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Healthcare information system management in the Kyrgyz Republic

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The article received: 30.12.2015. **Accepted for publication:** 04.02.2016.

Despite active ongoing processes in reformation of healthcare and informatization, there is different degree of equipment status concerning informational resources in healthcare organizations at different levels, parallel development of various streams of information collection, different level of development in regions, underdeveloped communication systems, which impede prompt information exchange for decision making in management. It is essential to determine the degree of compliance of information systems and subsystems in healthcare with the needs of the users, as well as the assessment of the capabilities of information systems in timely provision of healthcare information to all users of all levels for decision making in management. The article presents the results of comprehensive assessment of the current situation of the healthcare system informatization of the Kyrgyz Republic with the use of analytical tools, developed by HMN Company (Health Metrics Network). It is shown, that there are significant differences in the management of the healthcare information system in the Kyrgyz Republic; its irregular use is marked, especially in regions.

Keywords: healthcare, management, information system, assessment.

(For citing: Bokushev R, Kitarova GS, Kondratieva EI, Alymkulov MS. Healthcare information system management in the Kyrgyz Republic. *Pediatric pharmacology*. 2016;13(1):63-65.) doi: 10.15690/pf.v13i1.1518.

Over past decades, information and communication technologies have been introduced at all levels of healthcare and have become an integral constituent part in daily activities of the healthcare sector of the Kyrgyz Republic. Information, provided by the healthcare sector, is widely used:

- at governmental level — for monitoring the progress of poverty reduction strategies, achieving the development goals of the millennium, providing transparency of financial flows;
- at healthcare sector level — for the assessment of interventions and decision-making;
- at civil sector level — for informational and educational work, social mobilization of local communities.

Since 2001, active introduction of information and communication technologies in the healthcare system in Kyrgyzstan with the grant support from the donor community has started; this was caused by increased needs in receiving high quality, reliable and timely information for improvements in management at all levels of health care. The demand arose from the public and other sectors for electronic healthcare services; besides, requirements for the quality of the information provided increased.

With the development of information and communication technology, software products were transferred into modern platforms for further integration, range of tasks to automate collecting, recording and analysis of healthcare data expanded [1].

The introduction of compulsory medical insurance system and new payment methods for hospitals per case in 1997 catalyzed the development of corresponding healthcare information systems.

The formation of healthcare information system in the Kyrgyz Republic was carried out within a framework of investment projects in stages; together with the provision of computer equipment, the information environment was needed to create — infrastructure, communications, information culture — training for both users and providers of information on healthcare to work with personal equipment and to use the tools. During this time, there appeared a need for integrating software products that were initially created on various platforms, the operational information collection with varying degree of detail for timely decision-making and assessment of interventions.

With the evolution of public healthcare, fragmentary development of the collection, analysis and usage of information was carried out within the framework of tuberculosis control programs, AIDS prevention, disease control, as well as for implementing individual projects due to imperfect data collection. As a result, the amount of extra work for healthcare organizations became inexpedient due to duplication of incoming information with varying and sometimes unnecessary detail. Moreover, the data provided in the different structures could appear to be different, which often led to contradictory conclusions. [1]

The application of information technologies in payments for the medical services, the composition of databases on population and their integration with the databases of other departments (the Social Fund, the Ministry of Labour and Social Development), focus on the targeted provision of public benefits influenced the development of the infrastructure of information healthcare system (HIS) significantly. In conjunction with the improvement of the processes of collecting healthcare information, the need for improvement in internal management, automation of accounting and reporting has also increased.

In the framework of the National Program "Manas Taalimi" (1996-2011) [2], much attention was paid to providing stability of HIS functioning, improving mechanisms of monitoring, data analyzing for subsequent decision making in management. Within the framework of healthcare sector reform, which included management decentralization, strengthening the role of primary healthcare, change in the functional hierarchy between all levels is HIS, new information needs and necessity of raising the mechanism efficiency, data analysis and processing, its dissemination and utilization both within the healthcare sector and in the form of electronic services to the public or representatives of the business environment. In addition, considering the uneven development of HIS in regions and its retained fragmentary nature, the need to assess the state of HIS is evident.

For this purpose, the situational analysis of the state of HIS at different levels was conducted, the degree of conformity in HIS and its subsystems and needs of users, the need of the regions for HIS development to improve the efficiency of collection, analysis, use and dissemination of data were identified. A strategy for sustainable functioning of HIS, which can provide timely and accurate information for prompt decision-making, has been developed. [1]

The assessment was conducted using analytical tools for a comprehensive assessment of country healthcare information systems, developed by the Health Metrics Network (HMN). The assessment framework was based on 4 major components:

- HIS resources;
- data sources;
- data management;
- usage and dissemination of information.

The data was being collected during 2011 at all levels of the system: local (district level — level 1), regional (2nd level) and republican (level 3). 178 healthcare organizations of the Kyrgyz Republic were studied. In accordance with the levels of the system, the sections of the survey, concerning the formation of HIS policy, were not applied to level 1.

The collected data were processed using assessment tool with analytical tools for a comprehensive assessment of country healthcare information systems developed by the HMN, in each district/city separately. Given a three-level organization of HIS, its assessment at the regional and at the national level were carried out separately. Bishkek, the capital of the Kyrgyz Republic, was also assessed separately, as many information products and mechanisms for collecting information are primarily

tested at the level of Bishkek, and afterwards gradually spread to other regions. Data on districts and regional healthcare organizations were combined in a unified database, including data on Bishkek and central healthcare organizations.

At the same time, the following data was being collected: data on availability of computer equipment, data on the application of information products for improving collection, analysis and usage of data in the healthcare information system. That is why, the assessment of the healthcare information system includes additional material, including previously conducted activities on the development of a unified healthcare information system, along with results analysis, based on assessment tools, provided by the registry of HMN,.

Recommendations and proposals for harmonization of HIS structure, improving access, quality, satisfiability and use of healthcare information were developed based on the results of the analysis.

Overall, adequate development of HIS, including resource provision, as well as methods of data collection and dissemination, are observed in the Republic (fig.).

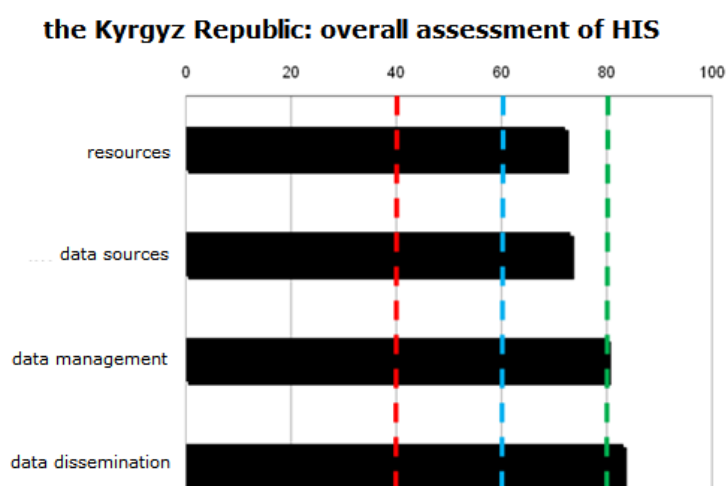


Fig. Overall assessment of healthcare information system in the Kyrgyz Republic

However, during HIS analysis at different levels, significant differences were found, uneven development of the system was marked, which is mainly due to the differences in resource provision and existing potential, particularly at regional and district level. The most problematic areas for HIS of district and regional levels in the Kyrgyz Republic are:

- provision of resources (staff, computer equipment, communication channels, etc.), particularly at district and regional levels, where the correlation between resource provision and use of information about the state of the infrastructure and its resource support is absolutely clear;
- improving data collection processes, including administrative information;
- creating a database.

One of highly important issues for regional and district levels of healthcare organizations is to disseminate information for raising the efficiency of its usage. A large amount of administrative information is being collected in the Republic, there is a sufficient potential for its collection, data integration has been started, which simplifies the use of administrative records. In some regions, it is necessary to increase the potential of healthcare organizations to use the available data efficiently.

Not all the heads of healthcare organizations make due account of the importance of information support services, its impact on the assessment of the performance of healthcare organizations and funding. Many leaders show lack of commitment in information technologies implementation, which affects the quality of data and the rational use of human and technical resources. While, in recent years, many leaders have been seeking means to maintain equipment in working condition, low wages of IT-specialists remains one of the major problems in the organization of the sustainable functioning of HIS [3].

Restrictions on the possibility of practical use of the data are associated with increased needs of healthcare organizations in their performance assessment for improving their efficiency, as evidenced by the high score of both levels on integrating the accounting data. Most of the regions do not have access to the Internet resources for data management and timely data sharing, although some organizations at district level use the Internet actively for data sharing. Low availability of e-mail is a consequence of low level of quality of data transmission and high monthly fees for provider services.

The assessment of the data management system as "high level of compliance" is overstated in the Republic, although, at present, reviews on the implementation of the "Manas Taalimi" programs, the indicators package, financial monitoring reports are posted on a website and are available for monitoring. The Republic has a large amount of data, the sources of data collection are clearly defined, but data integration is in the initial phase of the institutionalization process.

Availability of adequate information and its use have direct correlation with respect to resources planning and allocation. The regional and district levels of HIS hardly use the information for resource planning that is strongly associated with the stereotypes, which have arisen in conditions of persistent underfunding and centralized provision of equipment. Permanent access to the necessary information and training using Internet resources, rules of accessing the information posted on the healthcare websites, as well as dissemination of information on the availability of such websites and the information they contain, are required for raising the efficiency of resources application.

The outcome of the study was the approval and implementation of e-Health Strategy of the Kyrgyz Republic for 2016-2020 [4]. One of the most important directions of the formation of the Unified Healthcare Information System is creation of a record keeping system for medical services and the introduction of modern e-Health technologies as an e-government element. The introduction of e-Health system is necessary for both administrative tasks solution and clinical purposes. The Kyrgyz Republic has already done a lot in the field of information and communication technologies with a view to increasing management efficiency by creating the necessary databases and instructions for their use. In the future, special attention will be paid to the use of e-Health in medical practice.

Source of funding

Not stated.

Conflict of interest

The authors of this article have confirmed the absence of conflict of interest worth reporting.

REFERENCES

1. Информационная система здравоохранения: обзор и оценка. Документ исследования политики № 78. 2012. [Healthcare information system: review and assessment. Policy research paper № 78. 2012. (In Russ).]
2. Национальная программа реформы здравоохранения Кыргызской Рес публики «Манас таалими» на 2006-2010 гг. [The National Healthcare Reform Programme of the Republic of Kazakhstan "Manas Taalimi" for 2006-2010. (In Russ).]
3. Кыргызстан: обзор системы здравоохранения. *Системы здравоохранения: время перемен.* 2011;13(3):176. [Kyrgyzstan: review of the healthcare system. *Healthcare Systems: time for change.* 2011;13(3):176. (In Russ).]
4. euro.who.int [Internet]. Кыргызстан. Обзор системы здравоохранения. [Kyrgyzstan. *Obzor sistemy zdavookhraneniya.* (In Russ).] Доступно по: http://www.euro.who.int/data/assets/pdf_file/0003/151248/e95045R.pdf. Доступ от 10.01.2016.
5. Национальная программа реформирования системы здравоохранения Кыргызской Республики «Ден соолук» на 2012-2016 гг. [The National Healthcare Reform Programme of the Kyrgyz Republic "Den Sooluk" for 2012-2016. (In Russ).]