# Computerization of Medical Analysis Laboratories in the Sudan between Reality and Expectations

Dr.Nasreldin Hassan Ahmed juma
1-National Center for Research-Documentation and Information Center, Khartoum Sudan
2-Medical Record Department, Applied Medical Sciences College, Taif University, Kingdom of Saudi Arabia (KSA)
nasrjoma@yahoo.com

Dr.Samir Mahoud Adam
1-Middical Record Department, Applied Medical Sciences College, Taif University, Kingdom of Saudi Arabia (KSA)
2-Khartoum State Water Coorporation , Computre Center Department, Khartoum Sudan,
samiradm59@yahoo.com

Dr. Magdy Shayboub Ali Mahmoud [1,2]*
1Computer Science Department, Faculty of Computers and Informatics, Suez Canal University, Ismailia, Egypt.
2 Computer Science Department, Applied Medical Sciences College, Taif University, Kingdom of Saudi Arabia (KSA)
E-mail: magdy01sh@yahoo.com

**Abstract**
The rapid development of the techniques used in laboratories led generating massive amounts of data in record time, which put scientists on the front line not only with the interpretation of this data to vital information but with the store this data in databases organization in a good way that allows retrieved easily, and this what led to the emergence of science bioinformatics, which applies computer technology to the management of these bioinformatics, as has this science developed several algorithms and software for analyzing the genome ( after becoming exposed in front of us) and comparing with DNA sequences and chains of proteins with each other or matching new strings with previously undiscovered chains in order to gain access to information about the functions of the new strings without having to use laboratory experiments (which may take month).
A medical information services are one of the important pillars of the researchers, but this information becomes worthless or useful if it does not reach in a timely manner and to the extent appropriate. Medical information is considered substrate upon which the medical research in the various fields in Sudan, and so had to be interest in release of its information statement and its role in various fields. There are in the state of Khartoum multiple institutions of medical information in its institutions of medical universities and, have noted the researcher that the institutions of medical information are deficient in human cadre and technical, and there is a decline in the information services provided by these institutions have been given all these and other reasons, the researcher of the study Systems Division Medical Information and Documentation Centre information(SDMIDCI). The study has pursued the study of the case in the institutions of the information, has been used to study a number of scientific disciplines represented in the curriculum, both descriptive and analytical survey, while the study used to collect the data of the following tools: resolution as a key tool in data collection, interview and observation. Questionnaire was distributed to beneficiaries researchers and graduate students and university students of specialty medical laboratory databases of global and local at the Center for Documentation and Information at the National Center for Research. In Conclusion search accept the proposal of information systems in the laboratories of medical tests Sudanese, and the reality of the application of these systems in Sudan and accept results and recommendations is the most important weakness of human resources and lack of uses of modern technologies to reach the medical information in a timely manner, which is the infrastructure in the institutions of medical information then the low information services in those institutions. The researcher recommended that the state give precedence maximum support and medical information sector at the policy level and work to provide medical information to non-traditional fit with the nature of the specialized medical institutions.
**Keywords**: SDMIDCI, DNA, Questionnaire, science bioinformatics

---

**The extent to which researchers from the vital information in the databases of medical centers in the medical information: Case Study Documentation and Information Center, National Center for Research- Sudan.**

## INTROUDCTION
A medical information services are one of the important pillars of the researchers, but this information becomes worthless or useful if it does not reach in a timely manner and to the extent appropriate. Medical information is considered substrate upon which the medical research in the various fields in Sudan, and so had to be interest in release of its information statement and its role in various fields. There are in the state of Khartoum multiple

institutions of medical information in its institutions of medical universities and, have noted the researcher that the institutions of medical information are deficient in human cadre and technical, and there is a decline in the information services provided by these institutions have been given all these and other reasons, the researcher of the study Systems Division Medical Information and Documentation Centre information(SDMIDCI).

The study has pursued the study of the case in the institutions of the information, has been used to study a number of scientific disciplines represented in the curriculum, both descriptive and analytical survey, while the study used to collect the data of the following tools: resolution as a key tool in data collection, interview and observation. Questionnaire was distributed to beneficiaries researchers and graduate students and university students of specialty medical laboratory databases of global and local at the Center for Documentation and Information at the National Center for Research. In Conclusion search accept the proposal of information systems in the laboratories of medical tests Sudanese, and the reality of the application of these systems in Sudan and accept results and recommendations is the most important weakness of human resources and lack of uses of modern technologies to reach the medical information in a timely manner, which is the infrastructure in the institutions of medical information then the low information services in those institutions. The researcher recommended that the state give precedence maximum support and medical information sector at the policy level and work to provide medical information to non-traditional fit with the nature of the specialized medical institutions.

Interest is growing Palmalomyat health and medical, even become one of the key ingredients that are not indispensable national system of health care. Despite the different definitions of health and medical informatics, all definitions agree among themselves on the use of computer applications in health and medical care. And provides informatics, as a tool for information management , the amount of the benefits, and how, and strategy. The medical data can be taken in the field of computers and various forms according to the needs and views , but the most important thing is the quality and completeness of data , reliability and accuracy. And expanding the role of medical informatics in the work of doctors up to meet the needs of the process, and the needs of training and continuing education throughout life . Hence, it was necessary to provide medical informatics education as a long-term investment in the medical professions. The areas where it is applied medical informatics Interestingly, management, epidemiological surveillance , and medical records -based computers , and access to publications and information services , and knowledge-based services , and geographic information systems , and e-health and telemedicine.

## SEARCH ASSUMPTIONS
- That the systems and information technology in the areas of current medical information ( if any) is not based on normative grounds intact.
- That medical information is the foundation for a healthy society and healthy.
- Medical analysis laboratories in the Sudan government to determine the effectiveness of information technology .

## THE PURPOSE OF THE RESEARCH
- A survey of the sources and components of medical information systems in Sudan.
- identify the efficiency of the current medical information systems in Sudan.
- To raise awareness of the spirit of the role played by scientific information and use of Sudan.

## RESEARCH OBJECTIVES
- access through the study of the current status of medical information systems in Sudan 's proposal to optimize system.
- the proposal of efficient systems suitable for medical information in Sudan.
- a proposed work to automate medical analysis laboratories in Sudan.
- reverse the current situation of the beneficiaries of the services of medical information.

## THE IMPORTANCE OF RESEARCH
Considered information services, the cornerstone of every researcher wants to up his research to the desired results , which can be applied on the ground and the importance of research to raise the spirit of awareness of developments in the field of information technology and the various systems in the field of information systems Boeitha various scientific and take advantage of them mediated by researchers..

## DEFINITION OF MEDICAL INFORMATICS
Is the field of study on a large number of issues in the management of medical information and biological weapons and their use, including medical computing (introduction of computer applications in medical practice ),

and the study of the nature of medical information itself.

Medical informatics is the science that is based on the acquisition and preservation , retrieval and application of knowledge and biomedical information in order to improve patient care, education, research and administration And health informatics known as an umbrella term used to include specialization emerging quickly and of using methodologies and computing technology, networking and communications to support health-related fields such as medicine , nursing, pharmacy and dentistry. This definition covers a very wide range includes the exchange of messages and clinical management , and retrieval of information sources and references , and the operation and management of health services, save and retrieve patient information , health education and health promotion , epidemiological surveillance , and monitoring of health status , and clinical decision support, and analysis of radiographs and clinical signs ( clinical ) and provide models and telemedicine.

Encoded data, the user can interpret the data first and then give it coded . It is worth mentioning that the coding may lead to mistakes during interpretation. Although the encoded data limits the way of self-expression , but it imposes subordination terms of the standards agreed to put it , which is very important if I want to use the data by other people who are not collected , which applies to all health indicators data.

## THE IMPORTANCE OF INFORMATICS FOR THE BASIC ROLES OF DOCTORS

Based on view of the need to be a medical informatics basic elements of the curriculum for undergraduate on the close relationship between information management and the five basic roles envisaged for future doctors . The statement could be related to the educational needs of medical Palmalomyat each of these five roles are as follows:

Learning needs related to informatics , " the role of a lifelong learner ." To meet what is the responsibility of this role should be able to show the graduate know what exists of information resources and tools , in order to support life-long learning . These include the knowledge to take the knowledge of these resources , and content , and these resources can respond to the needs of the information. And include the necessary skills for this role the ability to retrieve information and classified and evaluated , while the required positions include the development of appropriate information-related habits.

## THE AREAS OF THE USE OF MEDICAL INFORMATICS
## MANAGEMENT

Include administrative activities in the field of health care : the management of the activities ( such as vaccination campaign or awareness ) ; and management of a national program ( such as disease control ) ; and management of a health care institutions (such as a hospital or laboratory ) ; also include the management of national health services in full. It is intended " management " cyclical process to analyze problems , and planning , programming , budgeting , implementation , monitoring and evaluation and re- planning . It is thus not limited to the procurement of logistics and financial management and executive , but covered include , inter alia . While they include , for example, monitor the expenditure under assessed budgets , they must also include administrative necessity to link the resources ( financial and human ) to various aspects of health services and programs.

While there are many examples to support information  of remote telemetric, logistics and procurement , and executive management , finance , it is not a development systems are sophisticated enough to provide support to the management of a general sense previously mentioned

## EPIDEMIOLOGICAL SURVEILLANCE

Includes disease surveillance data collection routine continuing to study the extent to which the spread of the disease , and to track trends, and to discover changes in the cases of occurrence. The epidemiological surveillance mainly study the distribution of disease patterns and trends and health care measures related distributed according to geographical regions and age groups , and communities , and others, for the purpose of setting priorities and the use of measures of care the best possible use through monitoring and evaluation. This requires the collection and analysis of large amounts of diverse data about the areas in which they occur diseases and other health problems , and which hosts including patients , particularly in hospitals and health centers in rural and urban areas.

## COMPUTERIZED MEDICAL RECORDS

Resulting in increased demand for available data and the good organization of patient , in addition to the developments in computer science to stir great interest in the development of electronic records for patients. The computer can facilitate the reading of the data and make it available , and improve the structure , but these things increase the need to gather information. Featuring medical records computerized medical records on paper with a number of features made it is indispensable in health care.

These features include: Access to the contents of this record from several locations at the same time . It can

doctors, and nurses who are in separate buildings or in remote areas ( countries or cities ) reached at the same time to record patients. Longer confidential patient information and ensure safety in the electronic medical records of the challenges facing medical informatics, health and legal communities . It must be taken into account when starting the design of electronic medical records that the secrecy of the key elements to ensure success in the future . It should be mutually supportive legal structure with the working environment of electronic access to electronic medical records high-quality and acceptable to both the medical community and the health and the general public.

## PROVIDE SERVICES TO REACH PUBLICATIONS ( DOCUMENTS AND PUBLICATIONS ) AND INFORMATION SERVICES

Topping many libraries in developing countries, a list of the victims of the economic problems and the problems of hard currency , forcing a lot of medical and university libraries to be squeezed curtailed tremendous acquisition for magazines and publications of foreign medical associations. If the disks use a chunky CD-ROMs , which are used in the development of lists of property libraries , dilute to a large extent of the research problem , the problem of acquisition unchanged. Publications are provided compositions and health , medical and biological in a number of electronic means , which provided for the health care community , and these include the following means:-

Health and medical information and biological weapons on CD-ROM. It is like this disc more electronic means to spread the effectiveness of health literature . She reached the database known as MEDLINE, and many other bibliographic data Had at beyond health care units remote in most countries.

 Electronic journals . Became abstracts ( summaries ) published on the Internet or directly available on the CD-ROM is not enough for many of the medical professional And health informatics known as an umbrella term used to include specialization emerging quickly and of using methodologies and computing technology, networking and communications to support health-related fields such as medicine, nursing, pharmacy and dentistry. This definition covers a very wide range includes the exchange of messages and clinical management, and retrieval of information sources and references, and the operation and management of health services, save and retrieve patient information, health education and health promotion, epidemiological surveillance, and monitoring of health status, and clinical decision support, and analysis of radiographs and clinical signs (clinical) and provide models and telemedicine.

Encoded data, the user can interpret the data first and then give it  coded  It is worth mentioning that the coding may lead to mistakes during interpretation. Although the encoded data limits the way of self-expression, but it imposes subordination terms of the standards agreed to put it, which is very important if I want to use the data by other people who are not collected, which applies to all health indicators data..

## THE IMPORTANCE OF INFORMATICS FOR THE BASIC ROLES OF DOCTORS

Based view of the need to be a medical informatics basic elements of the curriculum for undergraduate on the close relationship between information management and the five basic roles envisaged for future doctors. The statement could be related to the educational needs of medical Palmalomyat each of these five roles are as follows:

Learning needs related to informatics, "the role of a lifelong learner." To meet what is the responsibility of this role should be able to show the graduate know what exists of information resources and tools, in order to support life-long learning. These include the knowledge to take the knowledge of these resources, and content, and these resources can respond to the needs of the information. And include the necessary skills for this role the ability to retrieve information and classified and evaluated, while the required positions include the development of appropriate information-related habits.
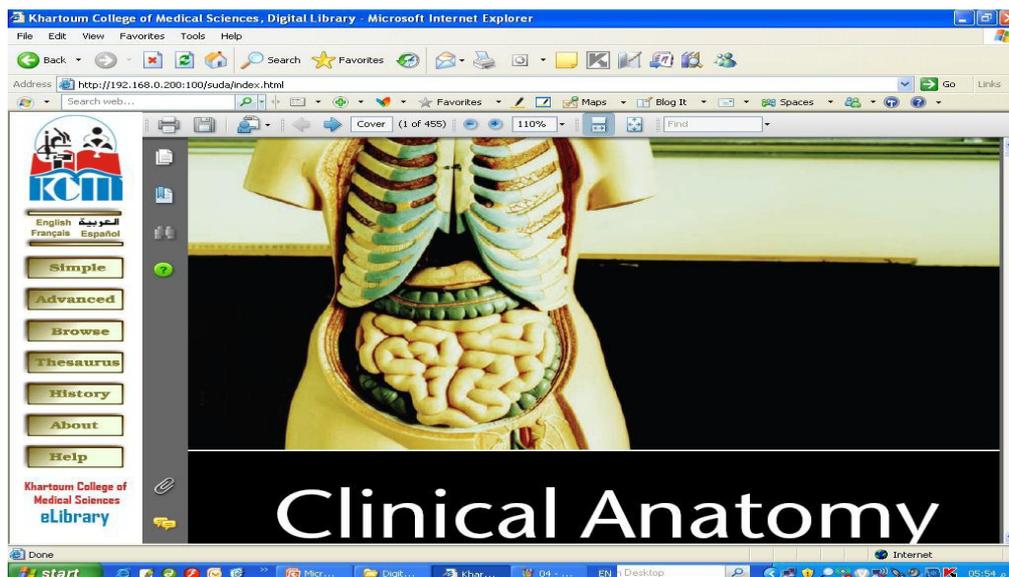
Fig. 1: Shaw the clinical anatomy in Khartoum college.

## INTERNET

A lot of health care organizations and publishers to use the Internet as a tool to spread their products on the Internet. Systems and e-mail discussion groups and news . One example is the use of the Internet by the health and medical community:

- Medical training and continuing education
- Provide access to information medical
- Patient care and support
- Diagnosis and consultation remotely
- Support during emergencies and epidemics
- Remote working for persons with disabilities
- Education in the field of preventive care and preventive health
- Electronic publication of the full texts of books and publications ( documents and publications ) health and biomedical.

## E-HEALTH AND TELEMEDICINE

Telemedicine is " the use of information technology to deliver services and medical information from one area to another or " provide remote service " , using electronic signals to transfer medical data (i.e., optical images with high resolution , and X-ray images , sounds, and patient records , and videoconferencing ) from one location to another . has been defined telemedicine as " the delivery of medical care by using the means of contact data , audio and visual synergistic ( interactive ) , including the delivery of medical care and consultation , diagnosis , treatment, and education , and the transfer of medical data ." covers the term " education " both patient education and " continuing education " for health-care personnel.

## CASE STUDY

Field study of the extent to which the beneficiaries of medical databases - available in medical laboratories Documentation and Information Centre - department of medical and vital information - National Research Center – Khartoum - Sudan

The Documentation and Information Center of the National Center for Research of the largest specialized centers in all different areas of knowledge in Sudan as it is interested in scientific research and development in Sudan . And documentation of research and studies Sudanese using the latest technology to save and retrieve and disseminate information , and is equipped with extended role of the ocean and all what he has . Not only was his role on the database , but Sudan has become a point of reference for many scientific centers and regional furnish him with CDs and online services and publications responsive inquiries researchers and students . Now the center is one of the most important centers of legal deposit of publications in Sudan.

**Objectives**

- Dissemination of information on research and published studies and ongoing in Sudan in order to benefit from the results ; includes books, magazines , periodicals and scientific studies
- Providing information and publications related to scientific research

- Providing information to the researchers by collecting , organizing, classifying and extracting and providing information
- Contact information networks of regional and international , to provide information from various sources
- Contribute to the formation and development of a national information and encourage cooperation between the various libraries around the country
- Work on the training of cadres and middleware research in the field of Information and Documentation
- Conducting studies and research in the relevant fields

**Sections of the Documentation Center and information:-**

Department of systems and information networks : boils down to his role in the establishment of information networks of the center and linked to networks of local, regional and international. The acquisition and construction of local rules and global and electronic libraries on different types and retrieval of the beneficiaries ( CD-ROMs , Internet , etc. ) and the work of her statistics. Inventory and classification of beneficiaries and to identify their interests and provide them with the appropriate information.



Fig. 1: Shaw the DITIGTAL BOOK WORKFLOW.

**Department works to supply**:- (the collection and supply), inventory and adjust production Sudanese scientific publication and non-publication in different vessels (manual and electronic), and surround the ongoing services of the Observatory record of ongoing research in Sudan and Observatory Research National Research Center.

**Department of Library Sudan:-:**

Sets up rules of local information by classifying and summarizing and indexing and cataloging and feeding mechanism of acquired research and dissemination (version Abstracts of scientific Sudanese lists and bulletin-ins) and current awareness services.

Table (1) Decision maker from a sample of beneficiaries), hospital administrators and heads of units) shows a sample study answers whether the Internet is available to the beneficiaries in the possibility of their residence and their work:

| Percentage | Repetition | Is the Internet is available in your workplace? |
|---|---|---|
| 88 | 73 | Yes |
| 10 | 9 | No |
| 98.8 | 82 | Total |
| 1.2 | 1 | No answer |
| 100 | 83 | Total final |

The results of the study in Table (1) to (88%) of the sample of the study is available online at their place of work, and this percentage is high, has attributed the reasons for the lack of the Internet for the rest of the study sample and the proportion (10.8%) of the nature of work in the field

Table( 2) shows the number of respondents who received cycle using the Internet:

| Percentage | Repetition | Did you receive the session on the use of the Internet? |
|---|---|---|
| 44.3 | 36 | Yes |
| 55.4 | 46 | No |
| 98.8 | 82 | Total |
| 1.2 | 1 | No answer |
| 100 | 83 | Total final |

The results of the study in Table (2) to (55.4%) of the Spread of the study sample did not receive a course in the use of the Internet, and this percentage is high, indicating that they may be the cause of the weakness in the use of the Internet among workers in the study sample.

. Table (3) shows the extent to which the beneficiaries of the medical Arabic content: use in center:

| Percentage | Repetition | Did you Benefit from medical database |
|---|---|---|
| 42.2 | 35 | Yes |
| 56.6 | 47 | No |
| 98.8 | 82 | Total |
| 1.2 | 1 | No answer |
| 100 | 83 | Total final |

The results indicate in the table number (3) to (56.6%) of the study sample reported that a few rules of medical localized content and attributed to the weakness of medical studies of Arabic content available on the internet.

Table( 4) shows the importance of Internet services to increase knowledge in the field of medical work and raise the efficiency and effectiveness of research:

| Percentage | Repetition | Internet allows me to see all that is new in my field and raise the efficiency and effectiveness of the work degree |
|---|---|---|
| 27.7 | 23 | Very large |
| 31.3 | 26 | Great |
| 16.9 | 14 | Medium |
| 6 | 5 | A few |
| 3.6 | 3 | Very few |
| 85.5 | 71 | Total |
| 14.5 | 12 | No answer |
| 100 | 83 | Total final |

The results of the study in the table (4) (31.3%) of the study sample reported that the Internet allows them to see all that is new in the field of medical work significantly, while (27.7%) reported that the Internet allows access to all that is New in the area of work very much, and when collecting percentages can say that 59% of the beneficiaries have convinced a large importance of the Internet in continuing education or in providing information and knowledge in the field of work which leads to raise the efficiency and effectiveness of medical work, and this positive indicator and high.

**Table( 5) shows the degree of sample answers on the efficiency of local databases and global access to medical information is required:**

| Percentage | Repetition | The efficiency of databases to access the required information achieved a degree? |
|---|---|---|
| 16.9 | 14 | Very large |
| 21.7 | 18 | Great |
| 25.3 | 21 | Medium |
| 12 | 10 | A few |
| 8.4 | 7 | Very few |
| 84.3 | 70 | Total |
| 15.7 | 13 | No answer |
| 100 | 83 | Total final |

The results of the study in Table (5) to (25.3%) of the study sample reported that the efficiency and speed of access to the required information is located at the middle class, while reported (21.7%) of the study sample that the efficiency of the Internet is great, and (16.9 %) at a large degree, and collect percentages are large and have a very large total (38.6%) and this is an indication that there is a problem in the use of the Internet if it has been dropped percentage of those who did not answer this question, and of forgotten (15.7%) may be the reason the result of foot computers, and poor infrastructure of the Internet**.**

**THROUGH THE ABOVE CAN BE SUMMARIZED AS THE MOST IMPORTANT FINDINGS OF THE STUDY, INCLUDING THE FOLLOWING**

* The centers of medical information , is available where the infrastructure of the Internet , and thus the potential

of employing the Internet in the management of technical operations in digital libraries , and the staff working in these libraries mostly have the equipment and supplies for the use of the Internet in the management of technical operations and the completion of activities , and have the ability to handle with the Internet , and thus work to employ their fortunes to help the beneficiaries to obtain information Tabahela that there is a weakness in the use of employee Internet use optimize the management of technical activities in these libraries is caused by the weakness of the dispatch staff in courses in the field of Internet use in technical operations , with the there are great conviction for staff in the importance of using the Internet in the completion of technical activities.

- The percentage of those who rely on the databases and the Internet in the completion of research ( 43.4 %), and this percentage is less than the required level  and the proportion of check use results in the completion of activities is ( 42.2%).
- (57.8%) *reported that the Internet allows them to answer their questions to help them get the job done.
- (59%) of the respondents said that the importance of using the Internet to access information and medical (63%) reported that the use of the Internet to achieve increased knowledge in the field of work and achieve the goals of continuing education in the field of specialization
- A slow access to information while using the Internet in the completion of activities and moderately , due to the efficiency and speed of the Internet, computers and feet  and not updated or replaced with modern.

**Proposal to automate medical analysis laboratories in Sudan:**

At the end of our search , we will present the importance of information systems in medical analysis laboratories , and the reality of the application of these systems in the Sudan.

## INFORMATION SYSTEM ANALYSIS OF MEDICAL LABORATORIES

Is a software system automates the work of laboratory medical tests , starting from the reception of requests for tests to collect and process the results and then printed. The system handles this process of determining the necessary samples for analysis , and direct them to the various sections of the laboratory according to the jurisdiction . It can also process the requests are sent to the analysis devices and analysis involved the collection of results from them. So we can say that there are several levels of information system , according to the operations of the processed.

## BENEFITS INFORMATION SYSTEM DETECTIVE PROPOSED

 Vary the benefits of an information system Detective different level of the system and place of application. We will focus in this paper on the benefits of the laboratory information system serving a large hospital without going into the details of the many:

**\*Health information provided by :** Detective facilitates information system to get answers to the questions raised about the cost of conducting the analysis , and the terms of sampling , and the possibility of conducting tests in a laboratory.

 -Increase the accuracy of processing samples : different types of blood tubes used in the analysis depending on the analysis to be performed . When a registration request analysis , the system specifying the types of containers and pipes needed to conduct a full analysis required for the patient . And this cannot forget the organizers of the withdrawal of blood sampling or - as is the case in the manual system - any sample are necessary to complete the analysis required , and can not commit an error in determining the type of pipe needed for the analysis. The examples are many in fact for committing errors in determining the types of pipe needed to analyze what has come across one of the nurses in the department to establish one of the hospitals , continued to commit the error of ten years because of misinformation in to him, and did not discover it until after you start dealing with the Information System laboratories**.**

**\*Speed up the loading devices analysis applied analysis :** All tests required for patients taught devices tests in the laboratory and by jurisdiction , and is not a secret that the process of indoctrination or download analytical instruments applied analysis towards a programmatic and automated is much faster and without making a mistake , forgetting to one analysis or another switch and other analysis.

**\*Collect the results of the analysis of analytical instruments :** The system is automated , the results are printed by the same analysis devices connected to a printer . Then combine the results of the patient to each other and recognizes him without respect for common method for printing the results, at best printing results returned by a typewriter or computer system using the appropriate editing . In the automated system , which shall collect the results according to the protocols of analytical instruments , combining to automatically print a uniform manner , as well as the accuracy of the information transmission speed and large in this process , and which have a significant impact in accelerating the work in the laboratory and improved.

**\* Monitor the results of analyzes of the Detective :** system ensures the passage of information on the results of laboratory monitoring to ensure the validity of these results scientifically and clinically**..**

**\*Potential and wide to conduct a study of the evolution of the case of a patient :** Do not stand detective work

when issuing the results of analyzes of the patients , but also extends to become possible to provide the physician supervisor on the patient's schedule , it may be supported by drawings , shows the development of the result of analysis or multiple results to the patient over a period of time what . Of course, this gives a good idea about the patient's response to therapy practice, which will benefit large to determine the appropriate treatment for this patient>

**\*Vast potential for medical studies statistic :** The accumulation of massive amounts of test results to patients coming from different places , and slices of age and wide , it can only tempt scholars and researchers using these results to statistical studies , may indicate the spread of some diseases during the period of time that in some areas , or the spread of diseases between the sexes one without the other , or between age-specific . This will benefit large as information on the nation in general. They can avoid the spread of some diseases of obtaining this information through programs enlighten , or take other protective measures**..**

**\*Adjust accurate accounting :** When you talk about money , The field is very wide to talk about the benefits and all the actors : Accuracy , speed , providing information of financial several forms , the study of the evolution of the financial benefits gained positively or negatively , the statement of the results of certain policies on informant during a period of what , and other a lot of benefits that cannot be counted in this research.

The benefits mentioned earlier to be the greatest , when linking information system Detective hospital information system (Hospital Information System - HIS) or at least expand the laboratory information system to include computer stations in the residence sections strapped to the Detective Information System **.**

**\*The possibility of knowledge available in the laboratory tests without trouble** : when the processor is available for a doctor in the department to review the possibility of analysis available in the laboratory , can access a quick decision in determining the analysis made it possible for the patient**.**

**\*Prevent a repeat of the same request analysis of the patient during the day :** doctors may ask a group of laboratory tests without the knowledge of him that they had already asked . Prevents this information system , redundancy and increases the credibility of the hospital and keeps the money patients.

**\*Reducing the amount of paper products used to print the results :** You can review the results of analyzes of patients from the computers in the department of residence without having to print them**.**

**Reducing the amount of mutual communication between laboratory analysis and other sections of the hospital :** The achievement of the link between information system detective with sections of residence, can avoid many of the questions that are being dumping detective by day, such as the question about the availability of the analysis , and on the readiness of the results of analyzes , and what kind of pipe needed to perform specific analysis**.**

**Reality automate laboratories in Sudan:-**

**The first thing that comes to mind after reviewing the above benefits is: Is applied information systems in medical analysis laboratories that serve large hospitals in Sudan?**

 -The answer is yes. but Sometimes applied to laboratory information system without connecting sections of hospital stay . Which limits the benefits of the information system , which we presented previously..

 -Applied sometimes Information System laboratories , without linking the office to accept patients , which is the beginning of a series of information in the hospital , where it is the introduction of information about the self of the patient and the reason for entry and date, and the name of the physician supervisor and others. Dissociating the admissions office calls to re-enter information on the self- patient in the laboratory after being introduced in the admissions office , which leads to a slow work in this system and to the possibility of the emergence of a mismatch between the data and the laboratory information system data admissions office.

Do not connect the analysis laboratories in the various hospitals to each other . The results of laboratory analysis does not belong to the analysis laboratory which conducted the analysis , but belong to the patient in the first place. And then if the patient entered the hospital last in the future , there is no easy way to know the results of previous tests conducted by this patient.

**SUGGESTED SOLUTIONS**

**Can enumerate the necessary solutions for the time being as follows:-**

**\***Due to the lack of an ID number and only Medical Laboratories supported globally , we call the laboratories of medical tests in Sudan to give a unique number for each analysis e can be performed in the Sudan and the purpose of that is to make a deal with the analysis by the numbers and not names , which may vary from one laboratory to another.

 \* Build Data Bank healthy connects all hospitals automated currently , so being stored data within the database is built according to the terms of a global , allows adding and reading information from remote , and within the powers studied , taking into account the issue of safe access to this rule , and without losing sight of backup operations have to ensure disaster recovery emergency.

First of all, this information includes bank results of medical tests for patients who visit the hospitals automated , on the grounds that these results are a cornerstone of health information , and being supplemented in the future

with the rest of patient information from X-ray and other images.

**\***The issuance of health cards swipe a key step toward linking hospitals , medical laboratories , and even small and medium enterprises in Sudan since these cards help to adopt a healthy number specific to each citizen , may contain a summary of the patient's condition and the most important results of its own analysis.

**Experiences around us in the developed countries are many experiences , and can benefit from them in line with the reality of our country. If we were able to overcome the errors committed in the experiments that are currently in Sudan , and we add to it new ideas and useful information systems applied in developed countries , can live up process automation mentioned to a very good standard.**

## CONCLUSION AND RECOMMENDATIONS

The trend towards a digital society for the services of medical information is considered a movement sweeping is the sheer volume of medical information and technology flowing without dams on the level of the cosmic whole by the communications revolution that rely on advanced technologies and a growing and fast it is difficult for the human intellect absorbed, and is increasing in general with the breadth of activity scientific and technical.

The society of scientific Arab in general, will not rise to the level of importance globally will maintain the level of progress , but owning high value in front of developed societies with which it deals , and the key to this value is its ability to compete with all enzymes and harmonious , which lies primarily on the good benefit of keeping the content of the Arab Information scientific and technical flowing through modern media according to the plans and programs for the production of information , relying mainly on the efficiency of human resource management in light of its smart , Creativity arises by employing these capabilities integrated decision-making practice in the field of research activity through specialized libraries. So, looking to the future in the world of digital libraries of specialized Arab requires concerted efforts administrative , strategic planning and the use of an investigation for an attribute of excellence and innovation.

## RECOMMENDATIONS

**The management of the health information of the key components of many health care systems . It is also medical and health information systems tools to work in medical informatics and health , and in the management of these systems . This field has not been given the fields of process the attention it deserves among workers in the medical field . Hence it was to enter medical information in hospitals and the role of health care systems in education and education of the utmost importance . And the following recommendations:-**

**1-** Preparation of master plans for the introduction of medical information in the health institutions and the implementation of these plans . Should cover these plans overall needs identified by users of the information , policies, and standards related to software development , and implementation phases , and the necessary resources, and management , and the necessary structural**...**

**2-** Allocation of financial and human resources at regional and national levels in order to provide support for the implementation of appropriate plans for private medical information**...**

**3**- Implementation of awareness-raising campaigns targeting health workers about the importance of medical information and the quality of their roles in the adjustment and adaptation.

4-Investment in human resource development in the field of medical information technology .

5 - To prepare a plan for the implementation of systematic and institutional framework for medical and health information in health care institutions.

6- Prepare a typical curriculum of medical information for medical colleges should be introduced this session in the early years of the curriculum.

7-Set up the structure of a typical electronic medical records to be taken when an application designed to international standards , and the cross-cutting nature of the technological environment and a commitment to confidentiality and to ensure that the rights of patients and taking into account the legal aspects..

8- The shift towards digital library project of Arab medical , and that the formation of a special committee eaten its functions to the Arab Federation for Libraries and Information for the study of the initial stages of the project , a manner that achieves the goals and needs of the new library.

## REFERENCES

1- Anwar Ahmed Badr , information science and libraries " in theoretical studies and links objectivity ." _ Dar strange . _ 1996.

2- Ahmed Badr . Special Libraries and Information Centers : Studies in the management and organization of information services. _ Cairo : academic library 0.1998 , p 70.

3- Hassan Ismail . Are we ready for the Arabization of medical education . Journal of Family and Community Medicine . Volume (9) Issue (3) 2002.

4- Guide to the National Center for Research - Centre for Documentation and Information in 2010

5- Zein Abdel-Hadi Juweili , Samer Salem , ( Current Awareness in specialized libraries using the system as a Windows Windows programs Computer Applications(

6- Abdel Hafez Mohammed Salameh . Information services and collection development office . _ Amman : Dar Al-Fikr

7- Council of Europe Committee of Ministers (1995). Recommendation No. Rec (90) 21 of the Committee of Minis http://www.cm.coe.int/indexes/doc.0.html

8-For decision-makers, Buckingham, United Kingdom, Open University Press, 2000.

9-http :// www.faqs.org/faqs/medical-informatics-faq/, (accessed 18 April 2001

10- Schwartz, Dan. "Core competencies: what every informatics expert should know"

11- What is medical informatics?" Http://dmi-www.mc.duke.edu/dukemi/essent/whatis.html, (accessed 19 April 2001

http://www.alyaseer.net/vb/showthread.php?t=4505(12)

http://www.alyaseer.net/vb/showthread.php?t=5518(13)