УДК 316.3

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INFORMATIZATION OF MODERN SOCIETY AND HEALTHCARE SYSTEM: STATE, PROBLEMS, PROSPECTS

This article analyzes the nature of the process of informatization of modern society, characterized by it sposition in the global and domestic space culture. The attention is paid що historical aspects of information. Defined features of the information society, features the information culture in society. Prospects of informatization of modern societies. The modern stage of development of civilization is also characterized by the growing role of information and of communication technologies. Conlusion. Thus, the main goal of information processes is to provide the required information level of awareness caused by the objectives of socio-economic development. The main result of information processes will become free timely public access to regional, national and global information fund and formation of needs and necessities of its use. Creation and development of information processing industry is main direction of informatisation, because just this industry, using the latest tools and technology, produces the final product – information that fills and supports information fund, provides each person's access to it and use. The information relates to such aspects of scientific progress that can't flourish without broad international cooperation. No country in the world could effectively develop all areas of information. Only active participation in international cooperation and division of labour in the informational fields creates opportunities for providing the necessary pace of information in our society. Computerization should mean an increasing of effective development of country's potential, realisation of the implementation mechanisms of civilization development in general and be oriented to meet the information needs of all members of society.

Key words: informatization of modern society, role of information technology in medical science, **use of IT in medical education,** the impact of information technology on medicine, the importance of information technology in medicine.

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ІНФОРМАТИЗАЦІЯ СУЧАСНОГО СУСПІЛЬСТВА І СИСТЕМИ ОХОРОНИ ЗДОРОВ'Я: СТАН, ПРОБЛЕМИ, ПЕРСПЕКТИВИ

Досліджено хід процесів інформатизації сучасного суспільства, зокрема історичні аспекти, проблеми та перспективи формування інформаційного суспільства у сфері охорони здоров'я. Проаналізовано характер процесу інформатизації сучасного суспільства, характеризується його позиція у глобальній та вітчизняній космічній культурі. Висвітлено історичні аспекти інформації. Визначено риси інформаційного суспільства,

особливості інформаційної культури в суспільстві, перспективи інформатизації сучасних товариств. Встановлено, що основною метою інформаційних процесів є забезпечення необхідного інформаційного рівня обізнаності, спричинене цілями соціально-економічного розвитку, а основним результатом інформаційних процесів стане безкоштовний своєчасний доступ громадськості до регіонального, національного та глобального інформаційного фонду та формування потреб та потреб його використання.

Ключові слова: інформатизація сучасного суспільства, роль інформаційних технологій в медицині, використання інформаційних технологій у медичній освіті, вплив інформаційних технологій на медицину, важливість інформаційних технологій у медицині.

Statement of the problem. Since the second half of the 20 th century the value and role of information in the decision of practically all tasks of global world in the civilized world have been increasing. It serves as a strong argument for evolutional transformation from the scientific and technological revolution to the intellectual and informative one. The modern stage of development of civilization is also characterized by the growing role of information and of communication technologies. The researches [1–7] view this process as the global information revolution that greatly surpasses industrial, scientific and technological revolutions in the scope and effect. The problem of informatization of society became a priority and the value of it in the society grows constantly.

Analysis of scientific research. Development of computer technologies allowed the society to approach the global problem of informatization that is connected with the rapid integration processes getting to all spheres of our activity: science, culture, education, production, management. Informatization of the society is a global social process with the special feature. The thing is that the dominant type of activity in the sphere of public production is a collection, accumulation, regulation, maintenance, transmission, use, producting of information, carried out on the basis of modern facilities of microprocessors and calculable technique, and also various facilities of informative co-operation and exchange [7–11]. In present, sociocultural terms information is examined as something independent next to such categories as a matter and energy. A. Ursul asserts that information is not simply a property or attribute of the matter and all its systems but it plays a very important role in the "life" of these systems, in the whole environment [12–16]. Many facts and discovered regularities testify to priorities of information over a substance and energy: more and more replacing materially-power resources or substantially complementing them, information helps to change cardinally all structure of social activity. The most common determination of term "information" is given by philosophers who define it as "reflection of variety in any objects and processes of living and lifeless nature" [2–12].

The main material. Computers became the panacea in processing of any information, they act as a reinforcer of intellectual possibilities of a man and society on the whole. The appearance and development of computers is the integral part of the process of informatization of society and education. During the informatization of society they pay basic attention to the complex of the measures directed to providing of complete use of reliable, exhaustive and timely knowledge in all types of human activity. For this reason, this concept is wider than "computerization of society", where the basic attention is payed to the development and introduction of the base of computers that provide the operative receipt of information. In the concept "informatization of society" an accent must be done not only on the technical equipments, but on essence and aims of socialtechnical progress. Informatization based on the of introduction of computer and telecommunication technologies is the reaction of society on a requirement in the substantial increase of the labour productivity in the informative sector of public production, where the more than half of capable of working population is concentrated [9–14]. In most developed countries people understand that remaining behind in the field of information and communication technologies can become ruinous for their development on the whole. Society with the high level of development and information technologies where developed infrastructures provide the production of informative resources and possibility of access to the information is information society (IS). The Japanese scientists consider that in the information

society a process of computerization will give an access to safe sources of information, will deprive them of routine work. The process will provide the high level of automation of treatment of information in productive and social spheres. The production of informative not material product must become a motive force for the development of society.

They determine the following characteristics of information society [3–9]:

– the problem of information crisis has solved;

– the priority of information in comparison with other resources;

– the informative economy will become a main form of development;

– computer-aided generation, storage, processing and use of knowledge with the help of the newest informative technique and technology will be laid in the basis of society;

– the information technology will get a global character embracing all spheres of social activity of people;

– formation of informative unity of all human civilization;

– free access to the informative resources of all civilization for everyone;

– in the management of society and in its influence on the environment the humanistic principles are realized.

The countries with developed informative industry are the first on the way to the information society. They are: the USA, Japan, England, Germany, countries of Western Europe. For a long time in these countries the direction related to the investments and support of innovations in informative industry, development of the computer systems and telecommunications is one of the directions of public policy [7–16]. In the transition period to the information society it is necessary to prepare human to rapid perception and treatment of information, capture by her by modern facilities, methods and technology of work. In addition, the new labour conditions generate dependence a man's knowledge on the information received from other people. Therefore, it is not enough to be able to master and accumulate information independently. It is necessary to learn the special technology of work with information when decisions are prepared and accepted on the basis of collective knowledge. It deserves a certain level of culture of handling the information. In order to reflect this fact the term "information culture" was introduced. The information culture is the ability to work with information purposefully and to use computer information technology, modern technical equipments and methods for its receiving, treatment and transmission. However, the variety of thoughts about the nature of information need still leaves the major problem of the mechanism of needs formation and functioning. There are already mentioned scientists who develop the issue in this aspect. For a free orientation in the information space a person must possess information culture as a component of general culture. Information culture is closely connected with the social nature of man. It is the product of diverse creative human abilities and could be found in the following aspects [9–15]:

– the skills of using various technical devices;

– the ability to use computer information technologies and different software;

– the ability to "extract" information from different sources as from periodical press and the electronic communications, to represent it in a clear manner and be able to use it effectively;

– the skills of using analytical information processing;

– the ability to work with different information;

– the knowledge of the informational flows in certain field.

Information culture absorbs the knowledge of those sciences that contribute its development and adaptation to a particular activity. An integral part of information culture is knowledge of new information technology and the ability to use it for routine operations and in extraordinary situations that require unconventional creativity. The information society demands to begin to acquire information culture since childhood, initially through electronic toys, and engaging personal computer. For higher education the social order of the information society means to ensure the level of students' information culture enough for work in a particular field. In the process of information culture formation the high school student should study of theoretical subjects in information much time should be given to computer information technologies, which are the basic components of future scope. In the information society, the focus is on the social production, which

significantly increases requirements for training of all participants. Therefore, the informatisation program focuses on informatisation of education that is directly related to the acquisition and development of information culture. This, in turn, understands education as the "object" of information where it is necessary to change the content of the training in order to ensure future specialists not only in general and professional computer knowledge, but also at the necessary level of information culture. Just now we can see further confrontation between the people involved in the information technologies development, and certain categories of people, e.g. villagers of particular age group (it is very difficult or even impossible for them to adapt to modern information society). Sometimes information technologies brazenly interfere in private lives of people and organizations, destroying it. The problem of selection of quality and reliable information is becoming sharper [6–12]. Developed information society is an attribute of progress as the role of knowledge as a decisive factor in the society existence and it becomes increasingly apparent. In case of stable development of information technologies, communication facilities and systems, production and services, information should be successful with the support of the rapid development of high-tech engineering and communications. Successful informational development will develop existing and new data and knowledge bases, unlimited access to all means of communication, especially to personal computers. It also will support computerization of retraining and education, industry automation, manufacturing and mining industries, transport and processing of agricultural products, robotics and creating flexible production. This, in turn, could increase the number of employees in the field of information technologies.

Role of Information Technology in Medical Science. Health information technology (HIT) is the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making. HIT, technology represents computers and communications attributes that can be networked to build systems for moving health information. Let's have a brief glimpse at the background of the information technology in medicine [5–9]. Health informatics tools include computers, clinical guidelines, formal medical terminologies, and information and communication sytems. It is applied to the areas of nursing, clinical care, dentistry, pharmacy, public health, occupational therapy, and (bio)medical research.

Use of IT in Medical Education. With the development in IT, there has been a significant change in medical education all over the world. The changes is that majority of the medical students are computer literate these days. New information on medical topics is readily accessible via the Internet and handheld computers such as palmtops, personal digital assistants (PDA). Information Technology can assist medical education in various ways such as in college networks and internet. Computer-assisted learning (CAL), Virtual reality (VR), Human patient simulators are some options. With the help of college networks and Internet, the medical students as well as the teachers may stay in contact even when they are off college. Rapid communication can be established with the help of e-mails and course details, handouts, and feedbacks can be circulated easily. Many medical schools these days use online programs such as "Blackboard" or "student central" to underline and coordinate their courses. Such programs allow speedy access to information and quick turnaround of evaluation and messaging, and allow all tutors, assessors, and students at any site to look at the curricular context of their own particular contribution. Similarly, the Internet provides opportunities to gain up-to-date information on different aspects of health and disease and to discuss with colleagues in different continents via net conferencing. Free access to Medline, various medical journals, online textbooks and the latest information on new development in medicine also encourages learning and research. CAL is considered as an enjoyable medium of learning and very suitable for conceptually difficult topics. Interactive digital materials for study of histopathology, anatomy and heart sounds are used widely. Development of anatomical three dimensional atlases of various internal organs using computed tomography and magnetic resonance imaging are very illustrative and help the students to understand the subject matter clearly. Another development is of "Advanced Cardiac Life Support" (ACLS) simulators and Haptics "the science of touch" simulators are used in medical education to develop various clinical skills such as ECG interpretation, appropriate intervention such as ABC, drugs, injections, defibrillation without working on a real patient. These days, highly sophisticated simulators

"virtual reality" with highly advanced medical simulation technologies and medical databases are available in the advanced medical schools that expose the medical students to the vast range of complex medical situations. It can emulate various clinical procedures such as catheterization, laparoscopy, bronchoscopy etc. With new technology, the students can virtually go inside each and every organ and see how they actually look like from outside as well as from inside [7–12]. Information technology has been very helpful to the healthcare sector. One example of a significant advancement that IT has provided to hospitals is the development of electronic medical records (EMR). This technology can convert medical information into a single database. Not only does this technology reduce paper costs, it allows healthcare providers to access pertinent patient information such as medical history, medications, insurance information, etc with just the click of a mouse. EMRs hold great promise in the clinical arena. The ability to care for patients with a record that is integrated with laboratory and pharmacy information, and provides point of service information regarding preventive services, diagnosis, treatment, and follow up represents a dramatic advance in patient care. Improving and measuring quality would be instantly improved if all clinicians used EMRs. For example, it would be easy to prompt clinicians that their patient with diabetes needs an eye examination or a hemoglobin A1C level. Drug prescribing patterns of individual clinicians could be carefully evaluated and compared to established standards. In fact, computer based clinical support as part of an EMR has been shown to improve physician performance and patient outcomes. Reducing medical errors has become a priority all over the world. Specifically adverse drug events are an important source of injuries in hospitalised patients. In response to the need to improve patient safety, computerised physician order entry (CPOE) systems have become increasingly more common. In general, CPOE systems force physicians to write all orders online. These systems have the capacity to verify that written orders are correct, that is, based on a patient profile, they can automatically check the dose and contraindications of a specific drug. There is no argument over the influence of IT in medicine and education. But there are still many areas which need to be improved before we could utilise IT to its full extent. Last but not the least, however advanced the technology gets, it can never replace the interaction the doctors and students require with the patient and the clinical judgments which make great doctors. So, in the pursuit of modern technologies, we should be careful that the doctor patient relationships do not get overlooked.

The impact of information technology on medicine. Noone can deny that information technology (IT) is changing the way that medicine is practised. The fact that you are actually reading this editorial is clear evidence of it. This journal would probably not be in existence if it weren't for the availability of effective and affordable IT. Most of the early applications of IT were geared towards number crunching. The heart of any computer is the central processing unit (CPU) where arithmetic and logic operations are carried out. In the early days of computing, emphasis was on pure processing power for mathematical and statistical purposes, and at this time the impact on medicine was minimal. Things changed however when the focus of attention shifted to the relationship between the human and the computer and the ways in which a human can become more productive and information-efficient with the help of IT. There followed a systematic analysis of human tasks and activities and an attempt to improve these by means of computer applications. Medicine then became fertile ground for development, and the concepts of expert systems in medicine emerged, with systems for computer-aided history-taking and diagnosis. In the long run, however, it was the more mundane IT applications such as word-processing and database management systems that penetrated the everyday practice of the working clinician, and even more the world of health services management. The first sectors of hospital activity that benefitted tangibly from IT were patient administration, laboratories and accounts – not surprising, considering the large volumes of numeric data that these sectors handle. At the same time, clinical activities involving calculations were greatly facilitated – the days of nomograms were numbered. The next significant development was the convergence of information and communication technologies. This led to a veritable boom in networking both within and between organisations. The first major effect of this, in the early 90's, was the evolution of data sharing concepts and the emergence of integrated information systems. Hospital information systems developed and started to take rich data on board. The acquisition, storage and transmission of medical data, especially from

medical instrumentation, became increasingly digital, rendering the total electronic health record feasible. The second major effect of networking, in the mid 90's, was the explosive growth of the Internet. It became feasible to move data and information quickly and cost-effectively between any two networked PC's on the planet. This increased the potential for the communication of medical information among health professionals and patients immeasurably. The full impact of the Internet on medical practice has still to emerge. There is no sign of slowing down in the rate of development and proliferation of information and communication technologies. In the next ten years we can expect more sophisticated human-computer interfaces with efficient voice and handwriting recognition; the penetration of techniques such as tele-surgery into mainstream clinical practice; sophisticated undergraduate and postgraduate computer-based training; and better structuring and portability of integrated electronic health records. The challenge for health professionals is to harness the new power at their disposal for the benefit of their patients.

Information Technology in Medicine. Information and communication technologies are about to make a massive move into medical practice, not only in selected areas of 'high-tech' medicine, but throughout the field. Research in information technologies is needed in the areas of medical imaging, telecooperation, education and training. Medical images are produced in such a number and richness of detail that they can only be analyzed with the help of the computer. Computers not only improve the quality of the images, but also help in reconstructing structures, detecting anomalies and measuring. In particular, computers help with an appropriate visualization to make the image contents understandable to the clinician. Three-dimensional images are used more and more. They have the inherent problem that it is extremely difficult to visualize images consisting of a cloud of material in different shades of grey. Mechanisms have to be found that render the interesting detail and hide other structures that are not relevant for a particular situation. The selection and composition of algorithms depend on the medical goals of a particular analysis and thus can only be determined together with medical experts. Images are needed to plan and control microinvasive surgical procedures. It is therefore necessary to design systems that support the physician with appropriate visualizations throughout the whole process from image acquisition, diagnosis, treatment planning, surgery to final control. As medical professionals become more specialized, diagnosis and treatment occur in cooperation between different physicians that may be distributed. They have to use computers to exchange their medical data, in particular images. However, data transfer alone is not sufficient. they must also be able to communicate about their patients, to talk freely about medical data and refer to that data during their discussion. Merging these two communication channels is a challenge that needs to be addressed before teleconsultation can be reasonably efficient. And finally, medical knowledge increases at an amazing pace. Physicians are required to keep up with new knowledge for their whole life. To ensure the quality of diagnosis and treatment, special emphasis on continuous education is needed. Computer-based techniques can help with this task, in particular if they provide training on the job, assisting in the analysis of images and teleconsultation. All these problems can be solved only in interdisciplinary teams. One needs physicians that are open-minded to think about new computer-based approaches. Computer scientists have to listen for the problems of their medical partners. Psychologists have to look at human-human and human-computer interaction. Engineers and administrators have to make things work. A single profession can no longer deal with all aspects of the complex problems. Furthermore, new systems have to be designed iteratively, with the user in mind. Systems must be addressed to real user problems. However, it is not possible to completely assess the value of a new development before it is taken into daily practice with real users. Developers must be ready to radically change their systems until these really meet the user needs. Users must be involved, but not in a naive fashion. A constructive dialog between users and developers, involving a sequence of prototype systems, is needed to acquire the real user needs. The following examples show that ERCIM members work together with medical partners on all these aspects. These interdisciplinary activities are needed to broaden the influence of computer science research in our society throughout Europe.

Information Technology Comes to Medicine. Judging from the excited rhetoric of some of its enthusiasts, health information technology (HIT) has the power to transport us to almost a dreamlike world

of health care perfection in which the work of doctors and the care of patients proceed with barely imaginable quality and efficiency. For many physicians, however, especially those in solo or small practices, HIT conjures a very different image – that of a waiting room full to bursting, a crashed computer, and a frantic clinician on hold with IT support in Bangalore. With these two starkly different fantasies animating so much discussion about HIT, the real implications of HIT for doctors, patients, and the health care system are often hard to understand, as are the likely pace and extent of adoption of HIT. One central, often unspoken question is whether HIT is best viewed as one more in the long list of technologies that modern medicine has effectively accommodated over the years without great disruption or whether it is something fundamentally different, a potentially transformative force that ultimately will bring about a radical redesign of the processes by which care is delivered. This latter view suggests that adoption of HIT could fundamentally change the practice of medicine and the relationship between doctors and patients for decades or even centuries to come. In this report, we seek to clarify some of the issues that are central to current discussions about HIT, focusing on topics critical to physicians, patients, policymakers, and managers. For HIT experts, however, a word of caution is in order. This report is intended for an audience of general physicians who have, as yet, little or no direct experience with the marvels and, yes, frustrations, of HIT as it affects their daily work. HIT cognoscenti, therefore, will find that many topics are not pursued here in detail. To reach its intended audience, the report also adopts a purposely detached tone toward the benefits and risks associated with HIT. To some of its advocates, this tone may seem to deny what many regard as its indisputable value. That is not our intent. Rather, we recognize that the benefits and costs of HIT are multiple and complex and that the evidence supporting them is evolving. HIT consists of an enormously diverse set of technologies for transmitting and managing health information for use by consumers, providers, payers, insurers, and all the other groups with an interest in health and health care. For reasons of space, we focus here on technologies that are particularly relevant to storing and processing data about patients. Even these technologies encompass a diverse array of systems ranging from those that are relatively straightforward with which physicians are widely familiar, such as the computerized storage and reporting of laboratory results, to more novel systems that permit clinicians to share information about patients across institutional and geographic boundaries. Many types of HIT are important, but three deserve particular attention because of their potential significance for the day-to-day delivery of health care services: the electronic health record (EHR), the personal health record (PHR), and clinical data exchanges. The EHR is the technology likely to have the most profound effect on the daily work of physicians and other health care providers. According to the Institute of Medicine, an EHR is a system that can do eight things electronically Thus defined, an EHR is able electronically to collect and store data about patients, supply that information to providers on request, permit physicians to enter patient care orders on the computer, and provide health professionals with advice for making health care decisions about individual patients. The clinical data exchange is the most abstract of the three forms of HIT highlighted here, and as its name suggests, it may not, strictly speaking, be a technology. In most cases, the clinical data exchange is established and managed by a regional health information organization, or RHIO. These organizations consist of local groups – including hospitals, insurance companies, employers, pharmacies, consumer groups, and government officials – that are brought together to connect the HIT systems maintained by the separate health care providers and insurers in a given geographic area. If successful, regional health information organizations will allow clinicians, no matter where they are or for whom they work, to share information electronically about common patients. Although it is helpful to be familiar with the types of HIT, the implications of the technologies for doctors and patients really depend on nontechnical considerations. Missed diagnoses, incorrect clinical choices, errors, and unnecessary tests and procedures will be dramatically reduced. Moreover, by using their PHRs, patients will become partners in maintaining their health and treating their own illnesses. They will monitor their clinical values – such as daily weights for patients with congestive heart failure – and using new forms of decision support, will make wise decisions regarding how to manage their health problems without always having to contact a doctor or a nurse. With all these changes, quality and efficiency will soar. This vision, however, is dependent on much more than putting new technology on physicians' desks or in patients' pockets or laptops. To realize the full potential of the information revolution in health care, clinicians will probably have to change the way their offices and days are organized, how they enter and

retrieve patient information, the process by which they make medical decisions, and the ways in which they relate to colleagues and consultants and interact with their patients. Patients will have to find ways to understand and manage huge amounts of health care information that had previously been largely inaccessible to them. In other words, effective use of HIT depends as much on managing change as it does on information management, and change has never been easy for our nation's health care system. The capacity of HIT to realize this transformational vision will also depend on something else: whether the systems installed are designed to produce the information required to make possible the quality and cost reforms that are sought. It is one thing to digitize the current medical record, so that the information clinicians now collect is available to them in electronic form. It is another thing to make certain that all the data needed for the purposes of improving quality and efficiency are collected and to install new software applications that can retrieve these data, organize them, apply decision algorithms, and provide the result to clinicians and managers when and where they need it. The HIT products now being sold are intended to meet the present needs of clinicians – as would any product be that is aimed at attracting buyers in a well-functioning market. Health care reformers, however, imagine a world in which HIT meets needs that most physicians and hospitals do not now think they have. How to meet future needs, and how to persuade providers to invest in such innovative systems, is a nut waiting to be cracked. Whether HIT can or will catalyze these huge changes remains uncertain – and extremely difficult to evaluate in the short term. However, it is possible, if still challenging, to assess the benefits and risks associated with some types of HIT. Since data about the effects of PHRs and clinical data exchanges are scarce, we focus here on what is known about the benefits and risks of EHRs. Information on EHRs and their effects comes in at least two forms: studies of the effect of EHRs, or of the tasks that they can perform, on the quality and efficiency of care and cost–benefit analyses that, on the basis of these smaller studies, project the effects of EHRs on the health care system as a whole. On the basis of studies of what these authors called “multifunctional systems” of HIT, some of which consisted of full EHRs whereas others involved multiple EHR functionalities, they found evidence that implementing a multifunctional EHR system could increase the delivery of care that would adhere to guidelines and protocols, enhance the capacity of the providers of health care to perform surveillance and monitoring for disease conditions and care delivery, reduce rates of medication errors, and decrease utilization of care. Effects on the efficiency of care and the productivity of physicians were mixed. The major limitation of the literature on EHRs, in the authors' view, was that most of the key studies originated at four institutions that had pioneered the use of HIT and had developed their own EHRs incrementally over time. Since providers are likely to purchase off-the-shelf EHRs, the relevance of these studies to the probable experience of most doctors and hospitals is uncertain. Although some of the other studies that examined the effects of commercial systems purchased by health care institutions also suggested significant benefits, others hinted at potential risks. In general, the empirical literature on EHRs at this point raises a question that is commonly encountered when considering new health care technologies: how to translate evidence of efficacy into estimates of effectiveness. In the settings in which EHRs have been evaluated, empirical evidence of efficacy seems strong, though accompanied by cautionary notes about unintended consequences in the form of new errors and economic dislocations. If EHRs were drugs under review by the Food and Drug Administration, they would probably be approved for marketing but with requirements for some postmarketing surveillance. Like physicians, hospitals are discouraged by the cost of new systems and the pace of technological change, but they also confront the difficulty of implementing such systems across large organizations and the presence of bits and pieces of HIT systems that must be abandoned or reconciled with new EHRs. These barriers to adopting HIT are to some degree symptomatic of underlying issues. Convinced that HIT will actually save money for the health care system, advocates of health information systems contend that the real problem is that distortions in health care payment systems prevent those who will bear the costs of implementing HIT – the providers of care – from sharing in the resulting economic gains. Especially for older physicians, the case for jettisoning familiar practices has to be truly compelling. So far, this case has evidently not been made. Whatever uncertainties surround the net benefits of HIT, its potential is sufficiently compelling – and its pace of adoption sufficiently slow – to have generated a flurry of interest and activity among public and private health care groups aimed at promoting the dissemination of the technology. Consistent with the administration's suspicion of government and its belief in the ability of markets and the private sector to

accomplish key policy objectives, federal authorities have operated on a very modest budget, have used the bully pulpit heavily, and have focused on strengthening private markets for HIT adoption. Until recently, federal regulations made it illegal for hospitals to give doctors not in their employ any assistance in acquiring HIT. The government feared that such assistance would be used as an inducement for physicians to make referrals or to bind physicians to particular hospitals. The frenzied interest in HIT throughout our government and our health care system creates the strong impression that its widespread adoption is inevitable. As an instrument of reform, HIT has attributes that ensure its attractiveness to many groups in a politically and economically divided health care system that is struggling with seemingly insurmountable problems of cost and quality. However, the apparent certainty of the adoption of HIT needs to be constantly reexamined. Several difficult questions remain. One is whether the Bush administration's current decentralized, market-based approach to promoting its spread will prove effective in realizing the promise of HIT. Relying on private organizations and state and local governments to implement HIT solutions will almost certainly result in varying patterns and rates of adoption across the United States and the development of systems that differ in capability and performance from institution to institution, practice to practice, and region to region. Characteristically, other Western countries, such as the United Kingdom, are adopting more top-down approaches to implementing HIT systems. A second question is whether, if the apparent benefits of HIT materialize, its spread will perpetuate and perhaps even enhance disparities in care received by different population groups and in different geographic regions of the country. If we rely on the private sector to fund acquisition of HIT – at a likely cost of hundreds of billions of dollars over several decades – providers that are financially strong will have an advantage over weaker ones. If history is a guide, organizations that disproportionately serve underrepresented minorities and the uninsured will lag and their patients will suffer. Perhaps the biggest uncertainty, however, concerning HIT is whether it will accomplish dramatic, transformational improvement in the functioning of our health care system. Creating an economic and policy environment in which hospitals and doctors find quality improvement and cost reduction essential to accomplishing their financial and professional goals will be necessary to widespread adoption of HIT and to assessing its transformative potential [6–15].

The Importance of Information Technology in Medicine. Information technology plays important and sometimes surprising roles in medicine. According to a review of studies published in the “Annals of Internal Medicine”, there is good evidence that using information technology in the medical field can improve the efficiency and quality of care. However, many institutions don’t take full advantage of the technology available or don’t document the impact of implementing information technology [7–9].

Benefits. Medical technology provides three primary patient benefits: It helps increase how well medical staff follow care guidelines for specific conditions. It reduces the number of medication errors. It also improves how well medical professionals are able to track the progression of diseases within a community [12–15].

Storing Information. Information technology helps to organize patient records and can provide valuable cross-referencing information when it comes to things like drug interactions. Because of the rise in the number of medical images captured and used in treatment for a variety of conditions, information technology is especially important for storing images and locating them when needed. Even reading medical images may require IT assistance because of the increasing complexity of imaging technologies [13–15].

Trained Professionals. Information technology in and of itself is not enough to improve patient care. Hospitals, doctor’s offices and other medical institutions need trained IT professionals to implement and maintain new information technologies [14–16].

Privacy Concerns. While information technology can improve patient care, it can also compromise patient information, potentially making personal details available to people outside of the doctor-patient relationship. Institutions implementing information technology to store and communicate information should be aware of these concerns and take steps to address them [14–17].

Conlusion. Thus, the main goal of information processes is to provide the required information level of awareness caused by the objectives of socio-economic development. The main result of information processes will become free timely public access to regional, national and global information fund and formation of needs and necessities of its use. Creation and development of information processing industry is main direction of informatisation, because just this industry, using the latest tools and technology, produces the final product – information that fills and supports information fund, provides each person's access to it and use. The information relates to such aspects of scientific progress that can't flourish without broad international cooperation. No country in the world could effectively develop all areas of information. Only active participation in international cooperation and division of labour in the informational fields creates opportunities for providing the necessary pace of information in our society. Computerization should mean an increasing of effective development of country's potential, realisation of the implementation mechanisms of civilization development in general and be oriented to meet the information needs of all members of society.

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