



Ministry of Health

**INFORMATION AND COMMUNICATION  
TECHNOLOGY**

**POLICY AND STRATEGY FOR THE HEALTH  
SECTOR**

**DRAFT**

## **1.0 INTRODUCTION**

### **1.1 Background**

In recent times the health sector has seen an increasing use of information and communication technology in almost all facets of health service delivery. These developments are taking place largely in an environment in which the infrastructure for the deployment and use of information technology remain either weak or uncertain. Among the many weaknesses in infrastructure is the unreliable domestic electricity supplies and well developed national technology infrastructures; an inadequate level of computer literacy, computer density and an underdeveloped modern telecommunication infrastructure. These limitations are especially pronounced in the rural areas where the need for health services is strongest.

It is an acknowledged fact that Information and Communication Technology can provide a direct benefit to health primarily by increasing access to medical and health care. This role of technology in health has been summed up in the Alma-Ata Declaration of 1978 which states that: Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible and at a cost that the community and the country can afford to maintain.

Fortunately information and communication technologies are evolving rapidly and the costs of both equipment and use are falling. The growth in use of the Internet continues to be exponential and many countries now recognize the importance of telecommunication for social and economic development. Consequently significant investments have been and are being made in telecommunications to extend and improve networks at both local and national level.

The lack of a clear information and communication technology policy and strategy in health has created a situation where past initiatives have either failed to meet their objectives, did not address priorities in the health sector or were incompatible to systems and management culture of the sector. In other instances there were duplication of efforts and inefficient use of scarce resources in procurement and deployment of information and communication technology in the health sector.

The demand for improved use technology will remain ever increasing from both user and supplier perspective. But more importantly the performance of the health sector will depend on the extent to which these resources are effectively deployed in the face of limiting resources and the pursuit of greater decentralized decision-making in the health sector. There is therefore the need for the Ministry of Health to provide a policy framework guiding the acquisition and use of information and communication technology to support the realization of health sector goals and objectives.

### **1.2 Information systems**

This policy provides the basic framework for the information and communications strategy for the health sector within which detailed strategic plans for the deployment information and

communication infrastructure and systems will be developed. In particular the following specific health information and communication systems:

- Medical record system focusing on district and regional hospitals
- Budget and planning systems focusing on district, regional and national health administration level
- Performance assessment focusing on district, regional and national health administration level
- Surveillance and rapid response systems focusing sub-district and district level
- Drugs and other supplier systems focusing district and regional hospitals

In this framework consideration is given only to equipment and processes for information management and communication in the health sector. It does not cover medical, dental and other equipment used in x-ray, laboratory and other departments of the hospitals and clinics even though they may have components that will store and reproduce information.

### **1.3 National Health Goals**

The government vision 2020 document defines five main areas for priority attention. These include efforts to maximize the healthy and productive lives of Ghanaians, a fair distribution of the benefits of development and the promotion of science and improved technology as tools for growth and development. It also aims at attaining a national economic growth rate of 8% and the reduction of the population growth rate from 3% to 2%.

In the above context the health sector has identified the following goals:

- i. Significant reduction in rates of infant, child and maternal mortality rates.
- ii. Increased access to health services especially in the rural areas.
- iii. Establishment of a health system effectively oriented toward delivery of health services.
- iv. Effective and efficient management of the health system.

To realize these goals the following strategic objectives have been defined to guide the development of the sector in the medium term:

1. To increase geographical and financial access to basic health services to all people living in Ghana.
2. To provide better quality of care in all health care facilities and all outreach centers.
3. To improve efficiency at all levels of the health care system.
4. To foster closer collaboration and partnership between the public sector and communities, other sectors, non-governmental organizations, private healthcare providers and other interested groups.
5. To increase the overall resources and ensure equitable and efficient distribution of resources in the health sector.

## **2.0 INFORMATION AND COMMUNICATION TECHNOLOGY CHALLENGES**

In the context of the above goals and objectives, the deployment and use of information and communication technology presents several challenges. Primarily the strategies require that systems should be put in place to ensure that the sector is able to respond to local health needs. It is also important that whilst building the capacity to respond to local health needs the sector must ensure that the overall means of assessing performance is built into the routine data collection, analysis and dissemination process.

In the short term, the strategies require a complete reorganization of the various structures and procedures for information collection and dissemination to effectively function with the establishment of the Ghana Health Service.

### **2.1 Increasing access to health services**

Availability of health services especially in the rural areas is constrained by need to travel long distances to reach primary facilities. On the average over 40% of the population live beyond one hour travel time to a health facility and just over 50% live within 30 minutes travel time from a health facility. In certain areas particularly in the northern sector over 90% of the population do not have access to health services. In most of these areas outreach services are few and far between. To add to this problem, health facilities in these areas are usually only able to provide limited services due to lack of skill. Specialist services to a large extent are limited to the urban areas with over 80% of these services available only in the regional capitals.

The underlying causes for this level of access are due to the inadequate service delivery points and a weak referral system, which is further, complicated by the lack of appropriate transport system. Specialist support to the lower levels is also very limited due to the low numbers of specialists and the lack of facilities at the lower levels.

The strategies adopted to overcome these constraints include the building of new facilities and the introduction of specialist outreach services. These strategies all have large recurrent implications and the mounting costs may affect expansion in the long run.

Information and communication technology in this case will help in bringing the specialists skill to the lower levels while at the same time provide policy makers with a clearer understanding of the health problems of the lower levels for more precise planning and programming to be effected.

Financial access is also an important constraint. While the government is pursuing a cost recovery policy the cost burden on patients tend to be way beyond what the government has approved. The strategy is to ensure that patients are aware of the actual costs so that they can plan their expenditure in the hospital. Information and Communication technology will serve as a means of empowering patients to be able to demand the appropriate bills for services.

## **2.2 Improving quality**

The main concerns with respect to quality of health services are the uncaring attitude of staff to patients. In addition the level of technical competence, the handling of emergencies, frequent shortages of drugs and medical supplies have been identified as major barriers to quality of care. The underlying causes include among others the low level of skill among health workers at the periphery, poor physical infrastructure, mal-distribution of staff and the lack of supervision, monitoring, regulation of staff and service delivery. The strategies to overcome these barriers include efforts to improve staff skill through in-service training, improvement of transport and communication and redressing the unfavorable distribution of staff.

The above strategies will take a long time to really have the desired effect of ensuring a minimum standard across the country. In this regard a constant and sustained support from the central and regional level will be required as a means of bridging the quality gap. Information and communication technology will need to be deployed in a way that skill transfer can be facilitated, service supervision and on line support can be enhanced and a system of rapid response to problems and health events even in very remote areas can be put in place.

## **2.3 Improving efficiency**

Institutional inefficiency characterized by a centralized hierarchical arrangement without a corporate culture. The headquarters functions as a conglomerate of different divisions and units. Each of these divisions and units has their own programmes, which are developed and implemented independently. This has led to a lot duplication of efforts, inefficient use of resources and lack of synchrony in programmes. Coupled with this problem is the absolute lack of information on programmes of the various divisions.

The underlying cause is the inadequate fora for disseminating information and an inefficient system for broadcasting activities and events such as meetings both internally and across levels. Although several efforts have been made to streamline meetings and make them more purposeful, the problem of information dissemination remains a problem. The use of information and communication technology will need to be employed as a means of disseminating information and supporting the postal system. However in the face of limited resources there is the need to put in place minimum standards to ensure systems compatibility and cost efficiency.

## **2.4 Improving inter-sector collaboration**

There is a growing private sector (including missions) in health without adequate regulation, control and integration even though 40% of people who seek health do so from them. This private/public sector relationship is worsened by the lack of information across both sectors. The same can be said of the relation between the Ministry of Health and other ministries departments and agencies. The results of this lack of collaboration have been the duplication

and dissipation of efforts, lack of holistic planning and inefficient implementation of health programmes.

The strategy is to bring all sectors on board to plan and implement health programmes. Contractual agreements and procedures will form the basis for most of the programme implementation arrangements. The pooled donor funds arrangements imply that donor involvement in programme implementation will be limited. Information to support further assistance will therefore have to come from the overall performance assessment exercise.

To some donors the need for information will be more frequent than this annual programme and will therefore need to constantly update their information from implementing units. This will require a system of information dissemination and sharing over a wide area and involving large amounts of current information. This demand can effectively be met by taking advantage of information and communication technology.

## **2.5 Increasing funding to the health sector**

Funding to the health sector has persistently been low over the last decades. The total expenditure on health has averaged about \$12 per capita with about 50% being out-of-pocket payment. The linkage between capital development and recurrent cost implications is still not clear. Most of the resources in health have been skewed towards clinical care and towards tertiary services.

The strategy is that while ensuring that absolute funding to the sector is increased both through government budgetary allocation and through donor support there is a deliberate shift of resources to the district levels and below. The increasing importance of out-of-pocket payment has also led to the search for alternative sources of funding with health insurance being a critically considered option.

The role of Information and communication technology in this regard is very varied. Firstly the sector must be able to market itself to the outside world in order to attract donors. A conscious effort must also be made to ensure that closer monitoring is effected at the lower levels so that the objectives of resource shift are met. A health insurance scheme will require an extensive record keeping system, which can only be effective with the support of information technology.

## **2.6 Summary of Information and Communication Technology challenges**

The challenges posed by the objectives of the health sector in the area of Information and Communication Technology can be summarized as follows:

- i. Improving access to health services by:
  - Expanding the scope of activities of specialists in a way that will minimize the effect of their low numbers in the sector.
  - Support the establishment of a rapid response system to enhance performance in both clinical and public health care.

- Empowering patients so that they will seek quality care and make the right demands on the health care system.
- ii. Improve quality by:
- Supporting the transfer of skills and expertise to health workers in the periphery thereby improving their on-the-job performance.
- iii. Improve efficiency by:
- Improving both management and technical efficiency of the sector through reliable information dissemination systems.
  - Supporting the decision making process by ensuring the prompt availability of information for all decision-makers.
- iv. Improve collaboration by:
- Providing support to overall planning and sector assessment process
- i. Improve funding by:
- Providing a broadcast facility for marketing the health sector.

### **3.0 GOALS AND OBJECTIVES**

In meeting the above challenges, there is the need to put in place a system of procurement, deployment and use of information and communication technology that will ensure that a careful balance is established between the need for the technology and the human and financial resource availability. The goal of the Information and Communication Technology policy is thus to ensure the maximum use of modern technology to enhance the overall performance of the health sector.

#### **3.1 Objectives**

The overall objective of this policy is to provide a framework for the procurement, deployment and use of information and communication technology in the health sector.

Specifically the policy aims at:

1. Providing guidelines for the specification and selection of products and services to develop, enhance and maintain equipment and systems for data collection and analysis; information generation and dissemination; information transmission and communication.

2. Providing standards for the human resource development for information management.
3. Providing guidelines for the development and enhancement of culture of information utilization in the health sector.
4. Identify priority areas and systems to be developed to meet the challenges of the sector.

#### **4.0 INFORMATION AND COMMUNICATION TECHNOLOGY BOUNDARIES IN THE HEALTH SECTOR**

In the deployment and use of Information and Communication Technology in the health sector, the Budget and Management Center shall be the foci for the development of:

- Management information and support systems
- Internal communication systems and
- External communication systems

The Budget and Management Centers to be considered are as follows:

1. The Sub district Health Administration
2. The District Hospital
3. The District Health Administration
4. The Regional Hospital
5. The Regional Health Administration
6. The health training and research institutions
7. The Ghana Health Service Headquarter

#### **4.1 THE SUBDISTRICT HEALTH ADMINISTRATION**

##### **Key Information and communication systems to be supported**

The Sub district is a defined geographical area with or without a health center, but has clinics and outreach points. It has a Sub district health team who provide both clinical and public health services in the communities and are responsible for the implementation of health programmes in their catchment area Subdistrict. Within the communities, there are other providers such as the Midwives and Traditional Birth Attendants, Community Based Disease Surveillance volunteers all of whom report health events to the Subdistrict Health Teams who in turn report to the District Health Administrations and provide feedback to the communities.

The content of reports from communities to the Subdistricts include the description and location of a health event which will require verification and prompt action from the district. Update of records of activities from outreach services, midwives and TBAs are also activities

that take place at the Subdistrict. The Subdistrict also reports to the district in a manner that allows for aggregation of information and assessment of the performance of individual Subdistricts and the district as a whole.

The Subdistrict provides the focus for Disease control and surveillance activities.

### **Information and support systems**

The Subdistrict shall have facilities to enable the following tasks to be performed:

- i. Simple addition, subtraction, multiplication and division in order to report on indicators for performance assessment.
- ii. Report writing in a legible manner compatible with normal reporting and filing systems.
- iii. Storage of information in a systematic way that will allow for easy retrieval.

### **Internal communication requirements**

The Subdistrict shall have facilities to enable communication to be established between:

- i. The Subdistrict Health Team/Health Center and community based disease surveillance officers.
- ii. The Health Center and Midwives and Traditional Birth Attendants
- iii. Different units in the health center

To facilitate the above tasks, the Subdistrict shall ensure that all community based providers live within two hours of travel time with the any available means of transportation to the nearest health center.

### **External communication requirements**

The Subdistrict shall have facilities to enable communication to be established between:

- i. The Subdistrict Health Team and the District Health Administration
- ii. The Health Center and the District Hospital for referral and technical support
- iii. The Subdistrict health team and other Subdistricts in the district

## **4.2 THE DISTRICT HOSPITAL**

### **Key Information and communication systems to be supported**

The district hospital is the first referral point in the health care delivery system. It provides some specialist support to the Subdistricts and other clinics in the district while at the same time undertaking outreach activities. The District Hospital provides clinical services to a large number of clients and are usually manned by highly qualified personnel. Systems that need to be supported include patient care services, drugs and medical supplies and financial information systems. These systems are can be grouped into complete transaction systems, services and decision making systems.

### **Information and support systems**

The district hospital shall have facilities to enable computerization of all key activities and transactions as follows:

- i. All complete transactions and unit record points in the hospital shall be computer based. These are:
  - The medical records unit including Admissions and discharges
  - The pharmacy store
  - Accounts and revenue units
  - The non-drug medical supplies store
- ii. All services shall be captured on a computer. These are:
  - Diagnostic services (Laboratory, x-ray ect.)
  - Dispensing
- iii. All decision-making systems shall be computer assisted. These are:
  - Consulting room services
  - Ward activities
  - Central management

### **Internal communication requirements**

The District hospital shall have facilities to allow a reliable communication among staff both in and out of the hospitals and specifically to support on call activities and the provision of 24-hour services.

### **External communication requirements**

The District Hospital shall have the facility to:

- i. Communicate by voice to all Subdistricts/health centers and other health facilities in the district.
- ii. Communicate by voice and fax with regional hospital
- iii. Communicate by voice, fax and data with the District Health Administration

## **4.3 THE DISTRICT HEALTH ADMINISTRATION**

### **Key Information and communication systems to be supported**

The District Health Administration has the overall responsibility for the performance of health service delivery at the district level. To do this the district receives reports and information from all Budget and Management Centers within the district. At the district level these are analyzed and put together as district reports. Resource distribution and monitoring of programme implementation at the district level is also a major function usually involving the analysis of large volumes of data. Rapid response activities and follow up on health events at the Subdistrict level also takes place from the district level. Operational research activities also take place at the district level to support internal decision-making and to contribute to national and regional surveys and research.

### **Information and support systems**

Information management at the District Health Administration facilitates a wide range of activities including planning, budgeting and performance monitoring. It will therefore require capacity for collection and analysis of a high volume of data and the preparation of reports with capacity for graphical presentation.

### **Internal communication requirements**

The District Health Administration shall have facilities to enable communication with all Subdistricts in the district, the district hospital and other sectors within the district.

### **External communication requirements**

The District Health Administration shall have facilities to:

- i. Communicate by voice to all health/health centers and other health facilities in the district.
- ii. Communicate by voice and fax and data with District Hospital
- iii. Communicate by voice, fax and data with the Regional Health Administration

## **4.4 THE REGIONAL HOSPITAL**

### **Key Information and communication systems to be supported**

The Regional Hospital provides secondary care which includes specialist support to the District Hospitals, the Subdistricts and other hospitals and clinics in the region. Information systems to be supported include patient care services including ambulance services, drugs and medical supplies and financial information systems. Like the district hospitals these systems can be grouped into complete transaction systems, services and decision-making systems.

### **Information and support systems**

The Regional Hospital shall have facilities to enable computerization of all key activities and transactions as follows:

- i. All complete transactions and unit record points in the hospital shall be computer based. These are:
  - The medical records unit including admissions and discharges
  - The pharmacy store
  - The non drug medical supplies store
  - Accounts and revenue units
- ii. All services shall be captured on a computer. These are:
  - Diagnostic services (Laboratory, x-ray ect.)
  - Dispensing
  - Physiotherapy

- iii. All decision-making systems shall be computer assisted. These are:
  - Consulting room services
  - Ward activities

### **Internal communication requirements**

The Regional Hospital shall have facilities to allow a reliable communication among staff both in and out of the hospitals and specifically to support on call activities and the provision of 24-hour services.

### **External communication requirements**

The Regional Hospital shall have the facility to:

- i. Communicate by voice to all Health Centers and other health facilities in the region. This shall include all ambulance services within the region.
- ii. Communicate by voice and fax with all District Hospitals.
- iii. Communicate by voice, fax and data with the Regional Health Administration.

## **4.5 THE REGIONAL HEALTH ADMINISTRATION**

### **Key Information and communication systems to be supported**

The Regional Health Administration has the overall responsibility for the performance of health service delivery at the regional level. To do this the region receives reports and information from all Budget and Management Centers within the region (Subdistrict and district hospital information will form part of the district health administration). At the regional level these are analyzed and put together as regional reports. Resource distribution and monitoring of programme implementation at the district level is also a major function usually involving the analysis of large volumes of data. The region coordinates rapid response activities and follow up on health events at the district level. The region also coordinated operational research activities at the district level.

### **Information and support systems**

Information management at the Regional Health Administration will require capacity for collection and analysis of a wide range of data and the preparation of reports with capacity for graphical presentation.

### **Internal communication requirements**

The Regional Health Administration shall have facilities to enable communication with all districts, district hospitals, the regional hospital and other sectors within the district.

### **External communication requirements**

The Regional Health Administration shall have facilities to:

- i. Communicate by voice to all District Health Administrations, District Hospitals, and the Regional Hospital.

- ii. Communicate by voice and fax and data with all District Health Administrations, the Regional Hospital.
- iii. Communicate by voice, fax and data with the Director and Deputy Director General of the Ghana Health Service, the Disease Control Unit and the Center for Health Information Management.

#### **4.6 THE HEALTH TRAINING AND RESEARCH INSTITUTIONS**

##### **Key Information and communication systems to be supported**

Training institutions shall ensure adequate provisions for computer literacy especially based on systems used in the health sector. The institutions shall make the following minimum provision in the training curricula:

- i. Computer appreciation programme for all trainees.
- ii. Word processing and spreadsheet usage for all trainees.
- ii. Use of statistical packages for officers who will manage information
- iii. In-house network management

##### **Information and support systems**

Health training institutions will require capacity for collection and analysis of data and the preparation of reports with capacity for graphical presentation for training purposes.

##### **Internal communication requirements**

The Training Institutions shall have facilities to enable communication with all departments.

##### **External communication requirements**

The Training Institutions shall have facilities to:

- i. Communicate by voice and fax and data with District and Regional Hospitals
- ii. Communicate by voice, fax and data with the Regional Health Administration
- iii. Allow access to the Internet.

#### **4.7 THE GHANA HEALTH SERVICE HEADQUARTERS**

##### **Key Information and communication systems to be supported**

The national Executive of the Ghana Health Service Headquarters is made up of the Offices of the Director, the Deputy Director General and seven (7) directorates all of which have responsibilities for information management for decision-making. This level is also made up of a number of technical units most of which are replicated at the regional and district level and which for the purposes of support and guidance maintain constant communication links.

Service planning and implementation are coordinated at this level which also has an additional responsibility of managing contractual arrangement with other sectors for service provision. Information management at this level will largely be part of the corporate planning process and provide access to organizational policy, frameworks and standards.

All divisions and units at the headquarters manage large volumes of data, reports and other pieces of information on regular basis. Decision-making is usually supported by such varied

sources of information. Many units maintain useful data that are not usually accessed and information sharing is not optimum. The demand for improvement in information and communication at the national level therefor centers on the need to enhance the responsibility for information management by divisions and units and to ensure that a system for information dissemination is supported.

### **Information and support systems**

Operating on the principle that divisions shall have the capacity to manage information for their own decision-making and contribute to sector policy formulation, each division shall ensure that all units are equipped with appropriate facilities for collating, analysis and dissemination of information. Every division shall therefor establish an information management office or assign the responsibility to an appropriate unit within the division.

### **Internal communication requirements**

There shall be established an internal communication system to enable:

- i. Information broadcasting to all divisions and units.
- ii. Divisions to access relevant information from other divisions and units including the Center for Health Information Management and the Disease Control Unit.

### **External communication requirements**

There shall be established facilities to enable the following:

- i. Information on the performance of the health sector to be made available to all partners and other stakeholders
- ii. Information about developments within the sector to be readily available to all decision makers and stakeholders

## **5.0 TECHNICAL STANDARDS**

5.1 The main components of an information technology system are the hardware or physical infrastructure and the software. For the deployment of a system in the health sector:

- a. The hardware shall be sufficiently powerful and reliable to enable the intended software to operate effectively.
- b. The software must be capable of meeting the needs of the Budget and Management Centre in a cost effective and user-friendly manner.
- c. The whole system should be capable of expansion and development to meet the changing needs during its lifetime.

5.2 The Centre for Health Information Management shall provide an Up to date information on the specification and capability of computer hardware and other aspects of information technology to the health sector. The Centre for Health

Information Management shall periodically publish an annual list of standards to cover:

- Operating systems
- Programming tools
- Software tools and
- Application software packages

5.3 The deployment of Information and Communication technology shall take due consideration of the following:

- a. The general guidelines for use of Information and Communication Technology at each level and for each Budget and Management Centre.
- b. The level of basic infrastructure and the availability of human resource at the point of deployment.
- c. Networks and information systems shall be guided by the following principles:
  - Compliance basic policy guidelines for network and information systems development as described in this policy
  - Compatibility with other networks and information systems to ensure easy communication and exchange of information between the various networks and information systems. A proliferation of networks and systems with different technical characteristics will either impede or raise costs of later integration of networks and systems. Furthermore, a variety in technical characteristics will make replication of partial network and information systems to other institutions. All networks and information systems must therefore be fully compatible should be regulated by clear technical guidelines spelled out in this policy.
  - Modular set up of networks and systems avoids over capacity and addresses required future capacity expansion. As much as possible, networks and systems should be designed in such a way that replication to other levels of intervention and to other institutions is possible.
- d. The minimum criteria for selecting any network and system shall be:
  - Based on technologies that can be managed and maintained by the responsible network and information system officers.
  - Based on proven technologies
  - Based on technologies for which sufficient and high-quality local suppliers of support and maintenance is available
  - Based as much as possible on off-the-shelf available technologies, requiring minimal customisation. Extensive new development of software shall be minimised.
  - Based on technologies that can easily be replicated at other levels of intervention and to other institutions in the health sector.
  - Based on technologies developed by professional suppliers. Design and development of networks and systems by IT non-professionals shall be avoided.

5.4 The deployed specific software systems will comply with international health sector software standards:

- Health Level Seven (HL7) is an ANSI<sup>1</sup>-Accredited Standards Developing Organisation (SDO) which focuses on the electronic interchange of clinical, financial and administrative information among independent healthcare—oriented computer systems; e.g., hospital information systems, clinical laboratory systems, enterprise systems and pharmacy systems.
- The Health Level 7-standards are developed and supported by a large number of institutes and software-developers all over the (western part of the) world. These standards are important to make possible the interchange of information between different information systems. There are also other standards, which can be used for interchanging information in health care. As an example there are ‘Edifact-messages’ and there are CEN-standards. These standards might be part of HL7 in the near future. Also from this point of view (that there are also other standards which are used in health care), it makes sense to ‘follow’ the HL7- standards.
- Knowing these standards and working with these standards is also important in the situation that information is just interchanged between systems of the same kind. This is because in future it might be possible that other systems will be bought. It is important that these other systems will be able to communicate with the software, which is already in use. And because of this it will be necessary to be sure that all systems are developed ‘concerning’ a standard, which is used in a large part of the world.

5.5 In line with the information and supply systems and the internal and external communication infrastructure, the following minimal infrastructure shall be developed at the different Budget and Management Centers (see chart Infrastructure):

**1. The sub-district health administration and health Centers**

**Information system and support**

- Electronic or manual typewriters and calculators at health administration
- Subdistricts with large health centers which are manned by Medical Officers shall have in addition to the above a stand alone Personal Computer.

**Internal communication**

- Where there is no reliable means of (public) transport the community-based provider shall be provided with or shall have access to means of transport.

**External communication**

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<sup>1</sup> American National Standards Institute

- A telephone and fax link based on the national telecommunication lines.
- A two-way radio (voice) communication system linked to the District Health Administration and the District Hospital. The system shall have a broadcast facility to enable communication with other sub-districts.

## **2. The district hospital**

### **Information systems and support**

- An internal telephone system connecting all departments.
- A local area network linking all activity and transaction point.

### **Internal communication**

- A paging facility for all medical officers and heads of departments.

### **External communication**

- A two way radio (voice) communication system as part of the district network.
- A telephone and fax link based on the national telecommunication network
- A telephone link with dial in facility to the District Health Administration

## **3. The district health administration**

### **Information system and support**

- A minimum of three (3) stand-alone personal computers with one dedicated to data entry and analysis.
- Facilities for document preparation and reproduction including copiers and bookbinders.

### **Internal communication**

- An internal telephone system connecting all departments of the District Health Administration.

### **External communication**

- A two way radio (voice) communication system as part of the district network.
- A telephone and fax link based on the national telecommunication network

- A telephone link with dial in facility to the District Hospital and the Regional Health Administration.

#### **4. The regional hospital**

##### **Information systems and support**

- A local area network linking all activity and transaction point.

##### **Internal communication**

- An internal telephone system connecting all departments.
- A paging facility for all medical officers and heads of departments.

##### **External communication**

- A two way radio (voice) communication system as part of the regional network.
- A telephone and fax link based on the national telecommunication network
- A telephone link with dial in facility to the Regional Health Administration

#### **5. The regional health administration**

##### **Information systems**

- A local area network linking all departments, including a facility for data entry and analysis.
- Facilities for document preparation and reproduction including copiers and bookbinders.

##### **Internal communication**

- An internal telephone system connecting all departments.

##### **External communication**

- A two way radio (voice) communication system as part of the regional network.
- A telephone and fax link based on the national telecommunication network
- A telephone link with dial in facility to the national and district level.

## **6. The health training and research institutions**

### **Information systems and support**

- A small local area network for administration.
- A computer laboratory with enough facilities to enable at most two students to one computer during instruction periods.
- Facilities for document preparation and reproduction, including copiers and book-binders.

### **Internal communication**

- An internal telephone system connecting all departments.

### **External communication**

- A telephone and fax link based on the national telecommunication network
- A telephone link with dial in facility to the District and Regional Hospital and the Regional Health Administration.
- Internet access

## **7. Ghana Health Service Head Quarters**

### **Information systems and support**

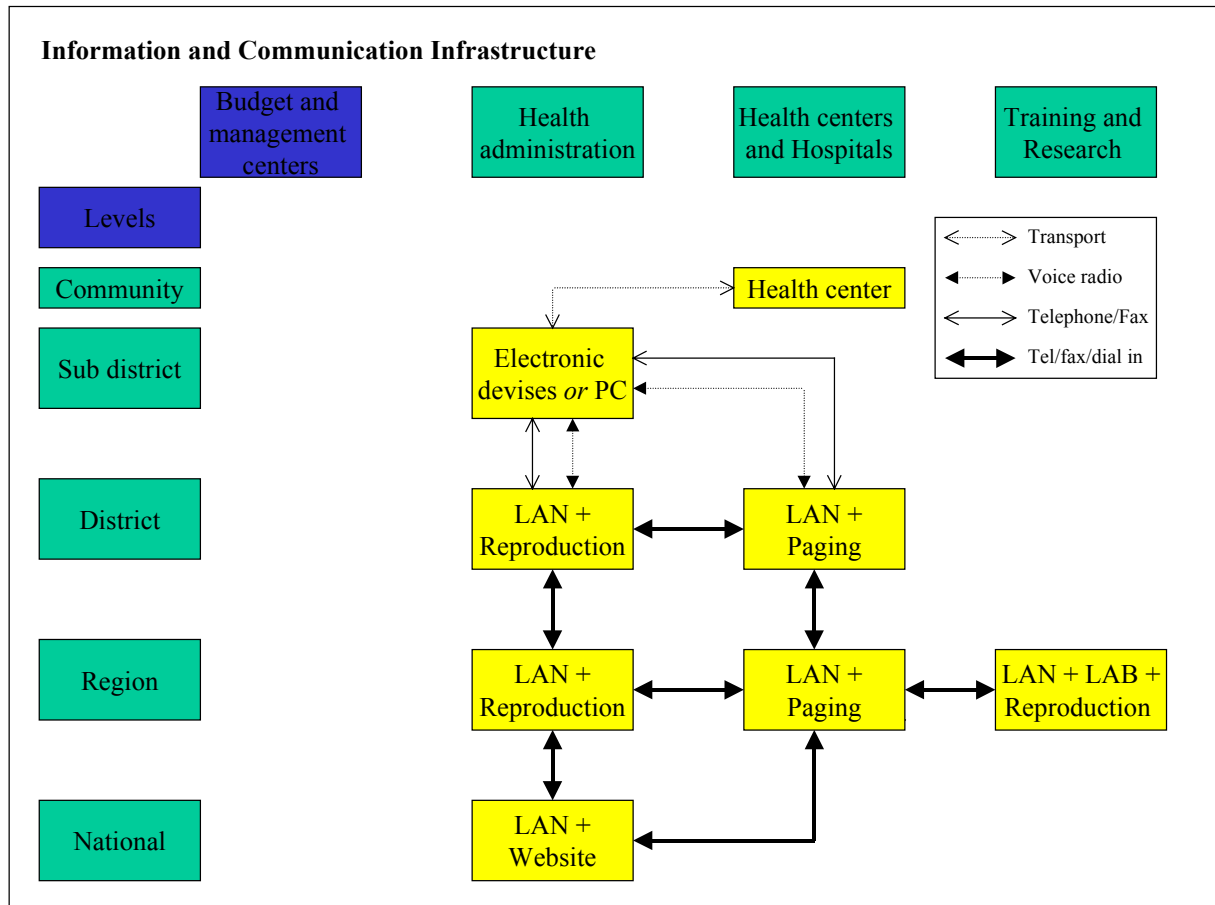
- Every unit shall have at least one Personal computer to facilitate documentation.
- The office of the Divisional Director shall have a minimum of two computers with one dedicated to data entry and analysis.
- Every division shall have facilities for document preparation and reproduction including a photocopier and bookbinders.

### **Internal communication**

- An internal telephone system connecting all Divisions, Units and Officers under each unit.
- A local area network linking all Divisions.

### **External communication**

- An external telephone link based on the national telecommunication network.
- Internet Access
- A website which shall be dedicated to the sector.



## 6.0 INFORMATION PROCEDURES

Standard and procedures for information and communication management shall be developed and updated annually by the Centre for Health Information to guide users in the management of both hardware and software. The procedures shall also include procedures for data and information flows and additional standards required. For data and information procedures the following principles apply:

- A unique coding system for basic patient information
- A standard for the classification of diseases
- A standard for the classification of diagnosis and treatment
- Procedures on the protection and use of patient information

6.1 A unique coding system based on the provisions of the **Medical Records Policy** shall be adopted for all patients. The coding shall cover a unique number for each registered patient including data on the patients' geographical health unit. The following minimum criteria apply to the coding system:

- The number will be applied to all health transactions of the patient. This will enable health providers to build a health history on each patient. The coding will be directly applied to all information and communication systems.
- The unique coding system is only related to the health sector. For the present the Ministry of Health will not subscribe to an integrated national unique coding system linked to non-health related issues to avoid the potential problems with access of non-health related institutions that do not subscribe to patient-related privacy procedures.
- For each patient, a basic minimum set of patient data will be developed including at least Name, Address and other basic personal information.
- This minimum data set in combination with a standard way of registration will make it possible to aggregate information (for scientific and managerial purposes) and to compare figures of different regions (or of different hospitals).

6.2 A standard classification system for diseases shall be used to ensure effective registration and exchange of disease related information. The following system will be deployed:

- International Classification of Diseases (ICD): ICD is a worldwide coding systems for medical terms developed and updated by the World Health Organisation. The basic ICD is used for coding diagnostic terms and other families of medical terms. The most recent version, used by many countries including Ghana, is the ICD-10. Other versions, which are used, are the ICD-9 and the ICD-9-CM.

6.3 In the longer term, a standard for diagnosis and treatment classification will be introduced, which will allow for the standard integration of diseases, treatment and budgeting along the following lines:

- Diagnosis-related groups (DRG's), which are a classification of hospital case types, put into groups expected to have similar hospital resource use. The groupings are based on diagnoses, procedures, age, sex, and the presence of complications or morbidity. The DRG will enable the hospital to classify a hospital stay in terms of what was wrong with and what was done for a patient. If it's clear what treatment is given to patients who are suffering from a certain disease, it will be possible to know the cost of treating a specific category of patients. The standard can be used for payments of inpatient hospital care.
- Using codes to register diagnoses and treatments by using (for example) the ICD-10, makes it possible in a later phase to calculate costs. In this way the registration can be used for financing purposes in future.

6.4 Procedures on the protection and use of patient information shall be developed and for all categories of data and information and shall apply to all levels. With the application of Information and Communication Technology, information flows in the health sector will become faster and more standardised. To avoid misuse of information, there shall be a standard code of practice for all data managers and health practitioners. The Guidance on the Protection and Use of Patient Information developed by the UK Department of Health will serve as the basis and as a starting point. However the following shall serve as a guide:

Key objectives will be:

- To establish a set of procedures with which users of personal information must comply (e.g. fair and lawful processing of information; information to be collected and processed only for specific purposes; information to be accurate and up to date and retained in a form which identifies the subject only for as long as is necessary for the purpose)
- Gives individuals the right to gain access to information held about them
- Provides for a supervisory authority to oversee and enforce the law

The procedures will:

- Permit the processing of health information where it is required for the purposes of preventive medicine, medical diagnosis, the provision of care or treatment or the management of health care services, and where those data are processed by a health data manager or practitioner subject under national law or rules established by national competent bodies to the obligation of professional secrecy or by another person also subject to an equivalent obligation of secrecy
- Require certain information to be provided to individuals whose personal information is processed
- Apply both to computerised and manual records

The procedures will provide detailed practical guidelines to the following practises:

- The basic principles governing the use of patient information
- Informing patients why information is needed, how it is used and their own rights of access to it
- Safeguarding information required for national health statistics and related purposes
- The circumstances in which information may be passed on for other purposes or as a legal requirement

## **7.0 ICT TRAINING AND HUMAN RESOURCES DEVELOPMENT PROCEDURES**

Health sector training programmes shall include Information and Communication Technology awareness creation and skills development. The training programmes shall upgrade information officers and health staff. Specific training and human resources development programmes shall be directly linked to specific ICT network or information systems. Specific training requirements shall therefore be detailed out in strategic plans for specific network and information systems activities.

7.1 Capacity development shall be based on the following guidelines:

- Training of trainers: A small cadre of network managers and information officers at national and regional levels will be trained through short-term training courses provided by specialised ICT training institutes in Ghana.
- The trained cadre of information officers will train the end users that are to use/integrate the systems in their daily work.

7.2 The capacity building programmes will encompass:

- Information management for higher health administration staff, network manager and information officers
- Network management and maintenance for network managers and information officers
- Database and web development, management and maintenance for information officers
- Information analysis and reporting for information officers
- Data entry for support information staff
- Basic computer literacy for health staff (basic office programmes such as text, spread sheet and presentation programmes)

## **8.0 PROCUREMENT PROCEDURES**

To ensure effective and efficient deployment of resources in the health sector the standard procurement procedures shall apply to information and communication systems. Procurement procedures for Information and Communication technology shall:

- Comply with the general procurement activities must comply with the general Government procurement procedures.
- Comply with the structure for hardware and software and technical standards described in this policy framework.
- Include support and maintenance arrangements and contracts with the suppliers.
- Allow for an adequate (both in terms of price and quality) technical evaluation by a responsible department at MoH.

## **9.0 SUPPORT AND MAINTENANCE PROCEDURES**

To ensure a sustainable development the information and communication structure, clear guidelines for support and maintenance shall be developed and updated by the Centre for Health Information Management. Support and maintenance procedures for ICT shall be based on the following policy principles:

- Networks and information systems shall, as far as software is concerned, be internally supported and maintained by the responsible information officers under the coordination of the Centre for Health Information Management.
- Hardware support and maintenance and more complex software support shall be outsourced to professional and experienced service providers. Outsourcing shall be based on support and maintenance contracts, which define the terms and conditions of support and maintenance. These contracts shall be included as part of the procurement procedures. The Ministry/GHS shall provide formats for standard contracts for support and maintenance.