Appropriate dissemination of validated technologies and regulatory decisions
- Dissemination of information for access and appropriate use of IBRMs or national biological reference materials
- Regional collaboration and inter-country information exchange

WHO PRODUCTS AND SERVICES TO SUPPORT REQUIREMENTS FOR USE

- Technical capacity building through education and training
- Harmonized international standardization processes and use of validated technologies
- Advice on the preparation and calibration of reference materials used by manufacturers and NRAs
- Educational regional workshops

Blood Transfusion Safety

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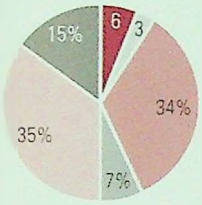
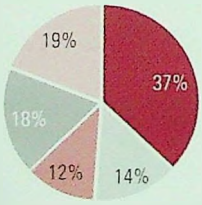
BLOOD TRANSFUSION SAFETY

Estimated use of red cell transfusion in developed countries



Pregnancy-related	6%
Children	3%
Surgery	34%
Trauma	7%
Medical	35%
Haematological	15%

Estimated use of red cell transfusion in developing countries



Pregnancy-related	37%
Children	14%
Surgery	12%
Trauma	18%
Medical	19%

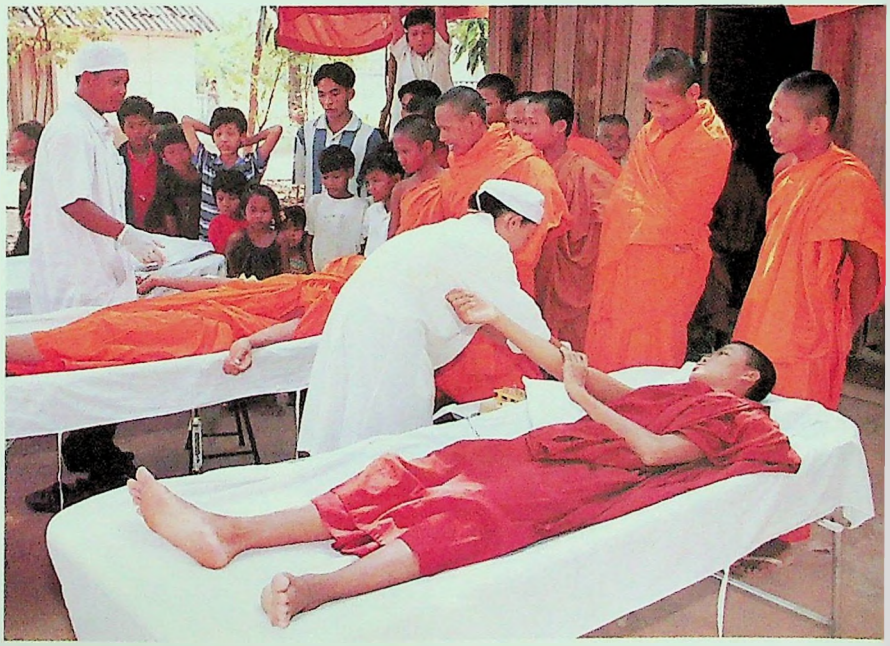
BLOOD SAVES LIVES

Every second, someone in the world needs blood. In every country, surgery, trauma, severe anaemia and complications of pregnancy are among the clinical conditions that demand blood transfusion.

In countries with advanced medical, diagnostic and laboratory services, a large proportion of blood is used in sophisticated treatments requiring a high level of transfusion support, including chemotherapy, open heart surgery, organ transplantation and the management of haematological disorders such as leukaemia, thalassaemia and haemophilia.

The pattern of blood usage is very different in countries where diagnostic and treatment options are more limited, with a much greater proportion of transfusions being given to women with obstetric emergencies and children suffering from severe anaemia, often resulting from malaria and malnutrition.

Whatever the degree of development of the health care system, transfusion is the only option for survival for many patients.



A life saved by safe blood

Blood transfusion is a unique technology in that its collection, processing and use are scientifically based, but its availability depends on the extraordinary generosity of people who donate it as the most precious of gifts – the gift of life.

Therein lies the fundamental challenge: safe transfusion requires not only the application of science and technology to blood processing and testing. It also requires social mobilization to promote voluntary blood donation by sufficient numbers of people who have no infectious diseases that can be transmitted to the recipients of their blood.

THE PROBLEMS

Many patients do not have access to blood when they need it. Of the estimated 80 million units of blood donated annually worldwide, only 38% are collected in the developing world where 82% of the world's population live. The shortfall has a particular impact on women with complications of pregnancy, trauma victims and children with severe life-threatening anaemia. Up to 150 000 pregnancy-related deaths could be avoided each year through access to safe blood.

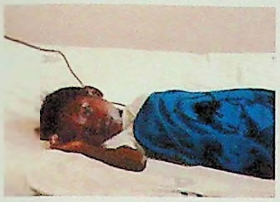
Even where sufficient blood is available, many people are exposed to avoidable, life-threatening risks through the transfusion of unsafe blood. The risk of acquiring HIV through the transfusion of infected blood is virtually 100%. Blood is also an effective means of transmitting hepatitis B, hepatitis C, syphilis, malaria and Chagas disease. About 5% of HIV infections are transmitted by unsafe transfusion as a result of the collection of blood from unsafe donors, irregular or inadequate supplies of materials to test blood for infections, poor laboratory testing procedures, inadequately trained staff, absence of quality systems or unnecessary transfusions.

While blood transfusion can be life-saving, many transfusions are given unnecessarily when the availability and use of simpler, less expensive treatments would provide equal or greater benefit. Not only does this expose patients needlessly to the risk of potentially fatal transfusion reactions, it also widens the gap between supply and demand and contributes to shortages of blood and blood products for patients who really need them.

THE COSTS OF UNSAFE BLOOD

Access to safe blood and blood products cannot be achieved without cost. However, an unsafe or inadequate blood supply is even more costly – in both human and economic terms.

Morbidity and mortality resulting from the non-availability of blood or the transfusion of infected blood have a direct impact on individuals and their families. The transfusion of infected blood also contributes to an ever-widening pool of infection in the general population with far-reaching consequences for society as a whole. Increased requirements for medical and social care, the loss of productive labour and higher levels of dependency place heavy burdens on overstretched health and social services and on national economies.



BLOOD SAFETY – A COST-EFFECTIVE INTERVENTION

A unit of safe blood costs an estimated US$40 to produce, including the recruitment of low-risk blood donors, testing, blood grouping, processing into components and storage and transportation. Compare this with the cost of even only one year's antiretroviral treatment for a patient infected with HIV by transfusion.

An investment in a safe and adequate blood supply is therefore not only a responsibility of governments, but also a cost-effective investment in the health and economic wealth of every nation.

The incidence of transfusion-transmitted infection – and its associated costs – will increase in countries that do not take stringent measures to ensure blood safety. However, effective national blood transfusion services have demonstrated how the implementation of the WHO strategy for blood safety can prevent the transmission of infection and ensure access to safe blood and blood products for all patients requiring transfusion.

WHO strategy for blood safety

- **A well-organized, nationally-coordinated blood transfusion service that can provide adequate and timely supplies of safe blood for all patients in need**
- **The collection of blood only from voluntary non-remunerated blood donors from low-risk populations**
- **Testing of all donated blood for transfusion-transmissible infections, blood grouping and compatibility testing**
- **The appropriate clinical use of blood, including the use of alternatives to transfusion wherever possible, and the safe administration of blood and blood products**
- **Quality system covering all stages of the transfusion process.**

THE BASIC OPERATIONAL FRAMEWORK FOR BLOOD TRANSFUSION SAFETY

The WHO Department of Essential Health Technologies assists countries to achieve a safe and reliable level of health services in a variety of health technologies through its Basic Operational Frameworks. Below is a summary of the basic requirements for blood transfusion safety and some of the products and services available from WHO in support of this goal.[1]

An efficient national blood programme is an essential component of an effective health system. The critical requirement is access to safe and clinically effective blood and blood products for all patients requiring transfusion and their safe and appropriate use.

Blood safety depends on the recruitment and retention of blood donors who are at low risk of transmitting infection, safe blood collection procedures, correct testing for transfusion-transmissible infections, blood grouping and compatibility testing and the appropriate use and safe administration of blood.

[1] *The full Basic Operational Framework is accessible on the internet at www.who.int/eht/.*

Policy

REQUIREMENTS

Consistent quality and safety in the provision, prescription and administration of blood and blood products cannot be achieved where services are fragmented and uncoordinated. National coordination of the blood programme is required to ensure uniform standards at all levels and facilitate economies of scale in testing and processing. Key elements include:

- National blood policy and plan
- Legislation and regulation
- Well-structured blood transfusion service (BTS)
- Specific budget allocation
- Standards for blood transfusion services.

WHO PRODUCTS AND SERVICES

- Strategy for blood transfusion safety
- Guidelines and recommendations
- Technical cooperation
- Collaborations and partnerships in global blood safety
- Guidelines and software on costing BTSs
- Promotion of World Blood Donor Day
- Global Database on Blood Safety
- National needs assessment tool
- Tools for evidence-based practice.

Quality and safety

REQUIREMENTS

The quality and safety of blood provided for patients depends not only on a national quality system for blood transfusion services, but quality in every activity. An effective national quality system requires:

- National quality policy and plan
- Quality officers at national and local levels
- Quality standards
- Documentation system
- Training of all staff
- Assessment of the quality system.

Regular, voluntary non-remunerated blood donors from low-risk populations are the foundation of a safe blood supply. Requirements include:

- National blood donor programme
- Identification of low-risk donor populations
- National criteria for donor selection
- Safe blood collection procedures
- Donor notification and referral for counselling
- Donor records.

All donated blood should be blood grouped and tested for transfusion-transmissible infections (TTI). This requires:

- National strategy for TTI testing and blood grouping
- Evaluation and reliable supply of test kits and reagents.

The preparation of high quality blood components requires:

- Sustainable programme that responds to clinical demands
- Application of good manufacturing practice.

All blood and blood products must be stored and transported correctly to prevent bacterial contamination and maintain viability. This requires:

- Specialized storage and transportation equipment
- Regular monitoring and maintenance of equipment.

WHO PRODUCTS AND SERVICES

- Advocacy documents, recommendations and learning materials
- Training courses
- Regional quality networks
- External Quality Assessment Schemes
- Guidelines, screening strategies, selection criteria and evaluation of test kits.

Access

The provision of safe blood and blood products requires an appropriate infrastructure and an adequate and reliable supply of reagents and test kits. Trained staff and continuing professional development are a prerequisite.

Provision should be made for a rapid response to emerging infections, emergency situations and post-disaster reconstruction.

WHO PRODUCTS AND SERVICES

- Advocacy documents, recommendations and learning materials
- Test kit bulk procurement schemes.

Use

Blood and blood products should be prescribed only to treat serious or life-threatening conditions that cannot be prevented or managed effectively by other means. The appropriate clinical use of blood requires:

- National policy and guidelines on transfusion
- Training of all staff involved in transfusion
- Availability of alternatives to transfusion
- Hospital transfusion committees
- Blood request form
- Blood ordering schedule
- System for monitoring transfusion practice.

The safe administration of blood and blood products prevents avoidable transfusion reactions. This requires:

- Standard operating procedures for bedside transfusion
- Training in bedside transfusion
- Haemovigilance system for monitoring, reporting and investigating adverse events associated with transfusion.

WHO PRODUCTS AND SERVICES

- Advocacy documents, recommendations and learning materials
- Training courses.

Blood Transfusion Safety

Department of Essential Health Technologies
World Health Organization
Geneva 27, Switzerland
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www.who.int/eht
E-mail: bloodsafety@who.int

INFORMATION TECHNOLOGY IN SUPPORT OF HEALTH CARE

The need for new ways to providing more efficient health care services, coupled with major advancements in information and communications technology have resulted in the increased use of the Information and Communications Technology (ICT) applications over the past decade.

ICT in general, and the Internet in particular, can help generate the human capital needed by the health systems. ICT has the potential to revolutionize the way medicine is learned by students and healthcare professionals.

Its role is one of providing support to the human resources generation function by facilitating initial training and continuing education processes in some form –improving access, increasing effectiveness, lowering costs, etc. A study of health telematics projects in fifteen European countries, undertaken by the European Health Telematics Observatory (EHTO) shows that training had a 6% share of all health telematics uses.

WHAT IS HEALTH TELEMATICS?

Health Telematics is a composite term for health-related activities, services and systems, carried out over a distance by means of information and communications technologies, for the purposes of global health promotion, disease control, and health care, as well as education, management, and research for health.

WHAT IS E-HEALTH?

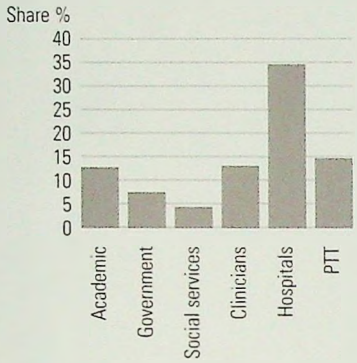
E-health is the combined use in the health sector of electronic communication and information technology (digital data transmitted, stored and retrieved electronically) for clinical, education and administrative purposes, both at the local site and at a distance.

WHAT IS TELEMEDICINE?

The delivery of health care services, where distance is a critical factor, by health care professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interest of advancing the health of individuals and their communities.

Key Actors in Health Telematics in Europe

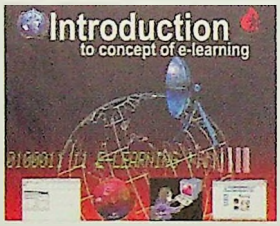
Source: The European Health Telematics Observatory, (EHTO)



ICT activities in the area of telemedicine will be carried out in close collaboration with the Evidence for Information and Policy Cluster. E-Health/Telemedicine should be directed by health needs and not driven by technology. This would be the case for EHT since it would be concentrated to support countries request. E-Health/Telemedicine has to be supported by various categories of stakeholders from the health sector as well as from industry. The situation in Europe is illustrative. There, health telematics activities are driven by a broad spectrum of individual and institutional actors – hospitals (34%), telephone utilities (14%), academic institutions (12%), clinicians (12%), governments (7%) and social services (4%).

In spite of the potential that E-Health/Telemedicine has given the world to improve the quality of health care, a number of barriers, at various levels, would need to be overcome for health systems to take full advantage of these opportunities. These barriers are not uni-dimensional, focusing on technical knowledge as previously thought, but rather a multi-dimensional construct, encompassing technical knowledge, economic viability, organizational support and behaviour modification.

EHT/IT translates material practices, guidelines, protocols and E-learning tools, for health promotion and disease prevention, in areas such as, Diagnostic Imaging, Laboratory disciplines, Medical Devices and equipment, District Surgery, Blood Transfusion Safety, HIV/AIDS Diagnosis, and Transplantation Services.



An important role for WHO/EHT is to continuously monitor developments in relevant fields and countries' readiness for Telehealth, and advise Member States as to when it is most opportune to introduce such services.

EDUCATION AND TRAINING

EHT/IT aims to assist countries by providing evidence-based policy guidance on human resources development with particular focus on increasing global migration of health professionals.

EHT/IT plans and manages the delivery of information technology and telecommunications services, to support the basic operational frameworks.[1]

ITC/EHT TOOLS:

Internet development: EHT Website, rich ICT tool that enhances access to EHT products and activities.

Multimedia Development: ICT management for the development of the appropriate package format of the standards, guidelines and training materials.

E-health/Telemedicine Development: The availability of e-health to facilitate medical care, irrespective of distance and availability of medical specialists in site make it attractive to the health care sector.

Monitoring developments will also enable the Organization to address changes in health care delivery systems in the future, which will be brought about by developments in information and communication technologies, especially in support to developing countries and countries in transition, for which these developments will represent disruptive changes.

[1] *Department Essential Health Technologies, http://www.who.int/eht*

contact us: eht@who.int, Fax.+ 41 22 791 4836

THEME		REQUIREMENTS	IN PLACE			WHO PRODUCTS AND SERVICES	
			Yes	No	In progress		Requested
1 POLICY							
1.1		**National coordination of e-health services**					
	1.1.1	National policy				Aide-Memoire for e-health for healt-care delivery.	
	1.1.2	National e-health plan				Guidelines: Minimum requirements for e-health services	
						Legal Issues	
	1.1.3	Legal framework for protection and transfer of patient data					
	1.1.4	National E-health committee					
	1.1.5	Education Programmes					
	1.1.6	Inventory of applications					
1.2		**E-health for emergencies**					
	1.2.1	Emergency respondness proper plan				Guidelines: Minimum requirenebts for an emergency responsiveness plan.	
1.3		**Adequate resources**					
	1.3.1	Financial					
	1.3.1a	Fiscal allocation					
	1.3.1b	Cost recovery					
	1.3.2	Technical resources					
	1.3.2a	Adequate functioning equipment					
	1.3.3	Adequate number of trained staff					

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THEME		REQUIREMENTS COUNTRY LEVEL	IN PLACE Yes	No	In progress	WHO PRODUCTS AND SERVICES	Requested
2	QUALITY AND SAFETY						
	2.1	**Standards for Patient Care Information Systems' (PCIS)**					
	2.1.1	Hospital Information Systems (HIS)				Report on Review of existing standarisation efforts in EU/World, for HIS.	
	2.1.2	Electronic Patient Record (EPR)				Open Source Reference; Implementation plus tooling of an electronic health record (EHR), based on International Open Standards	
						Smart Cards. Guidelines on developing and implementing a smart cards system	
	2.1.3	Patient Information Systems (PIS)					
	2.1.4	Physician Order Entry (POE)					
	2.1.5	Decision-Support Technique (DST)					
	2.1.6	Medication System					
	2.1.7	General Practitioner Information Systems (GPIS)					
	2.1.8	Data Warehouse					
	2.1.9	Training of all staff					
	2.1.10	Quality assessment system					
		Documentation system for all processes					
	2.1.11	Security				Quality aspects of e-health (Patient safety and Information security)	
	2.2	**Standards for Telematics services**					
	2.2.1	National strategy for Telematics services				Guidelines: Basic steps in Telemedicine	
	2.2.2	A country feasibility study on telemedicine				A country feasibility study on e-Health	
	2.2.3	Telemedicine, tele-education, telematics for health research and telematics for health services management				Study Report Decision trees for patient self-management of Chronic diseases	
	2.2.4	Working description of the techniques					
	2.2.5	Organizational and human capacities					
	2.2.6	Technical Issues				Guidelines in e-referral	
	2.2.7	Health technology assesment					
	2.2.8	Testing of all donated blood units					
	2.2.9	Good Telemedicine practice				Guidelines in training material on problem-solving	

THEME		REQUIREMENTS COUNTRY LEVEL	IN PLACE			WHO PRODUCTS AND SERVICES	
			Yes	No	In progress		Requested
3 ACCESS							
3.1		**Connectivity**					
	3.1.1	E-mail					
	3.1.2	Internet					
	3.1.3	Connnections					
	3.1.4	Video Equipment					
	3.1.5	Computers					
	3.1.6	Smart cards					
	3.1.7	Specific hardware for PCIS					
	3.1.8	Distance learning for trained professional and health workers					
3.2		**Sotfware and Hardware Standards**					
	3.2.1	E-readiness					
	3.2.2	Basic standards for technology readiness					
	3.2.3	Guidelines on adherence to technology standards					
	3.2.4	Protocols for hardware					
	3.2.5	Protocols for software					
	3.2.6	Standards and guidelines of open sources software					
	3.2.7	Benchmarking and comparative studies					
	3.2.8	Technology transfer and investment protocols					
	3.2.9	Computing manufacturing					
	3.2.10	Development and production of component chips					
	3.2.11	Encryption					
	3.2.12	Public software style standards					
	3.2.13	Guidelines on policies for licensing and reimbursement					

THEME		REQUIREMENTS COUNTRY LEVEL	IN PLACE			WHO PRODUCTS AND SERVICES	
			Yes	No	In progress		Requested
4 USE							
4.1.	**Appropriate Technical Use of e-health services**						
	4.1.1	National policy and guidelines on e-health					
	4.1.2	Training of health care workers involved in e-health					
	4.1.3	E-based patient tracking and recording					
	4.1.4	Patient demographics					
	4.1.5	ADT events					
	4.1.6	Diagnosis					
	4.1.7	Radiological images and Laboratory results					
	4.1.8	e-referral					
4.2	**Store and forward image exchange**						
	4.2.1	Tele radiology					
	4.2.2	Tele ultrasound					
	4.2.3	Tele clinical physiology					
	4.2.4	Tele pathology					
	4.2.5	Tele laboratories					
4.3	**Title**	**Tele consultation**					
	4.3.1	Dermatology					
	4.3.2	Pediatrics					
	4.3.3	Densitometry					
	4.3.4	Psychiatry					
	4.3.5	Surgery including laparoscopy					
	4.3.6	Cardiology					
	4.3.7	Psychiatry					
	4.3.8	Decision trees for patient self management of chronic diseases					
	4.3.9	Tele conferencing					
	4.3.10	Distance learning					
4.4	**Title**	**e-learning**				**http://www.who.int/eht/Resource_Centre.htm**	
	4.4.1	Laboratory					
	4.4.2	Diagnostic Imaging					
	4.4.3	Blood Safety and Clinical Technology					
	4.4.4	Injection Safety					
	4.4.5	Surgical Care and Transplantation					
	4.4.6	Medical devices					

D13-27.15

Fifty-seventh World Health Assembly

Technical Briefing on...

e-Health

e-Health for Health-care Delivery and Education

Friday, 21 May 2004 at 13:00 hrs

Room XII Palais des Nations Unies

Geneva, Switzerland

e-Health

e-Health is the use, in the health sector, of digital data that is transmitted, stored and retrieved electronically in support of health care, both at the local site and at a distance. It encompasses three main areas:

- Information for health promotion and awareness, medical education, health and biomedical research, evidence-based medicine and e-learning
- Information for health information systems, monitoring and evaluation, including, disease surveillance, health statistics, and management information systems
- Information for health-care delivery and electronic patients' records, including, diagnosis, treatment, consultation and telemedicine applications

e-Health for care delivery and education

Over the last decade, the need to develop and organize new ways of providing efficient health-care services has been accompanied by major advancements in information and communications technology (ICT). This has resulted in a dramatic increase in the use of ICT applications in health care, collectively known as e-Health. Today the integration of e-Health into the everyday life of health-care workers is becoming a reality in developing as well as developed countries.

e-Health has a tremendous potential of strengthening primary health care by taking medical services to rural and isolated areas where access to trained medical human resources including medical specialists may be extremely limited. When adequately used, applications like telemedicine and electronic patient records are highly cost-effective. They can render travels unnecessary and may effectively break professional isolation.

Effective education including public information on important health issues is another application where e-Health can drastically increase outreach. The Health Academy, recently launched by WHO, is a virtual school of public health which harnesses technology, health information, and education for the good of human development. Its aim is to reach people all over the world and give them the knowledge and know-how they need to protect and improve their health and environment.

Directed at the entire community, the Health Academy illustrates essential public health functions in a language people can easily understand. It creates public awareness of how individuals, families, and communities can benefit from progress in medicine, public health, environmental health, sanitation, and management.

The purpose of the proposed technical briefing is to present current WHO initiatives in e-Health for health-care delivery and education.

For more information

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CHOosing Interventions that are Cost Effective

WHO-CHOICE

www.who.int/evidence/cea

Background information

- General description of WHO-CHOICE
- Background papers and published guidelines/journal articles detailing WHO-CHOICE methodologies & results
- Demography: population size, mortality and birth rates by region
- Health state valuations (between 0-1, where 1 is healthy) for time spent in different states of health or disease
- Unit costs for inpatient, outpatient and health centre care (by region)
- Prices of traded and non-traded goods (by region) for estimating programme and patient costs
- Estimated resource requirements for programme and patient costs

Analytical tools

- CostIt: An adapted package designed to record and analyse intervention costs
- PopMod: A software tool used for evaluating population-level effectiveness of interventions
- MCLeague: A software program that estimates uncertainty around costs and effects
- Contextualization tool: **A software program for use by country analysts to convert regional results to country level estimates. (Available soon)**

Health interventions (completed analyses)

Population-level analysis in 14 epidemiological sub-regions of intervention costs (measured in international dollars), effects (measured in DALYs averted) and cost-effectiveness (cost per DALY averted) for the following risk factors/diseases have been completed:

~~Risk factors~~

- Unsafe water, sanitation and hygiene, indoor air pollution
- Childhood undernutrition
- Iron deficiency
- Cardiovascular disease risk factors
- Addictions: Heavy alcohol use; Tobacco
- Unsafe sex
- Unsafe use of injections in health care

Diseases (data available soon)

- HIV
- Tuberculosis
- Malaria
- Vaccine preventable diseases in childhood
- Maternal health (e.g. safe delivery)
- Mental health (schizophrenia; depression)
- Blindness
- Diabetes and cardiovascular disease treatments
- Cancers

Diseases (planned)

- Chronic lung disease
- Road traffic accidents
- Newborn diseases
- Sensory disorders
- And more....

WHO-CHOICE e-mail address: whochoice@who.int

pneumonia and diarrhoea. Maternal and newborn disorders, malaria, tuberculosis, vaccine preventable diseases are soon to be added, and work is ongoing in other areas including cancers, cardiovascular diseases, injuries, and diabetes.

Can analysts adapt the estimates to their own settings?

Regional databases represent a compromise between a single global database, that is not applicable locally, and the ideal of a separate database for each country, which is not feasible in the short run. However, WHO-CHOICE will provide information allowing analysts to modify the results of the regional databases to their country.

The databases include the raw cost and effectiveness data, as well as the method and calculations that were used to obtain the summary cost-effectiveness ratios. The costing template accompanying all interventions uses an ingredients approach - quantities of resources used and prices are recorded separately. Effectiveness data is presented in a similarly transparent format. Analysts from different countries will be able to modify any of the base assumptions to make them consistent with their own settings.

WHO-CHOICE initiative has developed computer-based tools that are available for use by analysts.

- ✔ PopMod, is a population model used for measuring intervention effectiveness in terms of comparable units across different types of interventions and diseases.
- ✔ The MCLeague, program presents the cost-effectiveness results in a stochastic league table, i.e. explicitly taking into account uncertainty surrounding cost and effectiveness estimates of many interventions at the same time.
- ✔ Cost-It, is used to analyse and report cost data.

What other benefits does WHO-CHOICE offer?

Generalized cost-effectiveness analysis forms the basis of WHO-CHOICE approach[3]. Uniquely, this method allows existing and new interventions to be analysed at the same time. Previous cost-effectiveness analyses have been restricted to assessing the efficiency of adding a single new intervention to the existing set, or replacing one existing intervention with an alternative. Using WHO-CHOICE, the analyst is no longer constrained by what is already being done, and policymakers can revisit and revise past choices if necessary and feasible. They will have a rational basis for deciding to reallocate resources between interventions to achieve social objectives.

WHO-CHOICE allows comparison of current interventions together with interventions being contemplated for implementation. It takes into account, from the health system's perspective, synergies between interventions on costs and effectiveness.

How will the results help policy-makers?

The WHO-CHOICE databases should not be used in a formulaic way. They will reveal a menu of interventions that are cost-effective in each region, a menu of interventions that are not cost-effective, and another menu of interventions in between. Policy-makers would then assess the appropriate mix for their settings, taking into account other goals of the health system as well as the improvement of population health. WHO will work closely with policy-makers on ways of using the evidence WHO-CHOICE produces to achieve social goals.

The databases on the cost-effectiveness ratios, together with the methodology, software programs and raw data sets will be made available on the Internet. The databases are also expected to guide recommendations coming from within WHO and will be offered as a resource to policy-makers who request technical assistance in these areas.

For further details visit: http://www.who.int/evidence/cea
or contact: whochoice@who.int

[3] Murray CJL et al. (2000) Development of WHO Guidelines on Generalized Cost-Effectiveness Analysis. Health Economics 9(3): 235-51.

World Health Organization

Improving Health System Performance

WHO-CHOICE

CHOosing Interventions that are Cost-Effective

Evidence and Information for Policy
Global Programme on Evidence for Health Policy
Choosing Interventions:
Effectiveness, Quality, Costs, Gender and Ethics (EQC)

Why is cost-effectiveness analysis important?

Health systems have multiple goals, but the fundamental reason they exist is to improve health. Yet health systems with very similar levels of health expenditure per capita show wide variations in population health outcomes. Part of these differences can be explained by variation in non-health system factors, such as the level of education of the population. But part can also be explained by the fact that some systems devote resources to expensive interventions with small effects on population health, while, at the same time low cost interventions with potentially greater benefits are not fully implemented.

Cost-effectiveness analysis (CEA) is one tool decision-makers can use to assess and potentially improve the performance of their health systems. It indicates which interventions provide the highest "value for money" and helps policy-makers choose the interventions and programmes which maximize health for the available resources.

CEA requires information on:

- ✔ the extent to which current and potential interventions improve population health, i.e. effectiveness[1]
- ✔ the resources required to implement the interventions, i.e. costs.

The impact of interventions on population health is vital. But it is also important to determine the role of different interventions in contributing to other socially desirable goals, such as reducing health inequalities, and being responsive to the legitimate expectations of the population.

What is WHO doing?

WHO seeks to provide the evidence decision-makers need to set priorities and improve the performance of their health systems. The Global Programme on Evidence for Health Policy (GPE) is assembling regional databases on costs, impact on population health and cost-effectiveness of key health interventions. This work known as WHO-CHOICE started in 1998 with the development of standard tools and methods[2] and is now in the phase of collecting and analysing the necessary data on costs and outcomes.

[1] An intervention is defined as any action whose primary intent is to improve health. This definition incorporates disease specific actions and integrated care. It covers prevention and health promotion as well as curative care. It incorporates some intersectoral actions such as the provision of seat belts in cars – the primary purpose of which is to maintain health.

The objectives of WHO-CHOICE are to:

- ✔ develop a standardized method for cost-effectiveness analysis that can be applied to all interventions in different settings;
- ✔ develop and disseminate tools required to assess intervention costs and impacts at the population level;
- ✔ determine the costs and effectiveness of a wide range of health interventions, presented with probabilistic uncertainty analysis;
- ✔ summarize the results in regional databases that will be available on the Internet;
- ✔ assist policy-makers and other stakeholders to interpret and use the evidence.

Why is it necessary to compare a wide variety of health interventions?

Policy-makers are concerned with two questions requiring evidence on costs and effects:

"Do the resources currently devoted to health achieve as much as they could?"
To answer this question, the costs and effects of all interventions currently employed must be compared with the costs and effects of alternatives. Reallocating resources from inefficient to efficient interventions can increase population health with no change in costs.

"How best to use additional resources if they become available?"
This type of analysis is critical for ensuring that as societies become wealthier, additional resources are well used. But it is pointless asking this type of question if the current mix of interventions is inefficient - both questions need to be asked together.

[2] Documentation available in: Making Choices in Health: WHO Guide to Cost-Effectiveness Analysis published by WHO in 2003.

WHO-CHOICE permits both questions to be asked and both types of analyses to be undertaken simultaneously.

Why do we need regional databases on intervention cost-effectiveness?

The pioneering effort of the World Bank's Health Sector Priorities Review (HSPR) encouraged policy-makers to incorporate evidence on the costs and effects of interventions into their decision-making. The HSPR focused on a limited number of interventions, the individual studies used different methodologies, and estimates of cost-effectiveness were produced only on a global basis. This made it difficult for country policy-makers to decide if the results across interventions were comparable, and if they were relevant to their settings.
Epidemiology, baseline levels of infrastructure, the history of disease control and health promotion, and cost structures vary across countries. So the costs and effectiveness of any health intervention will vary from one setting to the next. Consequently, a single "global average" estimate for an intervention's cost-effectiveness is not of great value to decision-makers. However, the ideal of specific estimates for each intervention in every setting is not achievable in the short run. As a compromise, WHO-CHOICE is producing databases reporting the costs and effectiveness of interventions for 14 subregions that have been grouped together on the basis of epidemiology, infrastructure and economic situation.

Which interventions are covered?

WHO-CHOICE has assembled regional databases on costs and population effectiveness of approximately 250+ health interventions using a standardized methodology. The interventions range from preventive to rehabilitative, from individual to packaged, from those addressing infectious to non-communicable diseases, including risk factors.

Currently, the regional databases provide information on the cost-effectiveness of interventions targeting tobacco and heavy alcohol use, unsafe sex, lack of safe water and proper hygiene, indoor air pollution, hypertension, obesity, high cholesterol, physical inactivity, unsafe health care practices, mental disorders, childhood undernutrition,

Let's Change the World Together - Invest in eLearning

THE HEALTH ACADEMY

eAcademy for Knowledge, Know-how and Technology

World Health Organization

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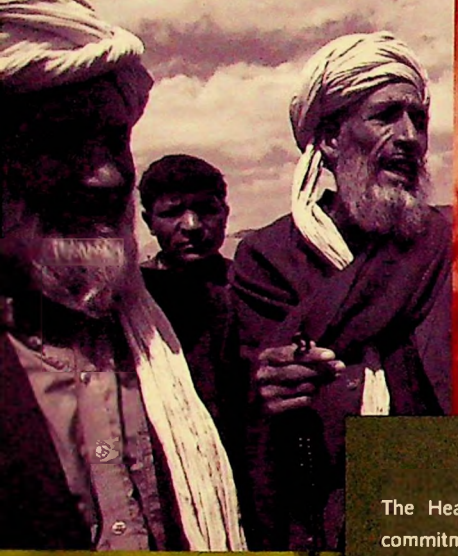
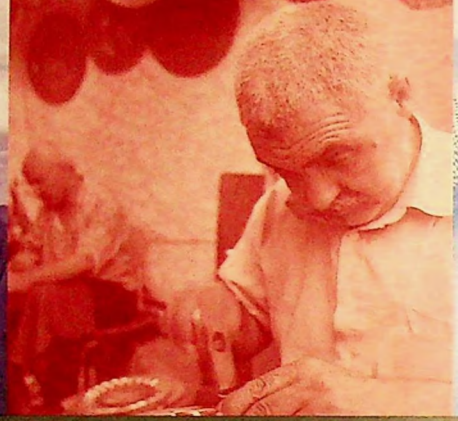
Prepress and Printing Raidy Printing Press

THE PRINCIPLES OF THE HEALTH ACADEMY

- The Health Academy is in keeping with the concept of eHealth as the backbone for the re-engineering of health systems, with citizens at the centre
- It will not duplicate the effective efforts of others in health education. It offers a new approach to learning, which will complement other ongoing actions
- It will bring information, technology, education and health together, in the form of eLearning, to create awareness and convey pertinent basic health knowledge in a language that everyone can understand
- It addresses the problem of the knowledge divide, provides solutions, and takes effective action to bring health and technology to those most in need
- It promotes equality, whether based on gender, nationality, culture, or education
- It operates on the principle that people can improve their lives when provided with the necessary skills, knowledge, and access to health information
- The Health Academy embodies that the privileged few have a responsibility to assist the less privileged

UNICEF


THE MISSION

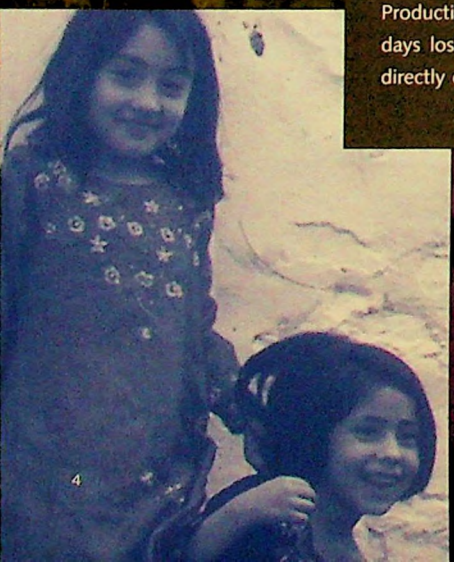
The Health Academy is about investing in people. It has a commitment to provide information on health to all, in order to prevent ill health and to alleviate suffering. It is a vision of how to harness technology, health information, and education for the good of human development.

Its aim is to reach people in all walks of life, especially those living in remote areas, and give them the knowledge they need to protect and improve their health and environment. It is directed at the entire community, the young and the old, the strong and the weak. It illustrates essential public health functions in the language of the people.

It creates public awareness of how individuals, families, and communities can benefit from progress in medicine, public health, environmental health, sanitation, and management. It will share knowledge so that individuals and communities may become more self-reliant in tackling their health problems in their own context.

This will bring untold benefits to the population as information technology is a major educational and economic engine. Productivity will increase as a result of less school days and works days lost due to ill health, and the standard of living, which is directly correlated, will increase.





"The Health Academy provides unprecedented opportunities for effective health promotion through people-centred partnerships. It is more than just education; it is a means to influence attitudes and behaviour towards a healthier lifestyle, which in turn may help reduce gaps between prosperity and poverty and health and sickness."

Director-General, World Health Organization

eHEALTH FOR ALL

Access to information has been a deep-seated problem that has taken on new importance with the emergence of the Internet as a basic tool for learning. It is crucial that technology is available to everyone, regardless of race, gender, income or age.

The Health Academy promotes sustainable access by all countries to existing and future health technologies. There has been enormous progress and success during the past 20 years in the field of Information and Communication Technologies with unexpected opportunities for private and public collaboration, including in the health domain.

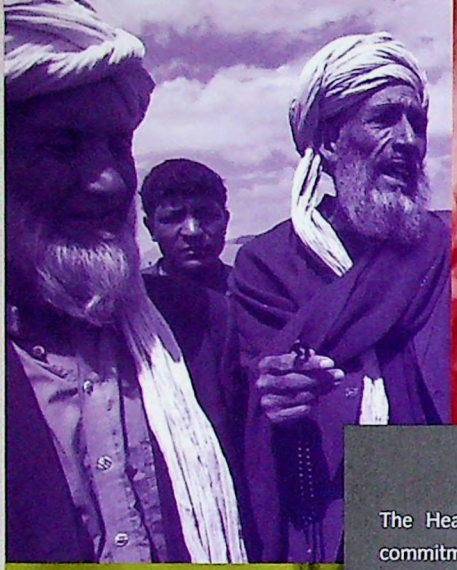
The integration of these technologies into the daily life of citizens depends on many factors. However, this is already occurring in many regions of the world. In less developed countries, completely new eHealth solutions, based on satellite, on mobile means of communication, and other developing technologies, offer new opportunities for public health and health care delivery.

Information and Communication Technologies will induce fundamental changes in all the facets of health and will induce a more citizen-centred, personalised health delivery system.

OUR HEALTH

Health is a universal value that transcends culture and class, and is considered by the World Health Organization to be at the heart of human development. In an age where information travels at its fastest ever, but where many remain victims of ill-health and disease, spreading awareness and educating communities and individuals on life-sustaining approaches to health is of the utmost priority.

The opportunity to enjoy the highest attainable standard of health has been enshrined in the World Health Organization's Constitution for more than half a century. Yet today, an intolerable burden of illness still afflicts a large part of the world's population. For millions of people around the world, particularly in the poorest segments of society, the reality is one of rampant disease, aggravated by poverty and lack of health knowledge. On the other hand, it is quite obvious that development, economic growth, stability, human dignity, and the fulfilment of human rights will only be achieved when people are given the opportunity to live healthy lives.



THE MISSION

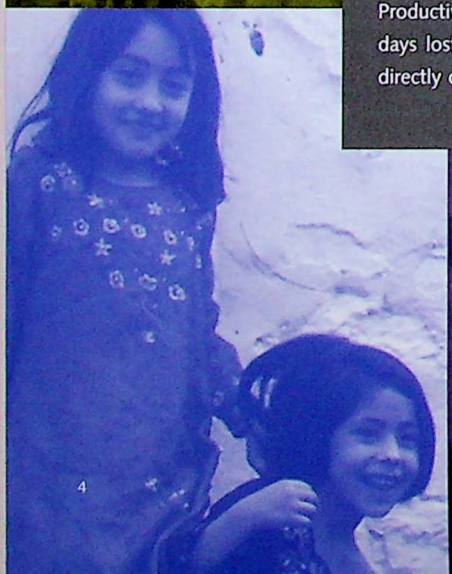
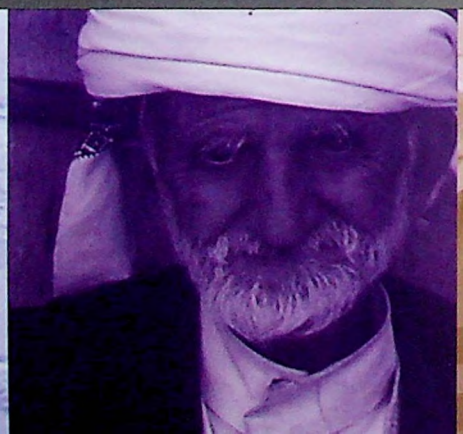
The Health Academy is about investing in people. It has a commitment to provide information on health to all, in order to prevent ill health and to alleviate suffering. It is a vision of how to harness technology, health information, and education for the good of human development.

Its aim is to reach people in all walks of life, especially those living in remote areas, and give them the knowledge they need to protect and improve their health and environment. It is directed at the entire community, the young and the old, the strong and the weak. It illustrates essential public health functions in the language of the people.

It creates public awareness of how individuals, families, and communities can benefit from progress in medicine, public health, environmental health, sanitation, and management. It will share knowledge so that individuals and communities may become more self-reliant in tackling their health problems in their own context.

This will bring untold benefits to the population as information technology is a major educational and economic engine. Productivity will increase as a result of less school days and works days lost due to ill health, and the standard of living, which is directly correlated, will increase.

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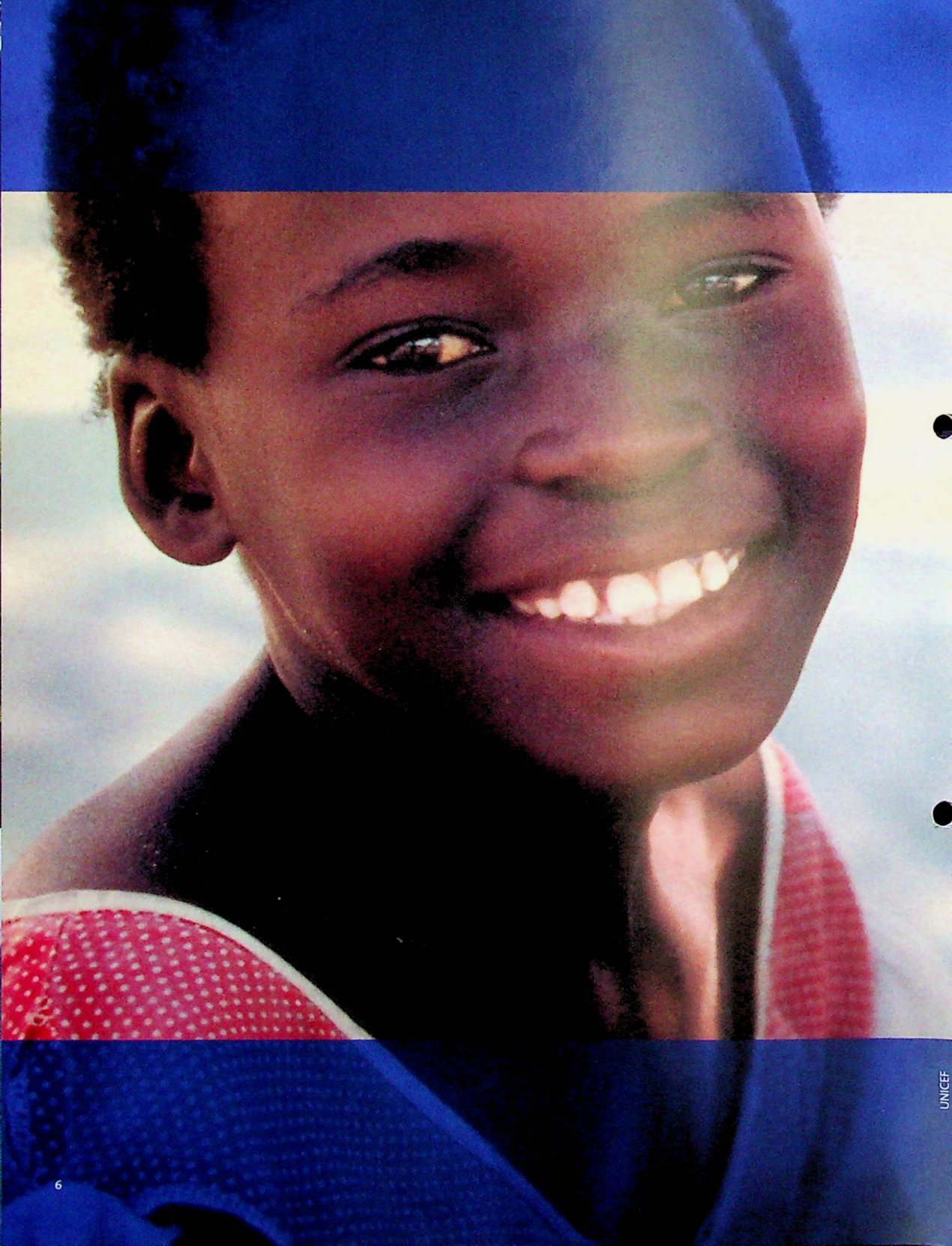


UNICEF

"All development starts with human development"

Abdellatif Youssef AL-HAMAD,
Director-General and Chairman of the Board,
The Arab Fund for Economic and Social Development

GLOBALIZATION

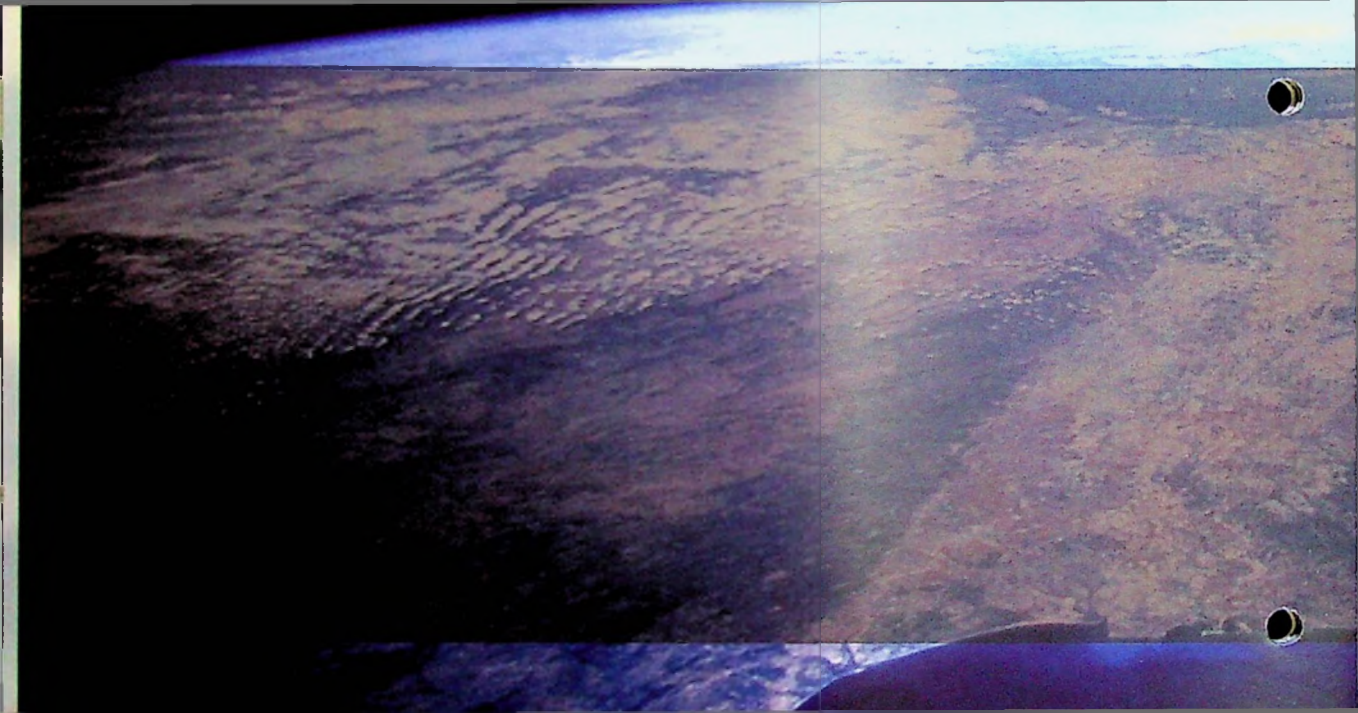
Globalization has shrunk the world, but not completely, and not evenly. There are still many parts of the world that are difficult to access at any time and many more areas during the rainy season or wintertime. In addition, many rural populations do not have the same services and facilities as urban dwellers. Thus, there is still much to be done to connect populations.

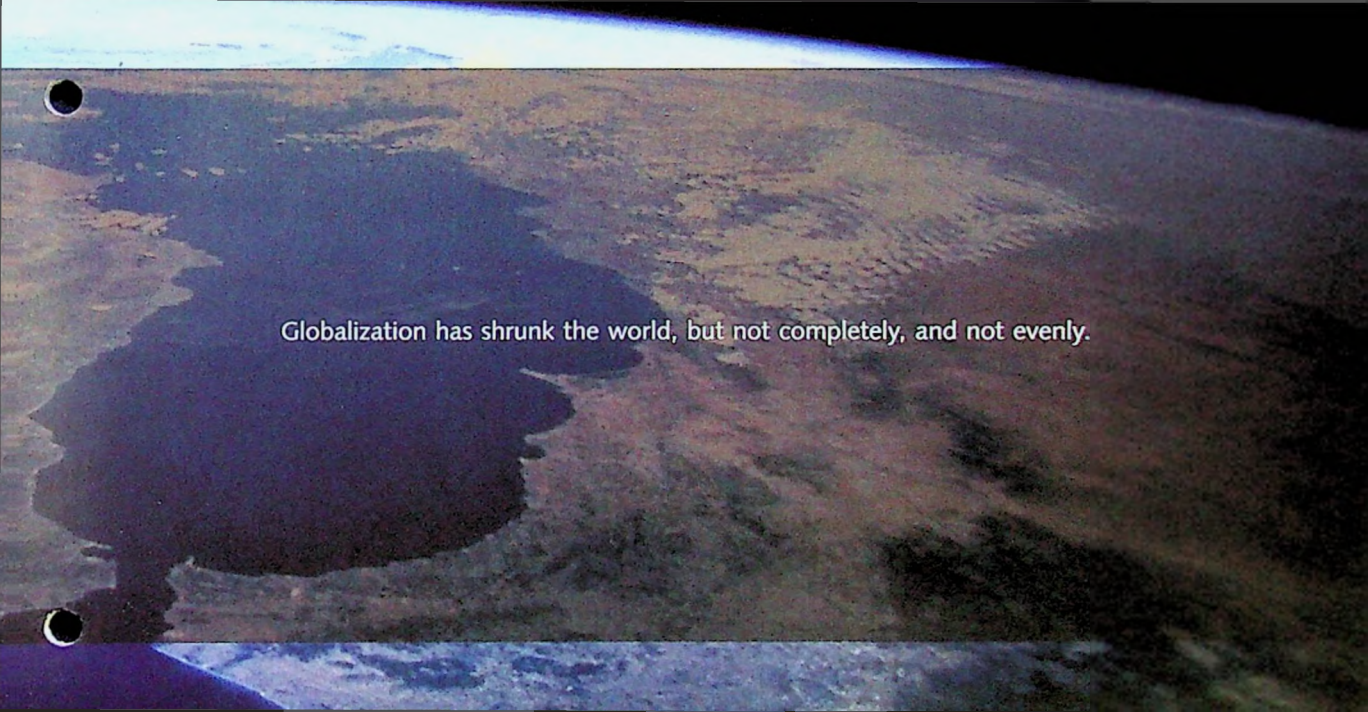
Building upon what has already been put in place, and what is planned to be done, the Health Academy will reach out to communities to bring the knowledge and know-how needed for them to be able to lead a more healthy and productive life. Although this will take time to become diffused over the existing networks, it will expand as the technology reaches more people, and will promote the extension of Information and Communication Technologies to the remotest corners of the earth.

PARTNERS

The Health Academy has a worldwide vision and is a model of a new method of working in the Information Society with a strong commitment from national authorities. It collaborates with other organizations, public and private, to fulfil its mission.

WHO has initiated the pilot phase of the Health Academy with Cisco Systems, Inc, a specialist technology company, especially in network infrastructure and provision of images and products, as its main technology partner. Other partners include the International Telecommunication Union and The Geneva Foundation for Diseases of the Tropics.




Globalization has shrunk the world, but not completely, and not evenly.

"The information was short and brief but it got to the point and the main idea was right there in front of you. You learn from your own mistakes and you learn at your own pace, I did not have to wait for any body else to catch up."

Ali

A 14-year old school boy from Kuwait

A VISION IN LINE WITH THE MILLENNIUM DEVELOPMENT GOALS

In September 2000, the United Nation's General Assembly adopted the Millennium Development Goals, a set of time-bound and measurable targets for combating the most pressing perils of our time.

The Millennium Development Goals enjoin countries to unite to combat poverty, illiteracy, hunger, lack of education, gender discrimination, child and maternal mortality, disease and environmental degradation. They are a challenge to the world community to hasten the pace of development.

The World Health Organization has risen to the challenge in many aspects of its work. One of these, the Health Academy, targets all sectors of society, particularly the underprivileged, especially in remote areas. It makes available information on health to all, in a language and in a manner that is easily grasped in a short space of time and which is straightforward to implement.

A NEW APPROACH TO LEARNING

The Health Academy strengthens both education and health. In keeping with the efforts to provide universal primary education for all, it will transform the role of teachers into that of mentors, and guide users through their educational experiences rather than directing their learning.

It transforms learners from **passive** recipients of information to **active** participants in knowledge acquisition. Using eLearning technology it reduces the time it takes learners to understand and grasp contents, through a multimedia presentation of information. Thus, much more subject matter can be presented to a user in the same amount of time allotted to classroom learning. In addition, users can proceed at their own pace, without sacrificing the amount of material covered. Equal educational opportunities for all, at the individual's own tempo.

By following these eLearning courses, it is expected that people will have quickly acquired sufficient health information to enable them to adopt a healthier life-style and the younger generation, to develop attitudes conducive to health promotion. It is anticipated that the digital divide will have been bridged with respect to health and that individual families and the whole community will have benefited.

"Technology has the power to change the lives of people in poorer parts of the world, giving access to education, health and commerce, and transforming living standards and the economic prosperity of developing nations."

John CHAMBERS
CEO, Cisco Systems, Inc.

eLEARNING

The eLearning technology used by the Health Academy is not simply distance learning. Its essential feature is relational learning, that is, it allows the learner to construct by oneself, from first principles, the very essence of what is being taught and to consolidate vital relationships between each building block. This approach helps to develop critical thinking and enhances concentration capacities. Recall of material is facilitated by the reinforcement of the written word with active listening. The content of the courses is exciting to both educators and users, as it is a truly interactive mix of different media technologies.

CONNECTING CULTURES

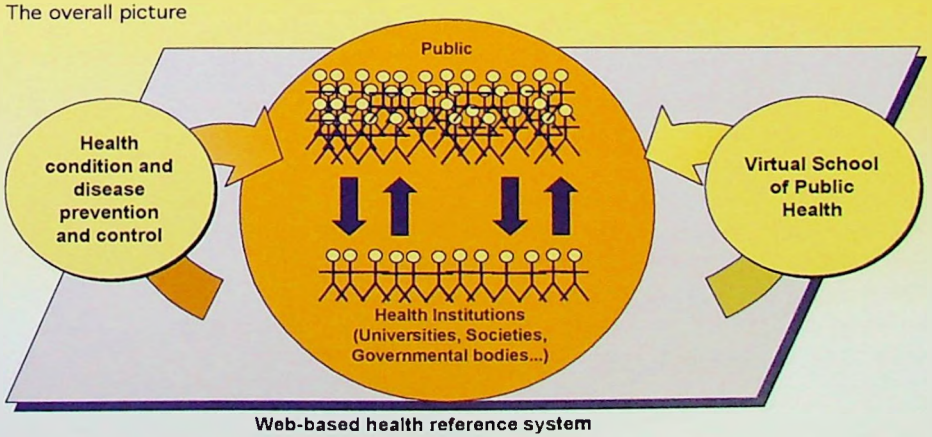
By making health information accessible, people will have the opportunity to attain a safe, healthy, and productive lifestyle. It should also stimulate a dialogue between the public, medical professionals and policy makers. The Health Academy especially takes into consideration individual cultural sensitivities. With its globally spread educational networks, it will connect people from different nationalities and cultures. Such enhanced global interaction will lead to an exchange of knowledge and cultural customs that can engender a global society that is rich in its diversity and united in its humanity.

A VIRTUAL SCHOOL OF PUBLIC HEALTH

WHO's information resources and expertise in health issues, as well as its worldwide access to health information in all countries, is the main source of validated health content for the Health Academy. The combined focus of everyone involved, equals a library of knowledge and decades of experience.

A web-based health reference system is key to achieve our strategy

The overall picture



Web-based health reference system

Karen Behkehani
World Health Organization
February 2001

"We need to renew the fundamental commitment to equity expressed by "Health for All": the Health Academy will contribute by empowering people to become more healthy and more active participants of the global society we live in today."

Dr Hussein A. GEZAIRY,
Regional Director for the Eastern Mediterranean
World Health Organization

REDUCING GLOBAL HEALTH INEQUITIES

Health is determined more by educating people to make informed decisions about their lives. The Health Academy strives to reduce global health inequities by accelerating the development, deployment and sustainability of health information interventions that will save lives and significantly diminish the disease burden in developing countries. It will enhance the visibility of valuable public health approaches and promote public health leadership.

THE PILOT PROJECT

The Health Academy is being piloted in schools in the Arab Republic of Egypt and in the Hashemite Kingdom of Jordan. All types of schools in the countries, and both genders in the age range 12 to 18 years, are included.

This is providing a very valuable practical experience in testing the materials and the processes of the Health Academy. The eLearning courses have been developed in both English and Arabic. The outcome from this pilot study will be used to guide the extension of the Health Academy both in the country and beyond, to other parts of the world.

COURSE DEVELOPMENT

The complete process for designing and producing eLearning courses for the Health Academy has been carefully formulated and tested. Courses are developed to meet the needs of countries and clusters of countries according to their health problems. The World Health Organization consults the World's specialists in the various subjects and, together with its own specialists, develops the course content based on the most currently available information, evidence and best practices. The Health Academy processes the content in a form suitable for eLearning and translates it into the six official languages. It is then adapted, where necessary, to be acceptable in local cultures. This is validated by the World Health Organization's education and community health specialists prior to being developed into eLearning courses that can be accessed through the Internet.

ENDLESS POSSIBILITIES

Wherever there is a need for transfer of knowledge and know-how and to change attitudes and behaviour given the resources, the Health Academy could be the vehicle to accomplish this in the fields of health, human development, environmental sustainability and management. As new knowledge and evidence emerge, it is in the enviable position that it can rapidly disseminate this new information widely to the people. Its potential is limitless.

"The Health Academy has been created to bring information technology and health together as a viable strategy to enhance the well being of individuals in all societies across the globe. It will provide freedom of thought, freedom of expression and empower the people to take charge of their own health. We have a responsibility to see this technology in the public domain. By providing sufficient information of the right type and quality in the right way to help people lead a more healthy and creative life will make the world a better place to live in for our children and our children's children." Dr Kazem Behbehani, Assistant Director-General, World Health Organization.

HEALTH ACADEMY COURSES

The following courses have been completed and are being used in English and Arabic in the pilot in Jordan.

All the Way to the Blood Bank

Around the world, AIDS is shattering young people's opportunities for healthy adult lives and this course is directed to the young people who offer the greatest hope for changing the course of the epidemic. This course describes the various components and functions of blood, explains the importance of donating blood, lists the most common diseases that can be transmitted by blood, in particular HIV, and explains who is suitable to donate blood.

Fighting for Our Lives

Tobacco is rapidly becoming one of the single biggest causes of death in the world; it is expected to kill about 1 billion people in the 21st century. The goal of this course is to enable people to take a leading role as advocates in environmental strategies to prevent and control tobacco use and to avoid its use personally. The emphasis of the course is on developing and implementing environmental approaches. In keeping with this approach, we urge communities to alter the physical, social, economic and legal environments that shape tobacco use. The emphasis of all activities is to develop learners' critical-thinking, analysis, and advocacy skills.

Healthy Mind, Healthy Body

The habitual use of substances has negative health impacts. The goal of this course on substance use is to promote healthy behaviour that decreases the incidence of habitual use of substances that have negative health impacts. It is designed to develop skills, to enable young people to avoid the dangers inherent in substance use, to promote positive and responsible attitudes and provide motivational support.

be informed

Safely on our Way

The death rates on the roads are high and are growing daily. This course empowers learners to promote safe behaviour on the roads for all users, drivers as well as pedestrians. In this way, attitudes and behaviour of whole communities will be changed. The learners may then advocate for the creation of environments where road traffic crashes are minimal.

HEALTH ACADEMY COURSES IN DEVELOPMENT

Eleven courses are presently in various stages of development.

- A Better Use of Medicines
- Changing Our Way of Life
- Conserving our Hearing
- Effective Expression
- Healthy Eating
- Personal Efficiency
- Protecting our Bones
- Safer Food for Better Health
- Staying Fit
- Successful Thinking
- Water for Life

* In addition, another 17 courses have been identified for development.

World Health Organization

DIS-2720

5.Central Bureau of Health Intelligence System (CBHI)

Objectives
Provide ready information on various health indicators for India, which are of great significance to planners, policy-makers, health administrators and research workers.

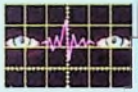
Target Users
CBHI, Ministry of Health and Family Welfare, Government of India.

Salient Features

- Online data collection from different sources at different administrative levels.
- Health statistical data available from 1991 to 1999 from the publication "Health Information of India" organized into various sections such as Population Statistics, Vital Statistics, Socio Economic Indicators, Pattern of Investment and Expenditure on Health etc.
- Analytical and graphic presentation and dissemination of information through reports available over web.
- Electronic archival and retrieval of documents including scanning and indexing.

Area of Work
Evidence for Health Policy

Business Owner
CBHI, Ministry of Health and Family Welfare, Government of India



Architecture
Web based n-tier application

6.National Institute of Communicable Diseases (NICD)

Objectives
Promote and facilitate exchange and dissemination of information on communicable diseases surveillance in India.

Target Users
NICD, Ministry of Health and Family Welfare, Government of India.

Salient Features

- Online (Web-based user interface) and offline (MS-WORD ed templates) modes to collect the data relating to mmunicable diseases surveillance from field officers.
- Analytical and graphic presentation and dissemination of information.
- Electronic archival and retrieval of documents including scanning and indexing .
- Electronic community building using discussion forum.

Area of Work
Communicable Diseases Surveillance

Business Owner
NICD, Ministry of Health and Family Welfare, Government of India

Architecture
Web based n-tier application

Information Systems for E-Health Developed by the Regional Office for South-East Asia

Information Systems for E-Health

1. Health Telematics System (HTS)
2. SEARO Integrated Data Analysis System (SIDAS)
3. Tuberculosis Programme Information System (TPIS)
4. Surveillance Project Management System (SPMS)
5. Central Bureau of Health Intelligence System (CBHI)
6. National Institute of Communicable Diseases (NICD)

Technology Platform

Web based applications
Development Environment
ASP 2.0 / 3.0, VB script and Javascript
Application Server
IIS 4.0/5.0 ,COM Components, Crystal Report 8.0, SMTP Services, MS Office 97/2000, ASPMAP 2.0
Database Server
MS SQL Server 7.0

Client-Server applications
Development Environment
Power Builder 6.5/ Visual Basic 6.0, VBA, COM Components, Crystal Report 8.0, MS Outlook 2000/XP, MS Word 97/2000/XP
Database Server
MS SQL Server 7.0

Contact

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World Health Organization
Regional Office for South-East Asia
New Delhi, India
Telephone : 91-11-23370804
Fax : 91-11-23370197,9395
Website : www.whosea.org

1. Health Telematics System (HTS)

Objectives
Facilitate the delivery of health care services by health care professionals using Information and Communications Technology (ICT) for the exchange of information for diagnosis, treatment and prevention of disease.

Target Users
Medical practitioners and health professional in Member States of WHO's South-East Asia Region.

Salient Features

- Enables secure exchange of information and suggestions on patients and on diagnosis between medical practitioners and health professionals using MS-Outlook e-mail client.
- Allows medical practitioners to consult other health professionals regarding history, provisional diagnosis, clinical information and laboratory test results of patient.
- Facilitates sending documents and reports such as X-ray and ultrasound reports.
- Enables recipient to respond to queries.
- Enables archival of relevant information in the database for future reference.
- Enables full text & criteria-based search of archived information.

Area of Work
Organization of Health Services

Business Owner
Health Systems

Architecture
Client Server 2-tier application

2.SEARO Integrated Data Analysis System (SIDAS)

Objectives
A single integrated tool for surveillance, collection, analysis and dissemination of data using indicators and to take advantages of synergies between programmes, avoiding duplication of work.

Target Users
All Technical Programmes in the Regional Office for South-East Asia and WHO country offices.

Salient Features

- Data collection using online (Web-based GUI) and offline (MS-WORD-based templates) modes.
- Data input for any available administrative levels for desired periodicities.
- Maintaining hierarchy of indicators organized into groups and sub-groups up to any level.
- Further segregation of indicators based on categories .
- Analysis of data on the basis of infrastructural sources.
- Presentation of data through analytical reports, charts & maps.

Area of Work
Communicable Diseases Surveillance

Business Owner
Director, Communicable Diseases (CDS)

Architecture
Web based 3-tier application

3.Tuberculosis Programme Information System (TPIS)

Objectives
Promote and facilitate the exchange and dissemination of information on Tuberculosis Programme in India.

Target Users
Revised National Tuberculosis Control Programme (RNTCP), Ministry of Health and Family Welfare, Government of India.

Salient Features

- Online (Web-based GUI) and offline (MS-WORD-based templates) modes to collect data from field officers.
- Analytical and graphic presentation and dissemination of information.
- Tracking transfer of TB patients from one treatment unit to another in accordance with the guidelines for DOTS implementation programme in India.
- Centralized drug inventory maintenance using on-line drugs requisition and approval by Central TB Division (CTD) in the Ministry of Health.
- Online submission of budget by State TB Officers (STO)/ District TB Officers (DTO) and allocation of finance by CTD.
- Automatic feedback on technical reports submitted online by STO and DTO in India.
- Electronic archival and retrieval of documents including scanning and indexing.
- Electronic community building using discussion forum, bulletin board and web-based e-mail services.
- Back-office application for system administration.

Area of Work
Tuberculosis

Business Owner
Central TB Division (CTD), Ministry of Health and Family Welfare, Government of India

Architecture :Web based n-tier application

4.Surveillance Project Management System (SPMS)

Objectives
Enhance transparency and access to accounting data of Polio Project and improved management reporting.

Target Users
National Polio Surveillance Project (NPSP), India, Regional Coordinators (RC)s and Surveillance Medical Officers (SMOs)

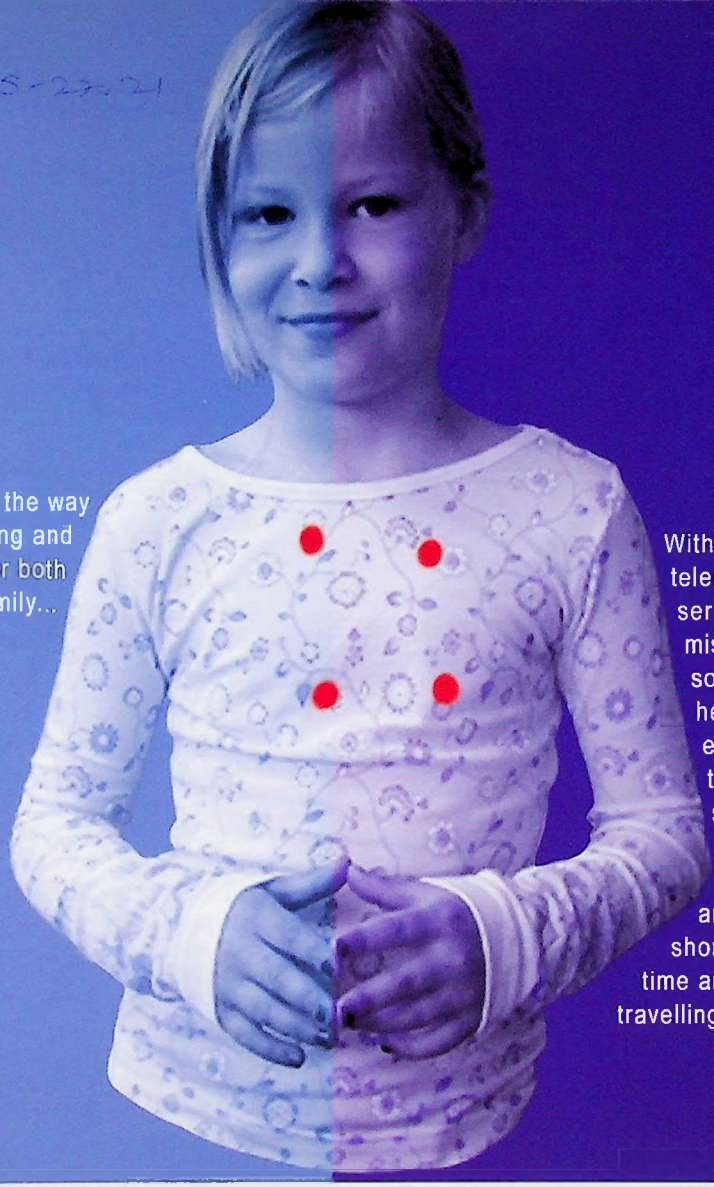
Salient Features

- Online data collection such as monthly cash books, Online accumulation and validation of data entered by Surveillance Medical Officers (SMOs) as per business rules defined in the system.
- Analytical presentation of data.
- Electronic archival and retrieval of documents including scanning and indexing.
- Electronic community building using discussion forum, bulletin board and web-based e-mail services.

Area of Work
Immunization and Vaccine Development

Business Owner
NPSP, India

Architecture: Web based n-tier application



A tiny heart is not beating the way it should be. Worry, waiting and hospital visits lie in store for both the child and the family...

With the telemedicine service for transmission of heart sounds, we can help to provide easier access to the health service, better conditions for the patient and family, shorter waiting time and less travelling.

Excellent Health Services Available to All

telemed.no nst

Norwegian Centre for Telemedicine

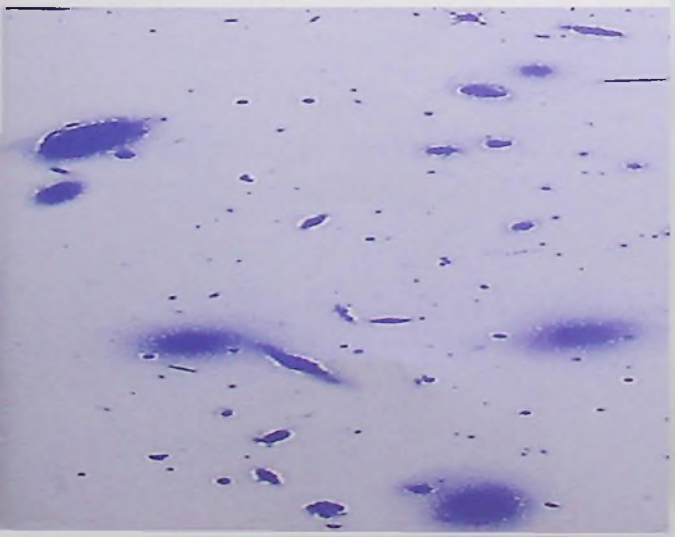
University Hospital of North Norway

Norwegian Centre for Telemedicine

Norwegian Centre for Telemedicine (Nasjonalt senter for telemedisin, NST) aims to provide research, development and consulting in telemedicine, and to promote the introduction of telemedicine services in practice.

The target groups are decision-makers, groups of patients, health practitioners and industry. Our primary task is to serve the public Norwegian health service, but we also aim to serve public- and private-sector organizations in Norway and abroad.

As a non-commercial part of Norway's health sector, our task is to focus on democratic values such as equality, participation and quality of care.



Research

The Norwegian Centre for Telemedicine at the University Hospital of North Norway conducts inter-disciplinary research in all aspects of telemedicine, since the different aspects of telemedicine are so closely inter-linked. Research takes place both in the form of projects commissioned by authorities and on our own initiative. Several professors and PhD students in disciplines including medicine, educational science and informatics are associated with the centre.

Research topics include:

- Factors that encourage and that hamper the use of telemedicine
- The clinical quality of telemedicine services
- The need for telemedicine
- Using the Internet to promote health
- Telemedicine in the home
- Organizational changes resulting from telemedicine
- Issues in health economics associated with telemedicine
- Evaluation and documentation of the use of telemedicine
- New technologies
- Legal issues

Telemedicine Services

Telemedicine services can contribute to:

- Making specialist services available locally, and improving their efficiency
- Making health services available directly from the patient's home
- Providing faster treatment for patients

Information on all medical conditions that can be documented using sound or images can be transmitted via PCs in a network or via video-conferencing. The Northern Norwegian Health Network (Nordnorsk helsenett) has developed a closed and secure network for the distribution of telemedicine services in the health sector. The NST has developed several of the services that are available in this network.

The primary care doctor or nurse can send questions by e-mail to a specialist. Files with sound, images or video can be transmitted as attachments. Specialists can use the information to make a diagnosis, assess the need for closer examination by a specialist, or follow up patients with known diagnoses. The primary care doctor or nurse receives an answer to the enquiry via e-mail. Telemedicine is also useful for doctors who want to consult colleagues in cases where there is uncertainty about the diagnosis or treatment.

Sounds of the heart

A digital stethoscope is used to record the sound of the patient's heart. The primary care doctor sends the recording via e-mail to a cardiologist. The specialist can analyse the sound and assess whether the patient should be admitted to hospital for further investigation.

Examination of the optic fundus

Diabetes can cause blindness. For most patients, their sight can be saved if laser treatment is undertaken at an early stage. Patients are offered examinations of the fundus every year to check the retina for changes. Specially trained nurses take images of the eye, which they send via e-mail to a specialist at the hospital.

Ear, nose and throat conditions

Primary care doctors who have patients with ear, nose or throat conditions can use special equipment at their offices to take images of the area affected by the condition. The images are sent to an otorhinolaryngologist for evaluation. Images can also be transmitted via a videoconferencing link. The primary care doctor, the patient and the specialist are present at the same time, and can communicate directly with each other.

Dermatological conditions

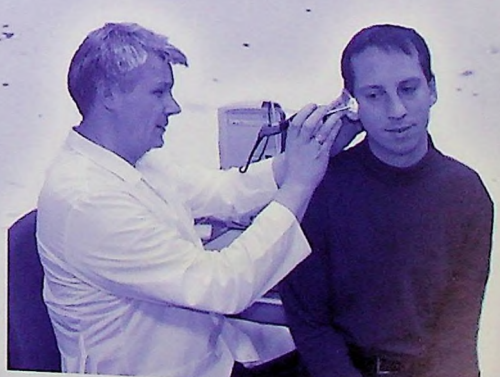
Images of dermatological conditions and lesions are transmitted via videoconferencing or e-mail for specialist assessment. With the use of e-mail, it is not necessary for the patient, the primary care doctor and specialist to be present at the same time.

Telemedicine:

"Telemedicine is the investigation, monitoring and management of patients and the education of patients and staff using systems which allow ready access to expert advice and patient information no matter where the patient or relevant information is located."

(Advanced Informatics in Medicine 1991)

Ear examination



Teaching and continuing professional education

The NST has organized distance education using videoconferencing since 1994, and has considerable experience in this form of teaching. The centre is currently developing Web-based distance education services. We offer expertise in:

- Using the technology to optimize learning
- Setting up studios
- Selection of technical equipment
- Training in the use of videoconferencing equipment

Telepathology

A pathologist examines and diagnoses a tissue sample under a microscope while the patient is under anaesthesia. The operation is concluded on the basis of the pathologist's diagnosis. Telepathology makes it possible to transmit live images of tissue specimens using videoconferencing and a remote-controlled microscope. In this way, a hospital without its own pathologist obtains immediate access to a frozen section service, and the health staff can receive professional support.

The concept was developed and established in North Norway more than 10 years ago, as the first service of its type in the world. At present, 10 hospitals in Norway have access to this online service, and 22 hospitals have installed advanced workstations for telepathology.

Teleradiology

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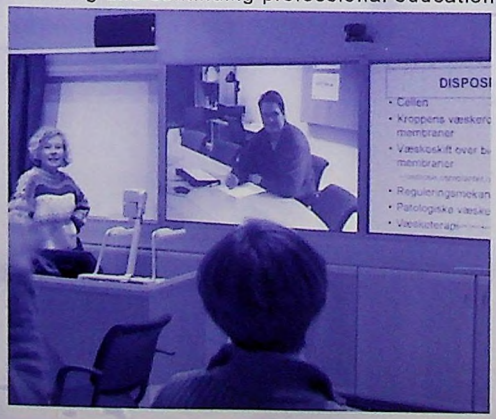
Teaching and continuing professional education



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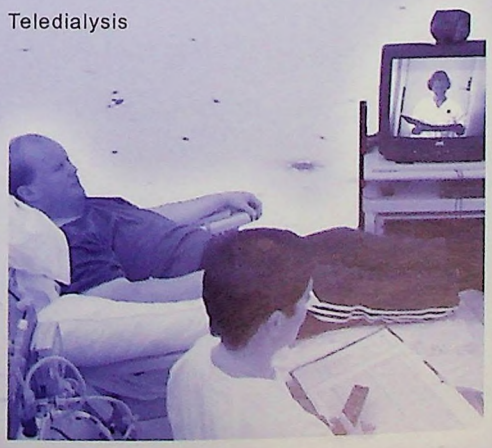

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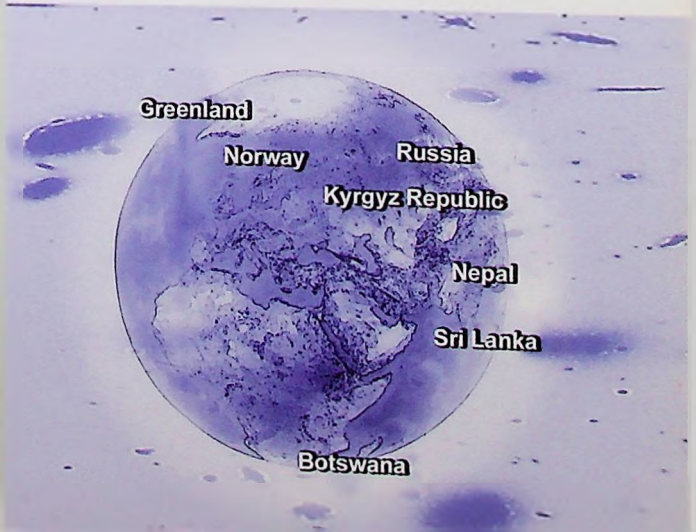

Norwegian Centre for Telemedicine
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The NST organizes courses and conferences in telemedicine.

Visit our Web site www.telemed.no for updated information.

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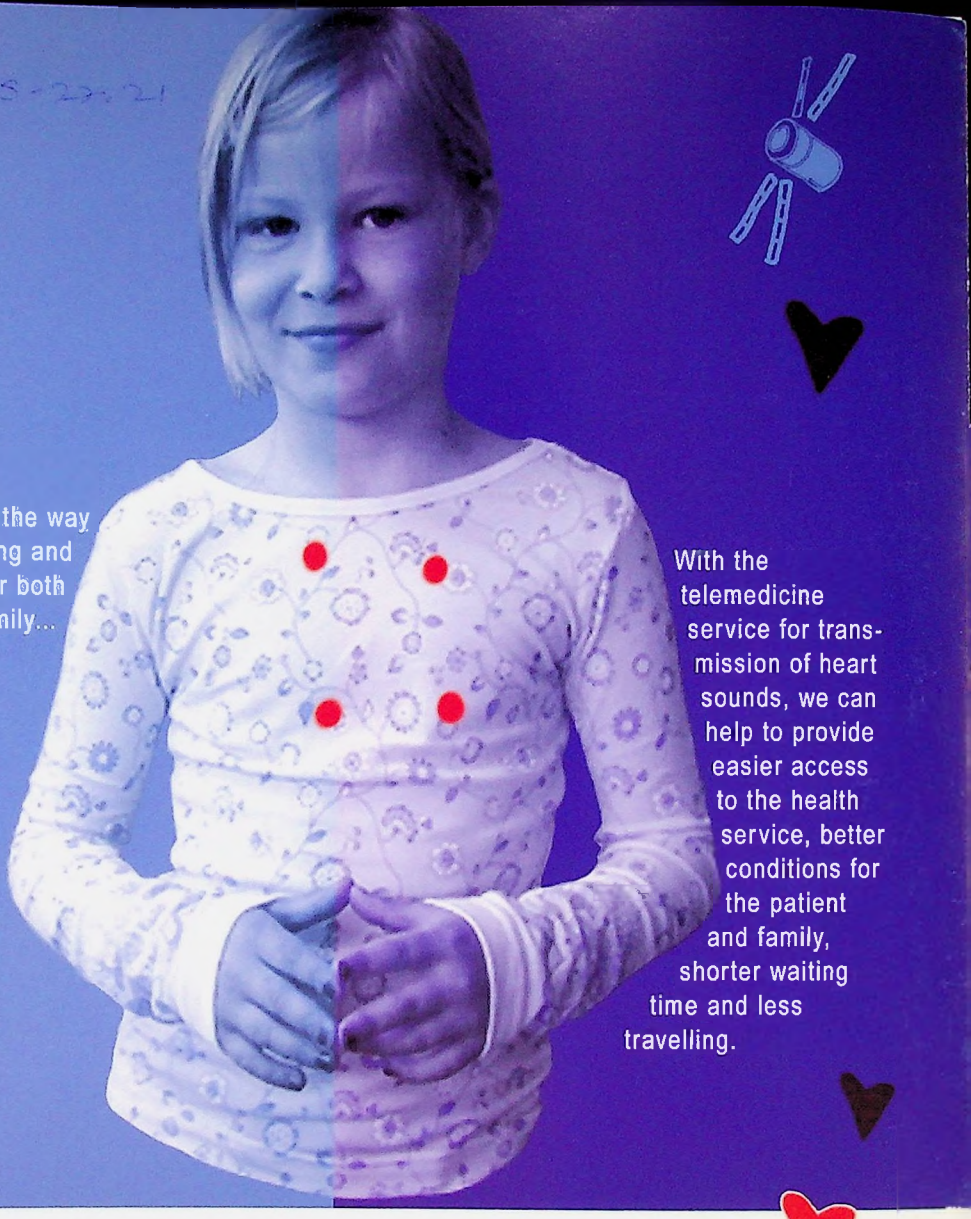


A tiny heart is not beating the way it should be. Worry, waiting and hospital visits lie in store for both the child and the family...

With the telemedicine service for transmission of heart sounds, we can help to provide easier access to the health service, better conditions for the patient and family, shorter waiting time and less travelling.

Excellent Health Services Available to All

telemed.no nst

Norwegian Centre for Telemedicine

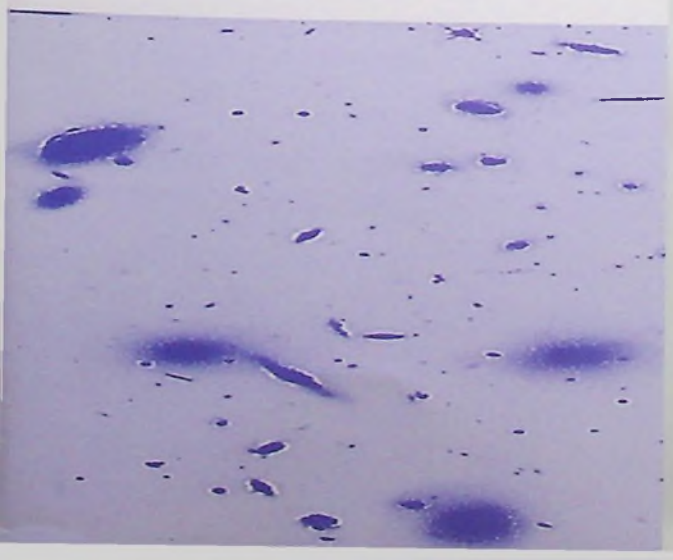
University Hospital of North Norway

Norwegian Centre for Telemedicine

Norwegian Centre for Telemedicine (Nasjonalt senter for telemedisin, NST) aims to provide research, development and consulting in telemedicine, and to promote the introduction of telemedicine services in practice.

The target groups are decision-makers, groups of patients, health practitioners and industry. Our primary task is to serve the public Norwegian health service, but we also aim to serve public- and private-sector organizations in Norway and abroad.

As a non-commercial part of Norway's health sector, our task is to focus on democratic values such as equality, participation and quality of care.



Research

The Norwegian Centre for Telemedicine at the University Hospital of North Norway conducts inter-disciplinary research in all aspects of telemedicine, since the different aspects of telemedicine are so closely inter-linked. Research takes place both in the form of projects commissioned by authorities and on our own initiative. Several professors and PhD students in disciplines including medicine, educational science and informatics are associated with the centre.

Research topics include:

- Factors that encourage and that hamper the use of telemedicine
- The clinical quality of telemedicine services
- The need for telemedicine
- Using the Internet to promote health
- Telemedicine in the home
- Organizational changes resulting from telemedicine
- Issues in health economics associated with telemedicine
- Evaluation and documentation of the use of telemedicine
- New technologies
- Legal issues

Telemedicine Services

Telemedicine services can contribute to:

- Making specialist services available locally, and improving their efficiency
- Making health services available directly from the patient's home
- Providing faster treatment for patients

Information on all medical conditions that can be documented using sound or images can be transmitted via PCs in a network or via video-conferencing. The Northern Norwegian Health Network (Nordnorsk helsenett) has developed a closed and secure network for the distribution of telemedicine services in the health sector. The NST has developed several of the services that are available in this network.

The primary care doctor or nurse can send questions by e-mail to a specialist. Files with sound, images or video can be transmitted as attachments. Specialists can use the information to make a diagnosis, assess the need for closer examination by a specialist, or follow up patients with known diagnoses. The primary care doctor or nurse receives an answer to the enquiry via e-mail. Telemedicine is also useful for doctors who want to consult colleagues in cases where there is uncertainty about the diagnosis or treatment.

Sounds of the heart

A digital stethoscope is used to record the sound of the patient's heart. The primary care doctor sends the recording via e-mail to a cardiologist. The specialist can analyse the sound and assess whether the patient should be admitted to hospital for further investigation.

Examination of the optic fundus

Diabetes can cause blindness. For most patients, their sight can be saved if laser treatment is undertaken at an early stage. Patients are offered examinations of the fundus every year to check the retina for changes. Specially trained nurses take images of the eye, which they send via e-mail to a specialist at the hospital.

Ear, nose and throat conditions

Primary care doctors who have patients with ear, nose or throat conditions can use special equipment at their offices to take images of the area affected by the condition. The images are sent to an otorhinolaryngologist for evaluation. Images can also be transmitted via a videoconferencing link. The primary care doctor, the patient and the specialist are present at the same time, and can communicate directly with each other.

Dermatological conditions

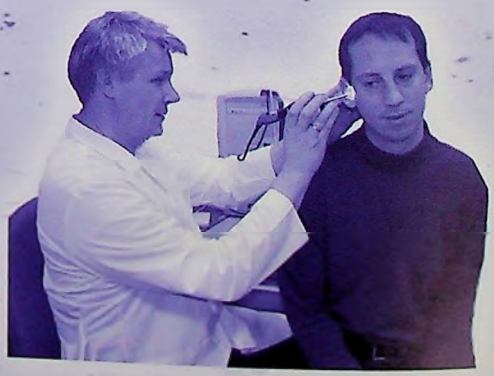
Images of dermatological conditions and lesions are transmitted via videoconferencing or e-mail for specialist assessment. With the use of e-mail, it is not necessary for the patient, the primary care doctor and specialist to be present at the same time.

Telemedicine:

"Telemedicine is the investigation, monitoring and management of patients and the education of patients and staff using systems which allow ready access to expert advice and patient information no matter where the patient or relevant information is located."

(Advanced Informatics in Medicine 1991)

Ear examination



Teaching and continuing professional education

The NST has organized distance education using videoconferencing since 1994, and has considerable experience in this form of teaching. The centre is currently developing Web-based distance education services. We offer expertise in:

- Using the technology to optimize learning
- Setting up studios
- Selection of technical equipment
- Training in the use of videoconferencing equipment

Telepathology

A pathologist examines and diagnoses a tissue sample under a microscope while the patient is under anaesthesia. The operation is concluded on the basis of the pathologist's diagnosis. Telepathology makes it possible to transmit live images of tissue specimens using videoconferencing and a remote-controlled microscope. In this way, a hospital without its own pathologist obtains immediate access to a frozen section service, and the health staff can receive professional support.

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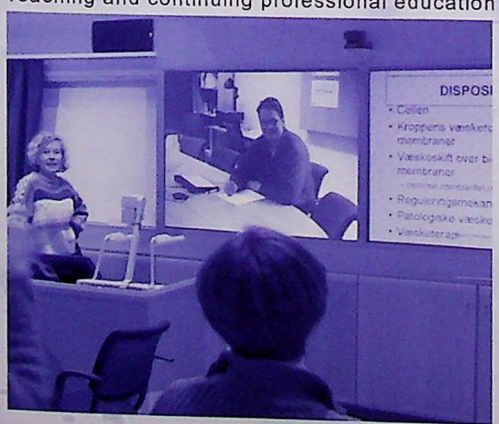

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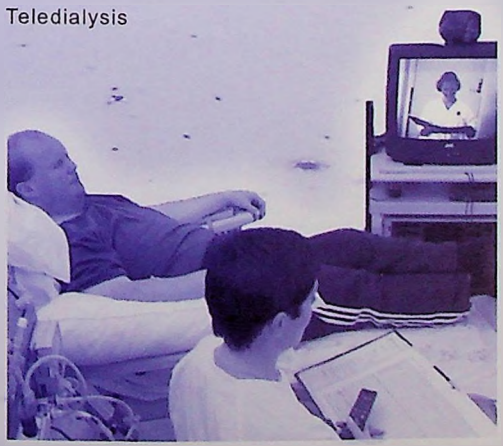

Examples of Current Activities

www.helseutdanning.no

The NST is working together with business and industry to develop the Web site www.helseutdanning.no. The project is supported by the Norwegian Industrial and Regional Development Fund and the Ministry of Health. The multimedia Web site gathers information and presents details of the health education programmes available in Norway. It is also intended for patients and their families as well as people with a general interest in health.

Maritime Telemedicine

The NST is assessing the requirements for maritime telemedicine in cooperation with several relevant organizations in shipping and emergency communication services. The objective is to develop health services for sailors and others at sea, which can make their workday safer. The practical benefits, user satisfaction and economic implications associated with maritime telemedicine are to be evaluated, and the conclusions will provide guidelines for further work with the services.

www.helsE-vett.no

The Internet offers a number of possibilities, but for those interested in health services there are also many pitfalls. There is no reason for not using the Internet for health purposes. However, it may be sensible to be critical of health services offered on the Web. The NST has established the Web site www.helse-vett.no which offers suggestions and tips that may be useful when analysing online health information and health services.

PatientLink

Annual surveys conducted by the NST have shown that an increasing number of people request e-mail communication with their family doctor. Thus far, security issues have prevented this from becoming a reality. The NST is currently developing a prototype for Internet communication between patients and their GP in compliance with data protection regulations. During a trial period, medical, organizational, security and socio-economic implications will be studied.

www.helseutdanning.no

Maritime telemedicine

Broadband Born

The 'Broadband Born' project uses broadband technology to transmit cardiotocography (CTG) recordings and ultrasound foetal images from the delivery room in Lofoten to the Nordland Central Hospital (Nordland Sentralsykehus). This makes obstetric services available to women in Lofoten without the need for them to travel to the central hospital. The recordings can also be transmitted electronically to other hospitals if necessary for consultation with colleagues. The service creates opportunities for shared teaching and for staff at hospitals in the rural areas to keep in touch with the latest developments in their professions.

Scenarios

The NST develops scenarios to communicate visions and ideas about solutions for health issues in the future. The decisions taken today affect the future of the health service. Important methods used in the development of scenarios include contextual analysis and design, visual communication and the development of prototypes. The scenarios must communicate knowledge about relevant trends and developments 3-10 years into the future.

CyberNINA is a visualization of health work and the use of mobile applications in the future: 'Nina, the cardiologist, rushes along the corridor. In her ear, a ringing tone sounds. A voice alerts her that the municipal doctors wants to ask her advice about a patient. Nina retrieves the patient's electrocardiogram on the display, and recommends immediate admission. At the same time, she displays treatment protocols and alerts all the staff who need to be ready. She can coordinate all the telephone services, retrieval of information from the network, communication via e-mail or videoconferencing and other tools for teamwork with colleagues via equipment integrated into her white coat. She can retrieve wireless data from stethoscopes, electrocardiographs and other technical medical equipment.'

www.telemed.no

CyberNina

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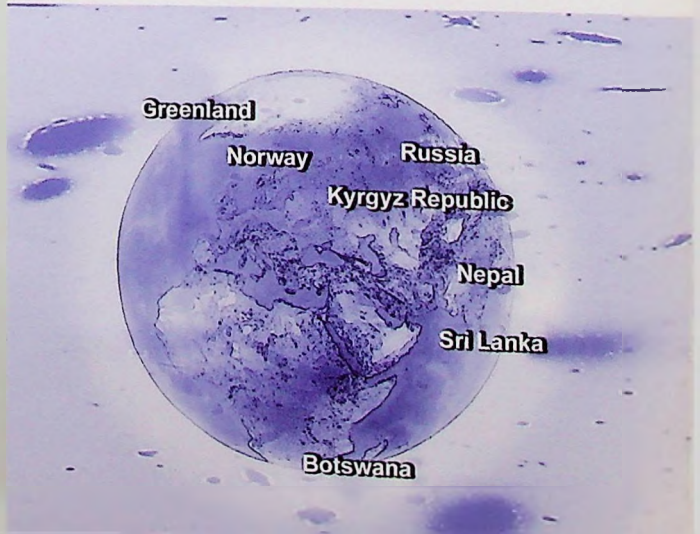

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EMISPHER NEWSLETTER

Euro-Mediterranean Internet-Satellite Platform for Health, medical Education and Research
www.emispher.org
co-funded by the European Union.
EUMEDIS B7-4100/2002/2165-083 P110

Newsletter December 2003

EVMU - The EMISPHER Virtual Medical University

In this second Newsletter we report on the EMISPHER Virtual Medical University (EVMU) for e-learning (teleteaching).

The main medical partners involved in the EVMU are:

- CICE - Centre International de Chirurgie Endoscopique, Clermont-Ferrand, France (Co-Leader);
- ASU - Aïn Shams University, Cairo, Egypt (Co-Leader);
- ANDS - Agence National de Documentation de la Santé (Ministère de la Santé), Algiers, Algeria;
- NIFRT - Nasser Institute for Research and Treatment (Ministry of Health and Population, MOHP), Cairo, Egypt;
- FMPC - Faculty of Medicine and Pharmacy of Casablanca, Morocco;
- Tunis - Faculty of Medicine of Tunis, Tunisia;
- ISTEM - Continuing Medical Education and Research Centre, University of Istanbul, Turkey;
- SEPELM - Société Européenne pour l'E-Learning Médical, in combination with UMVF - Université Médicale Virtuelle Francophone, Paris, France;
- IsMeTT - Istituto Mediterraneo per i Trapianti e Terapie ad Alta Specializzazione, Palermo, Italy;
- Charité Hospital, Berlin, Germany.

In the EVMU it is planned to use real-time broadcast of lectures, surgical operations, pre-recorded video sequences etc., as well as web-based e-learning applications.

The target population of the EVMU is comprised of medical students (both undergraduate and postgraduate), university hospital staffs, general practitioners and specialists, health officers, and citizens.

Seven medical specialities have been selected for the educational programme of EVMU:

- endoscopic surgery (CICE, ISTEM, FMPC)
- gynaecology-obstetrics (ASU, CICE, ISTEM)
- reproductive medicine (FMPC, CICE)
- infections diseases (CICE, ANDS, FMPC)
- interventional radiology (FMPC, CICE, Tunis, ASU, ISTEM)
- liver transplantation (NIFRT/MOHP, IsMeTT)
- tumour diagnosis and therapy (Charité, ISTEM, ASU)

The Université Médicale Virtuelle Francophone (UMVF), involved through project partner SEPELM, already has a certain experience in tele-teaching and e-learning. In particular, the UMVF has created digital campuses proposing pedagogical contents validated at national level and accessible via Internet (www.umvf.org, école de e-learning).

EMVU has started work after two exploratory workshops (Clermont-Ferrand, CICE in January 2003, and Casablanca, Faculty of Medicine and Pharmacy in June 2003).

Some of the pedagogical contents are presented on www.emispher.org and on various CD-ROMs. Through recorded videos and live video transmissions over the satellite-based network of surgical operations, EVMU hopes to enhance the effectiveness of the medical education in this region.

EMISPHER Consortium meeting in Casablanca (9-12 October 2003)

This publication has been produced with the assistance of the European Union. The contents of this publication is the sole responsibility of the persons /organisations indicated in the colophon/imprint and can in no way be taken to reflect the views of the European Union.

The priorities for selecting the pedagogical programme are based on the following criteria:

· needs expressed by the recipient countries;

· contents validated by experts;

· the proposed contents on the platform (selection, translations, digitalization, re-writing, page layout, preparation of multimedia contents, availability experts and teams) have been defined.

The e-learning programme has been accepted at the end of May 2003 as multimedia data base for the following topics :

Gynaecology-Obstetrics

A national French course of gynaecology-obstetrics is already on line, with free access to all.

For undergraduate students:

http://www.uvp5.univ-paris5.fr/campus-gyneco-obst/cycle2/default.asp?frame=sommaire

For postgraduate students:

http://www.uvp5.univ-paris5.fr/campus-gyneco-obst/cycle3/sommaire.asp

Surgery and Endoscopic Surgery

CICE pedagogical web site: http://www.endosurg.org contains a database of up-to-date surgical techniques and offers a forum allowing on-line chatting with experts and surgeons.

Turkish Association for Trauma & Emergency: http://www.travma.org

Turkish Association for Endoscopic-Laparoscopic Surgery: http://www.elcd.org includes information on endoscopic-laparoscopic and minimal invasive surgery:

Reproductive Medicine

In Cooperation with Professor Jean-Luc Pouly of the Department of Gynaecology from Clermont-Ferrand

http://perso.wanadoo.fr/fivnat.fr

a web site about reproductive medicine that contains educational and epidemiological data.

The EVMU Gateway

As central gateway to the contents of the EVMU, a dedicated section of the EMISPHER website has been created: http://info.emispher.org/virtual.htm

Each partner will present their own contents as well on their own website. Every page will be reachable from the EVMU gateway.

This method allows liberty and independence between the partners, allowing each of them to work at their own pace, based on their own design and contents, choosing their level of interactivity and access.

For each topic, the gateway will propose title, expert author, location, date, and keywords.

The satellite network as a tool for teleteaching

Live surgical operations from operating theatres, live lectures, etc. to one or several sites simultaneously (point-to-point or multipoint) will soon be reality, when the network between the 10 partners will be operational by the end of April 2004.

For these transmissions a video programme is prepared that will be communicated on the various web sites listed in the EMISPHER portal. The programme will list:

· Live broadcasting schedule, according to the yearly teaching programmes of the various partners institutions

· Monthly video programme

The EMISPHER partners have defined certain policies for the development of pedagogical contents for the project:

· Respect the charter of the Health On the Net (HON) http://www.hon.ch/HONcode/Conduct.html, a code of conduct for medical and health web sites.

· Each pedagogical topic will contain title, author, date of release, date of up-date, keywords and if possible, a short summary.

· Quality of the contents: contents are to be validated by the workgroups, working towards diploma-earning.

Further Actions

The partners have also discussed some further actions to be envisaged beyond the content building:

· To propose a first video broadcasting programme based on the schedule of equipment installation at the various partners' sites and the needs expressed by those partners already equipped;

· Advertise on the various relevant web sites, tabloids, medical magazines, etc. as soon as the satellite dishes and telemedicine workstations are installed;

· To evaluate the EMISPHER internet-satellite platform as pedagogical tool (questionnaire, evaluation, final validation of the e-learning / tele-teaching activities.

First EMISPHER Conference in Casablanca (9-12 october 2003)

eTEN Project: MEDASHIP

MEDASHIP: Medical Assistance for Ships,
Duration: 4/2002-12/2003
Participants: D'Appolonia S.p.A. (IT); Centre for Law Ethics and Risk in Telemedicine, Avienda (UK); Eutelsat (FR); National Centre for Scientific Research, NCSR Demokritos (GR); SRU OP 2000, Charité, Berlin, (DE); co-funded by the EC under the eTen Programme, Contract No. C27271

Project Coordinator: F.Bagnoli (D'Appolonia)
http://www.medaship.com

An integrated solution for health services on board ships is not readily available in Europe or elsewherein the world at the present time. Such technologies also have a vital role to play in providing medical care to passengers and crews on board ships and can dramatically improve the quality of medical care on board suitably equipped ships. These considerations led D'Appolonia in Genua, an Italian Engineering Company, which started few years agos some experimental activities in this domain, to form a group including a telemedicine tools developer and satellite carrier for the final assessment and running of the service, aiming at validating it in the day-by-day clinical practice.

During the validation phase the service has been tested on board of three ships (European Stars of Festival Cruises, Olympia Explorer of Royal Olympia Explorer) and in the ferry boat sector (Superfast XII of Superfast Ferries)) having the possibility to connect to three land medical centers, participating in the project:

· Charitè Hospital, Berlin;

· Sotiria Hospital, Athens;

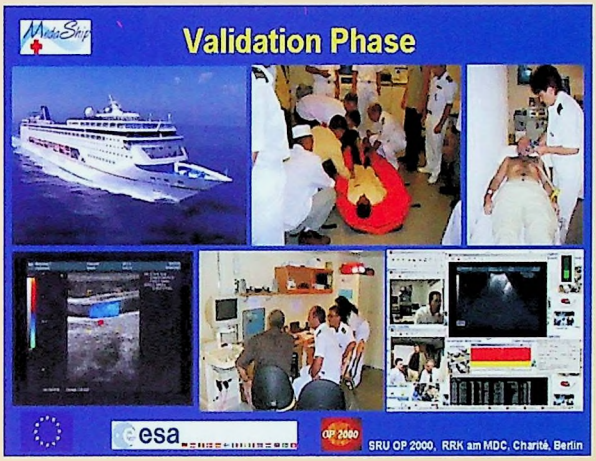
· Evangelico Hospital, Genoa.

During the project, which represents a further step towards the commercialization of the telemedicine service, technical issues have been finalized and other aspects (like medico-legal and business aspects) have been dealt with.

The services offered by MEDASHIP fall into two distinct categories: medical services and technical services. The medical services that are provided include telecardiology, ultrasound examinations and videoconferencing using the WoTeSa/WinVicos system.(This is the same system as will be used for the real-time telemedicine applications in EMISPHER.)

The technical services offered to the shipowners include the onboard installation and integration of the MEDASHIP service, the updating and retrofitting of structures already available on board and the design and development of medical facilities during the construction phase of the ship. The principal aim is to provide existing vessels and new builds with a turnkey platform and infrastructures for all medical services to be used on board. Other telecommunication services can also be integrated into the MEDASHIP service so that all services can be provided on a single platform. The telemedicine service will offer the shipowner the opportunity to install a satellite communication system on board.

This could be also used profitably for different other applications including videoconference, television channels, GSM and wireless telephony via satellite, remote banking services, fast internet and fleet management.



In the market validation phase the MEDASHIP consortium has investigated and developed two business models on the commercial delivery of the MEDASHIP service to its potential customers. The models are the "ticket price" and the "additional insurance" model. In the first of these models telemedicine services are paid through a slight increase in ticket price charged to cruise or ferry passengers. In the second model passengers will be offered the opportunity to buy an additional insurance for telemedicine services. These models have been developed after extensive discussions with the interested parties, including shipowners and travel insurers.

Preliminary results indicate that the MEDASHIP service is sustainable on a commercial basis.

COLOPHON / IMPRINT

- Content of Leading Article on EVMU by CICE, Clermont-Ferrand
- Editors of the EMISPHER Newsletter :
  - H. Kessis, ANDS
  - C. van Doosselaere, EHTEL
  - T.A. Roelofs, Charité

EUMEDIS Project: EMPHIS

EMPHIS (Euro-Mediterranean Public Health Information System), 09/2002-08/2005, EMPHIS Consortium of 19 international partners, under the leadership of Fondation Merieux

Project Coordinator H.Deboi FONDATION MERIEUX

http://www.emphis.org

Distance Learning at the service of Public Health

EMPHIS is one of the 5 projects in the Healthcare sector currently co-funded under the EUMEDIS programme.

The EMPHIS project intends to develop information systems within public health practice, care and education in the Mediterranean region, using as pilot projects

· the strengthening of disease surveillance in tuberculosis (TB);

· the development of a decision support tool in the control of zoonotic cutaneous leishmaniasis (ZCL) based on a geographic information system (GIS);

· the active exchange of data and counseling in nosocomial infections (NI).

Modern information and communication technology (ICT) tools will also be used to develop distance learning modules in public health and to disseminate information among end-users. The challenge of the distance learning component of EMPHIS project is to produce educational supports that can exploit the flexibility offered by the new technologies, in order to overcome possible geographical, material and human limitations to the use of EMPHIS products.

Needs analysis and innovative technologies are the strengths of the project. Through needs analysis, two types of targets have been identified:

· institutional, useful for carrying out national programs and projects; and

· academic, necessary for access to basic and continuous education.

Three obstacles remain, however, before the accomplishment of these objectives: *economic*, *organisational* and *pedagogical*

The main economic obstacle is the very high cost of pedagogical resources, both initial and maintenance costs. This limits the access to distance learning to only those countries or organisations with sufficient availability of money.

The EMPHIS project overcomes these problems by using XML (Extensible Markup Language), in association with a specific method for producing pedagogical supports. This lowers the price 5 to 10 times.

The organisational obstacle consists in questioning traditional professional practices and the organisational culture surrounding these practices. In order for the new tools to be effective, the actors must own them. The EMPHIS project aims to overcome this issue by promoting incremental changes, thereby allowing organisations and professionals to change their instruments and methodologies at their own pace, from a light change to, over time, a complete one. Technological solutions make these many changes over time almost free of charge.

The main pedagogical obstacle is that of pedagogical innovation. Professionals have their own methodology and it can be difficult and even unjust to ask them to abandon it. The EMPHIS project therefore proposes different pedagogical models, covering a great variety of methodologies, and offers tools through which it is possible to adapt each model to the clients' needs. It is also envisaged to create different kinds of material supports.

The final network proposed by the EMPHIS project is composed of three main areas, covering the entire Euro-Mediterranean region: area North (France, Université de Technologie de Compiègne), area South (Tunisia, Université du Centre), area East (Lebanon, Université Saint Joseph). They accompany the end users in their adaptation to distance learning technologies at the level of pedagogical engineering and use of technical tools.

The end goal of the three geographical areas will be to transfer their competencies as much as possible to the end users, in order to continue the process that EMPHIS has begun and further the dissemination of distance learning tools even beyond the life of the project.

Emphis Dissemination Office, Departement of Public Health, Turin, University via santena 5 bis, I-10126 Torino, Italy, tel 0039 011 6706593, Fax 0039 011 6706551, e-mail silvia.rovere@unito.it

EMISPHER International Dissemination Conferences

- Casablanca (Morocco): "Medical E-Learning", 9-12 October 2003 Host: Faculty of Medicine and Pharmacy Casablanca, FMPC, (Prof. Mohamed Kebbou)

- Cairo (Egypt): "Public Health in the Euro-Mediterranean Region", 19-22 February 2004 Host: Aïn Shams University (Prof. Gamal Wafa)

- Nicosia (Cyprus): "Continuity of Care", 24-27 June 2004 Host: University of Cyprus (Prof. Marios Dikaiakos)

- Istanbul (Turkey): "Telemedicine: Best Practices", 16-19 September 2004 Host: ISTEM, Istanbul University (Prof. Cavit Avci)

Global Telemedicine Partnership

The Norwegian Centre for Telemedicine was designated as the first World Health Organization Collaborating Centre for Telemedicine in July 2002. The activities of the centre cover the major aspects of telemedicine. The collaboration is based on the *Terms of Reference* which cover country work, research and dissemination, distance learning, advisory services and resource mobilization.

A global telemedicine fund-raising programme, the **Global Telemedicine Partnership,** will be launched in 2004.

Scope and objectives
The Global Telemedicine Partnership aims to reduce the digital divide between the haves and have-nots within and between nations. The aim is to encourage telemedicine projects and services in developing countries and under-served regions. The programme will support studies, projects and activities. The ambition is to allocate 5-10 million euros every year.

The fund's values and work methods will reflect openness, equality and fairness.

Target group
The partnership is targeting:

- People who would not otherwise have access to health services
- Health workers in developing countries and other economically weak areas
- Public- and private-sector organizations with good ideas which need funding to develop telemedical services

Contributors
Private-sector players will be invited to contribute to the fund according to WHO guidelines for working with the private sector. The European Space Agency (ESA) has agreed to contribute satellite capacity for the partnership. The Norwegian Ministry of Health and the Directorate for Health and Social Affairs are supporting the initiative.

Organization
The fund will be managed by the WHO Collaborating Centre for Telemedicine through Norut MH, a company which organizes research for the University of Tromsø and the University Hospital of North Norway, and works with the commercialization of research results. A maximum of 15% of the income will be used for administration.

A board for the fund will be established, with up to 10 members. The board will ensure effective communication with contributors, the fund's administration, fund manager and other stakeholders.

The board will decide the criteria for support. Applications will be evaluated by the board twice a year. Applicants will be expected to fund at least 20% themselves.

Would you like to be kept informed about the progress of the Global Telemedicine Partnership?

Application forms and other material will be available soon. In the meantime, you are very welcome to indicate your interest by submitting the form below.

I would like to contribute to the partnership	☐
I would like to submit an idea for funding	☐
I would like to receive the Global Telemedicine Partnership Newsletter	☐
Other contribution (ideas and comments)	☐

Name (person / institution): _____
e-mail address: _____
Comments & suggestions: _____

Contact:
Tove Sørensen, Head, WHO Collaborating Centre for Telemedicine
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Tel. +47 911 956 96 / + 47 77 75 40 00
www.telemed.no/who

Norwegian Centre for Telemedicine
WHO Collaborating Centre for Telemedicine
University Hospital of North Norway

STAKES

Den Norske Kreftforening

TTeC 2004 - Tromsø Telemedicine and eHealth Conference

Citizen participation in eHealth:

Challenges for research, technologies and health care organisations

Date: 21-23 June 2004
Place: Tromsø, Norway

More information:
www.telemed.no/ttec2004

Welcome to TTeC 2004

The TTeC 2004 conference is about people using eHealth for their own health purposes, and the ensuing challenges for research, technology and health care organisations.

Citizen and patient representatives, together with policy makers and experts from the field of health, social sciences and technology, are invited to exchange knowledge and debate strategies in eHealth.

We hope this event will strengthen efforts to build networks and knowledge that can facilitate the potentials, and limit the pitfalls, inherent in eHealth developments.

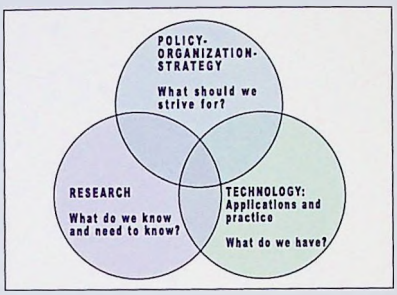
On behalf of the conferance co-organisers - the Norwegian Centre for Telemedicine (NST), the National Research and Development Centre for Welfare and Health (STAKES, Finland), the Norwegian Federation of Organisations of Disabled People (FFO), the Norwegian Cancer Society (DNK) and the Finnish Centre for Health Promotion (FCHP), I extend a warm welcome to all those interested in contributing to, and learning more about, this exciting field.

Deede Gammon
Conference chair
Head of eHealth consumer programme, NST

About the conference

The conference will provide a meeting place for exchanging knowledge and debating strategies between the key players in eHealth.

We invite citizen and patient representatives together with policy makers and experts from the field of health, social sciences and technology.



Keynote speakers

Angela Coulter Ph.D. is chief executive of Picker Institute Europe. She is visiting professor in health services research at the University of Oxford, visiting fellow at Nuffield College, Oxford, a governor of Oxford Brookes University, and an honorary fellow of the faculty of public health medicine.

Angelica Frithiof is a consultant in medical staff/patient communication based on principles of Narrative Therapy at AF Patientkommunikation. Present elected positions are chairperson of the VIS (Health consumers in Sweden), member of the education committee of the Swedish Rheumatism Association and board member of EHTEL.

David Gustafson is a professor of Industrial Engineering and Director of the University's Center of Excellence in Cancer Communication Research (funded by NCI) and Director of the National Program Office for the National Improvement Network for Addiction Treatment and the founding Director of the Center for Health Systems Research and Analysis.

Hiroshi Ishii is a tenured Associate Professor of Media Arts and Sciences, at the MIT Media Lab. He founded the Tangible Media Group to pursue a new vision of Human Computer Interaction (HCI): "Tangible Bits." His team seeks to change the "painted bits" of GUIs to "tangible bits" by giving physical form to digital information and computation.

Ian Kramer was a California attorney and English barrister until medical retirement in 1997. He has been living with HIV since about 1982. He has served as Vice-Chair of the UK Coalition of People Living with HIV/AIDS, co-Chair of the Board of the European Network of Positive People, and a member of the board of the Global Network of Positive People.

Jeremy Wyatt is an Associate Director of R&D at the National Institute of Clinical Excellence (NICE), a visiting professor in Medical Informatics at the Academic Medical Centre, University of Amsterdam and an Academic Adviser at NHS National Knowledge Service, based at Centre for Evidence Based Medicine in Oxford.

The name of a speaker from the EC eHealth Unit will also be announced

Preliminary Programme TTeC 2004

Monday 21 June			
07.30-09.00	Registration		
09.00-10.15	Opening session by co-organizers and WHO representative		
10.15-11.00	Angelica Frithiof, consumer and patient representative, will speak about patient empowerment: definitions, future perspectives, strategies and the potential role of ICT		
11.00-11.15	Questions, comments and discussion		
11.15-11.45	Coffee break in exhibition area		
	Preliminary tracks		
11.45-13.00	Patient empowerment	Driving forces and barriers for eHealth	Patients' access to electronic records
13.00-14.00	Lunch/registration in exhibition area. Poster presentations		
14.00-14.45	Professor Ishii Hiroshi, MIT Media Lab, will speak about his research on Tangible Bits and the relevance of Human Computer Interaction research for eHealth developments		
14.45-15.00	Questions, comments and discussion		
15.00-15.30	Coffee break in exhibition area		
	Preliminary tracks		
15.30-18.00	Future technologies and perspectives	Patient education	Confidentiality and privacy

Tuesday 22 June			
09.00-10.00	Professor David Gustafson, Centre for Health Systems Research and Analysis, will speak about the guiding perspectives in the CHESS research community and the role this type of research may have in eHealth developments		
10.00-10.15	Questions, comments and discussion		
10.15-10.45	Coffee break in exhibition area		
10.45-11.30	Professor Jeremy Wyatt, Academic Medical Centre in Amsterdam, will speak about the relationship between evaluation and the adoption of new eHealth technologies and services		
11.30-11.45	Questions, comments and discussion		
	Preliminary tracks		
11.45-13.15	Debate session on evaluation of eHealth applications	eHealth in prevention and health promotion	Researching virtual communities
13.15-14.30	Lunch/registration in exhibition area		
14.30-15.15	Ian Kramer, Vice-Chair of the UK Coalition of People Living with HIV/AIDS, will discuss patients as experts and outline strategies for enhancing equality in relationships with care providers		
15.15-15.30	Questions, comments and discussion		
15.30-16.00	Coffee break in exhibition area		
	Preliminary tracks		
16.00-17.00	eTreatment and eTherapy	Digital divide and equity of access	Organisational issues

Wednesday 23 June			
09.00-09.45	Angela Coulter, Chief executive of Picker Institute Europe, will address the issue of user involvement in health care and health policy		
09.45-10.00	Questions, comments and discussion		
10.00-10.30	Speaker from the EC eHealth Unit (name to be confirmed)		
10.30-11.00	Coffee break in exhibition area		
11.00-11.30	Plenary session: Unique challenges for research in new technology		
	Preliminary tracks		
11.30-13.00	eHealth and outcome research	Quality assurance of health sites	eHealth in home care
13.30-14.00	Closing plenary session		
14.00-15.00	Lunch		

Practical details

Certification

The TTeC 2004 conference has applied for both Norwegian and international accreditation. Please visit the conference website at www.telemed.no/ttec2004 for further details.

Conference venue and accommodation

The conference will be held at Tromsø Performing Art Center in the centre of the city. The conference hotels are Radisson SAS Hotel, Hotel Amalie and Saga Comfort Hotel. The rates are the same regardless of which hotel you are staying at:
single room NOK 1095 per night,
double room NOK 1295 per night.
Prices include breakfast. Please register at www.telemed.no/ttec2004

Travel

Note that there might be discounts on air fares if your stay in Tromsø includes the night between Saturday and Sunday. Why not grasp this opportunity to enjoy the weekend in the town described as the Paris of the North?

Registration and payment

Register for TTeC 2004 at the conference website: www.telemed.no/ttec2004. The regular registration fee is NOK 3800 for full conference participation. For discount rates, please read more at the website. Payment can be made through VISA or MasterCard or by invoice.

Trade exhibition

A number of interesting exhibitors will be present at the conference. Exhibitions are open during the whole conference. Please check the conference website for available and further information.

Members of the Scientific Committee

Name	Affiliation
Chair: Professor Per Hjortdahl	University of Oslo, Norway
Deede Gammon, Programme Manager	Norwegian Centre for Telemedicine, Norway
Dr. Finn Skårderud	Regional Centre for Child and Adolescent Psychiatry, Oslo, Norway
Ass. Prof. Katelyn McKenna	Assistant Research Professor, New York University, USA
Prof. Pekka Ruotsalainen	Head of OSKE/STAKES, Finland
Risto P. Roine, Chief Physician	Helsinki & Uusimaa Hospital Group, Finland
Sameline Grimsgaard, research fellow	NAFKAM, University of Tromsø, Norway

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P.O. Box 35, N-9038 Tromsø, Norway

WHO's Health Telematics Programme in South-East Asia Region

Goals

To improve health services delivery in particular and health system performance in general through the use of ICT in member states.

DIS-27.1

Objectives

- Raising awareness of Health Telematics benefits and applications.
- Establish pilot projects aiming towards development of strategic direction.
- Contribute towards improvement of health care services.
- Evaluation of cost and benefits of Health Telematics Projects.

Intended Impact

- Improve Access to Health care delivery.
- Improve Public health services.
- Improve Quality of Health.
- Improve Cost savings for Health Care.

Major Constraints

- Delay in receiving response from consulting sites.
- Comfort of medical Doctors with the use of ICTTechnology.
- High cost and non availability of funding.
- Lack of basic health infrastructure at the requesting sites.

Implementation Framework

- **Preliminary Studies**
  - Identify healthcare needs.
  - Design system to meet those needs.
  - Identify the equipment, services and ICT requirements.
  - Assess expected costs and potential benefit and what each of the partners contribute.
- **Pilot Projects**
  - To address issues of organization, acceptability and interoperability.
  - Help raise the awareness of governments and health care professionals.
  - Demonstrate potential advantages and ingredients to build national strategies.
- **Evaluation** of initial experience.
- **Operational Implementation.**

Three Step implementation approach for pilot projects

Step 1: Improve access to Information (Tele-Education)
- Internet connectivity.
- Access to journals.

Step 2: Improve access to Advice (Tele-Consultation)
- Through Email and multimedia attachment.
- Patient History, Pictures, Digital ECG ,Digital Stethoscope waves etc.

Step 3: Improve access to diagnosis & patient management.
- Tele-radiology , Tele-pathology and/or Tele-ultrasound.
- Integration with Health Management Information Systems.

Regional Situation for Pilot Project

Details Overleaf...

- **Bhutan** -Completed
- **Sri Lanka** -Launched
- **Maldives** -In Progress
- **Myanmar** -To be Planned
- **Nepal** -To be Planned

Bhutan: Completed

Implementation Sites

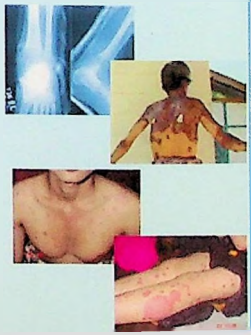
By the end of 2000, a Pilot project including all three steps was established between National Hospital at Thimphu (NH) and Regional Referring Hospital at Monger (MRRH). Later the facilities were extended to four more sites (Gelephu, Riserboo, T/Yangtse, Lhuentse).

Current Status

All the three steps have been estabilised at Thimphu and Mongar. For other four [illegible]s, step 1 & 2 have been established.

Consultation Statistics (Jan'02 to Mar' 04)

Type of Consultations	Number of Consultations
Dermatology	43
ENT	03
Gynecology	08
Medical	68
Oral Surgery	02
Orthopedics	22
Pathology	04
Pediatric	11
Psychiatric	06
Radiology	114
Surgical	07
TB	01
Others	01
Total Number of Consultations	**290**



Sri Lanka: Launched

Implementation Sites

In 2002, based on the lesson learnt from Bhutan, a Pilot project has been initiated at eight sites in Sri Lanka

Current Status

Step 1 and 2 have been establised., except at one Hospital (Ampara, General Hospital), where Step 3 has been implemented. A Pilot project has been launched at eight sites in December 2003.

Step 1: Improve access to Information- ***all eight sites***

- Internet and Email over Dial up or Lease Line

Step 2: Improve access to Advice (Tele-Consultation)- ***all eight sites***

- Web Camera
- Digital Camera
- Document Scanner
- Voice Over IP (VOIP)

Step 3: Improve access to Diagnosis and Patient Management - ***one site (Ampara)***

- Tele-radiology
- Tele-pathology

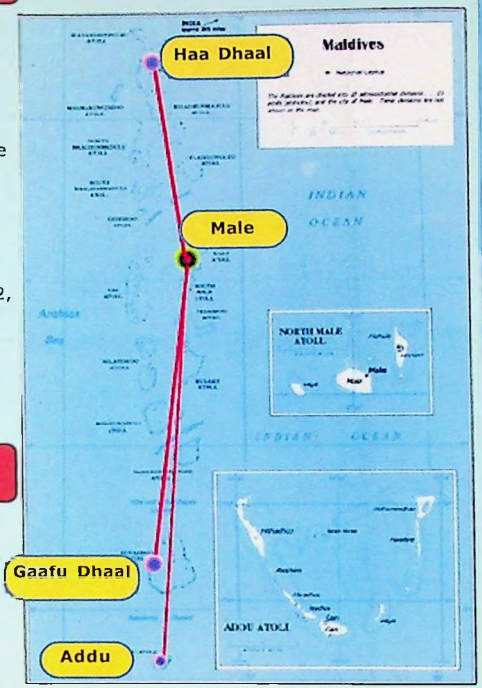
Maldives: In Progress

Implementation Sites

A plan for implementing Pilot Health Telematics project has been finalized for four Regional Hospitals located in the extreme North and South of Maldives Island

Current Status

The scope limits to step 1 and 2, except at one Hospital, where step 3 will also be implemented



Myanmar and Nepal To be Planned

A project plan will be developed by year 2005 for establishing pilot projects.

Conclusion

The question is not "if" the Health Telematics services should be adopted by countries, but it is "when" to do so

Role of WHO

- Continuously monitor developments in relevant fields and country readiness for health telematics.
- Advise member states as to when it is most opportune to introduce such services.
- Strong assessments of Health Telematics trials to measure evidence of the technology's impact on health system goals.
- Encourage the Health community, to develop innovative approaches for sustainable application of Health Telematics.

Contact

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