BASIC CHARASTERISTICS OF INFORMATION SYSTEM OF HEALTH INSURANCE IN FB&H

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Abstract

Due to the territorial and administrative division in the war period, information system of health protection after the war was divided in two systems, what matched organisation of health insurance in that period. Those information systems were incompatible, developed on different, both, hardware and software. Therefore, Ministry of Health, within the project "Basic hospital services", financed through the World Bank loan, applied new, common information system in health insurance. Goal of this paper is to present basic features of information system of health insurance in FB&H, as well as the way of its functioning in respect to other institutions included in the system, respective data bases, sites of entering and updating data, while using data available with Federal Bureau of Health Insurance.

Keywords: characterictics, information system, health insurance of FB&H

Introduction

System of health insurance in FBIH, built in accordance with the Law on Health Insurance (FBIH Official Gazette no. 30/97 and 7/02), have established three types of health insurance: obligatory, extended and voluntary health insurance. Sources of realization of basic rights of the insured person are provided from obligatory health insurance and from the other sources foreseen by the law (taxes, donations, budget etc.). Health insurance on cantonal level are collectors of the revenues stemming from obligatory health insurance. Cantonal fond of health insurance are financing health protection and realization of other rights from obligatory health insurance by means of making agreements on procurement of services of health insurance to insured persons. Some cantonal fond of health insurance are making special agreements about health insurance programs according to the level of health protection (primary, specialized, consultative or hospital) on the basis of (temporary) standards of health protection. Some other cantonal fond of health insurance retained system of contracting based on the lump sum of wages for the employees, material costs and major investments. Cantonal fonds are settled in cantonal centres, having their branch offices in each municipality of the canton.(1,2,3,4) Within the system of health insurance, there is, apart from cantonal fonds, Federal fond of Health Insurance which coordinates common services for all cantonal fonds, services of expert groups of the Federal Ministry of Health related to the process of drafting and adopting legal provisions, as well as rendering some other services related to health insurance. Furthermore, federal Solidarity Fund was established (within the frame of Federal Bureau of Health Insurance) in order to ensure equal rights to all insured persons on the territory of FBIH. Organisational structure of health system in FBIH and position of health insurance within the health sector is shown in the diagram below.

Methodology and Purpose of the Paper

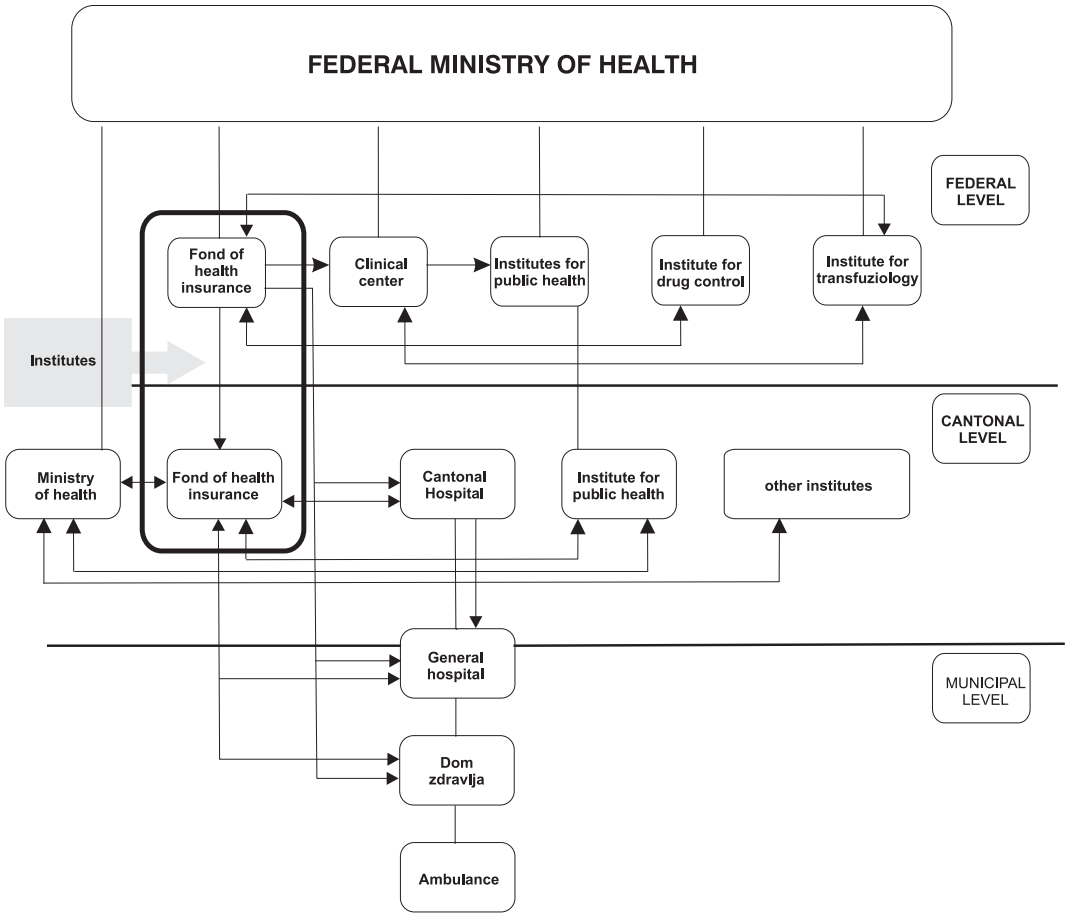
Purpose of this work is to present basic features of health information system in FBIH, along with its functions related to the institutions linked to the system, data registered within the system, sites of data entering and updating. This work is based on method of descriptive analysis.

Characteristics of the System

Institutions included

Institutions that are included in information system are:

- Cantonal agencies of health insurance, including branch offices in each municipality of FBIH
- FBIH Ministry of Health
- FBIH Agency for Public Health
- FBIF Agency for health insurance and reinsurance
- All cantonal health ministries
- Al cantonal agencies for public health



Equipment and software are identical in each institution within the system. IBM produces all computers and printers, network facility is 3 COM, PC operative system is Windows 2000 and database is Oracle 8i. Applicative software is developed in Dolphi development tool.
Agencies for health insurance are filling data into the system and use them for running the system of health insurance. Other institutions are provided with adequate equipment and software in order to gain indicators from health insurance agencies in electronic version, by modem. This link is shown in following diagram.

Registry Keeping
System register following data: basic data, documentation, revenues and expenditures within the health insurance system. There are following registers:

1. Revenues register, which includes:
   - Deductions for health institution
   - Donations
   - Budget allocations
   - Cashiers and other payments
   - Payments from abroad

2. Expenditures register includes:
   - Costs of drugs within the canton
   - Costs of treatment in health institutions in other cantons
   - Costs of treatment abroad
   - Costs concerning orthopaedic tools
   - Refunds for lost wages
   - Reimbursement for sick leave
   - Refunds of travel costs
   - Payment of funeral costs
   - Refunds of personal paying

3. Basic registers, code book and indicators register include:

   - Registration of units of organization
   - Registration of national and foreign insurance companies
   - Registration of insured persons, nationals or foreigners
   - Registration of health institutions
   - Registration of foreign clients
   - Registration of doctors and doctoral teams
   - Common system of code books
   - Indicators

Sites of data entry and updating
Updating of common codebooks is carried out on federal

Figure 2.

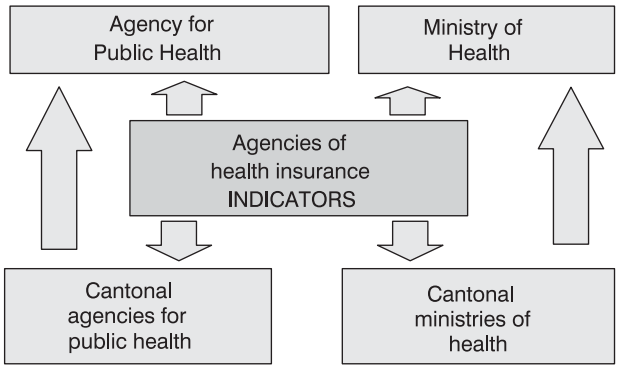
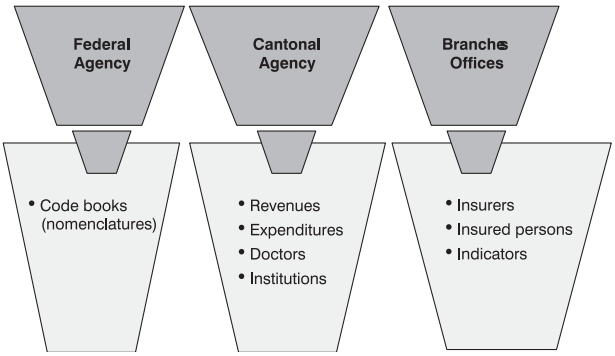


Figure 3.



level of the system.
Updating of data regarding insured persons and insurers is done on the municipal level (along with issuance and verification of certificates).

Updating of data regarding health institutions, doctors and doctoral teams is done on the cantonal level (along with financial data regarding revenues and expenditures). Bellow follows the scheme of registration according to the site.

Processes in system
Diagram presented below displays relations between Agency for Health Insurance and other actors in process of health insurance. The square in the centre of diagram presents activities of the Agency, while circles present external entities, which are participating in process of health insurance. Arrows indicate relations between process and external entities. All functions of the health insurance system could be divided into several logical units, depending on which data certain functions are processing. There are seven of those units:

- Registration of basic registers
- Registration of code books - nomenclatures
- Registration of documentation
- Registration of financial transactions
- Design of indicators and reports
- Input and output of data
- Conversion of older data bases

These components are having different scope and require different amount of work on different levels of organisation of the agency. Following diagram shows links between the registries within the single unit of organisation that carries out data entry and updating.

General mode of functioning of system
Entire system functions as a whole, which is realized in following manner:

- Structure of data base in entire system is standardised
- Clients' applications in entire system are standardised

Figure 4.

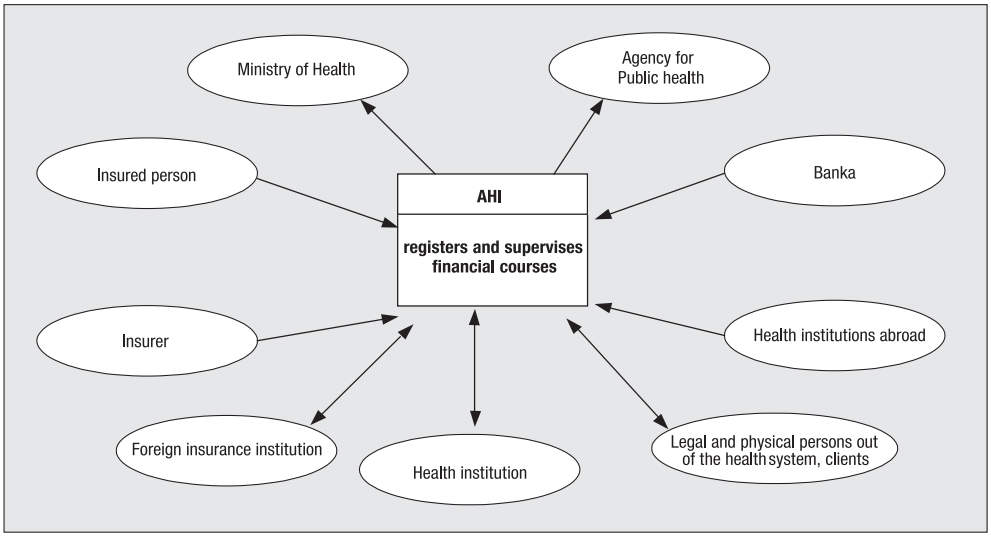
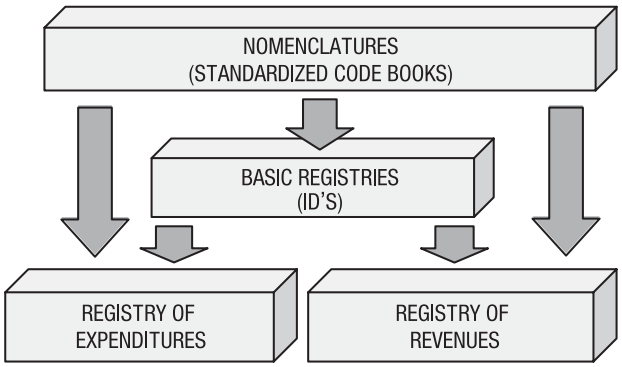


Figure 5.



- Data exchange within the system, between units of organisation is exercised through standardised procedures regarding data input and output
- System is multilingual
- Updating of standardised code books is performed at one place

Following picture shows the way in which different units of organisation, which are participating in data processing (agencies of health insurance), are correlating.

Extent of data

According to statistics of cantonal agencies of health insurance in FBIH, there are 1.981.186 registered insured persons, out of which 997.797 are directly insured, while other 983.289 are members of their families, what all makes about 85,4 % of population.

Following diagram shows structure of insured persons. All data linked to all of these persons registered with health insurance system are monitored in order to harmonize their rights and obligations with financial resources of the system.

Security Aspects

Method of authorization

In order to let client's application access the basis, one uses Oracle method of verification. User mentions the name, password and name of the server as he applies.

Services for export and import of data are using Windows 2000 verifications. "Call-back" option within the operative system is used in order to further increase safety. Each unit of organisation, that establishes the connection with the other, has its own user's name, password and phone number (for sake of "call-back" option) in that other unit of organization. When one who initiates the transfer establishes the link with the receiver of data, link is cut after the checking of the password and then receiver calls initiator on already defined phone number. This procedure prevents any breaking into the system.

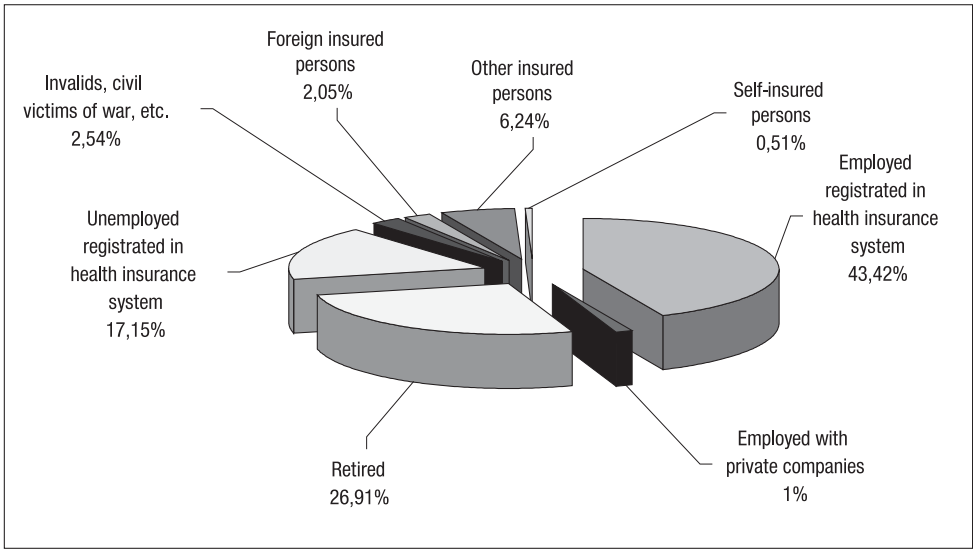
Solutions for registration of accesses to the system and changes of database

Every table contains field with the date and time of the change of each syllable and identifier of user who changes data. Besides, log file registers all accesses and actions within the course of working. There are three possible levels of registration into the log files, depending on initial parameters of applications. Level of registration is highest during initial period, since it needs to cover all actions and fix all mistakes in the course of work. Level of registration decreases when system reaches level of stable usage. Log files also register all mistakes in work with applications, beside registration of actions.

a) Solutions for limitation of user's rights

System features several groups of rights, named, in the terms of Oracle technology, ROLES. Administrators of

Figure 6.



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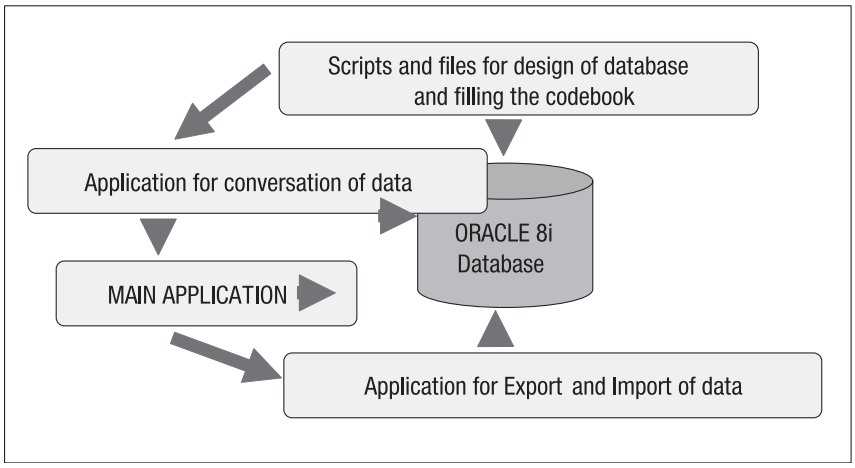

the bases can add new users as well as add new group of working rights with the data to these users. Besides, each user could be allowed or forbidden to work with certain menus of clients' applications. Applications built into the applicative software are in charge for these operations. Passwords over the basis (and clients' applications) are given by the administrator of the basis. Each canton appoints particular person in charge for this matter, either as an employee or as an honorary worker.

b) Solutions for filing and recovery of data
Filing and back up of data is taped into the tape unit on the server. Back up of statistics is done according to the needs and on the basis of decision of the administrator in charge for back up of data. That process enables filing of temporary data on the tape and reverting that data into the status and state it had before break up of the system. The administrator initiates back up itself, directly over the server of the database.

Applications

Clients' applications
Applications of clients are classified according to their general functionality. Those applications are unique in entire system, same as the database itself. There are three applications:

- Main application, used for work with all data on the places where this data is updated
- Application for export and import of data; and
- Application for conversion of data from existing into the new system

Clients' applications communicate with the same database way it is presented in the following picture.

Service applications
The task of service applications is to automate actions in order to decrease the need for users' interaction. These applications are located on the servers with modems, so they are designed as a service of operative system. When data for transfer are prepared and packed in appropriate format, service application takes the lead and sends the data to some other computer.(4,5)

Discussion

Due to the territorial and administrative division in the war period, information system of health protection after the war was divided in two systems, what matched organisation of health insurance in that period. Those information systems were:

- system with Inter-cantonal Agency of Health Insurance, which covered territory where Croats were majority population; and
- system, which functioned on the territory where Bosniaks were majority.

Beside these two major systems, there were also applicative solutions developed by local software enterprises in order to fill the gaps within the health insurance system in the regions with Bosniak majority. These two information systems were mutually fully incompatible. Developed on different, both, hardware and software they have been an obstacle for unification and standardisation of health insurance system as it was defined by law, since legal system required cantonal organisation of health insurance.

Therefore, Ministry of Health, within the project "Basic hospital services", financed through the World Bank loan, applied new, common information system in health insurance. That new system is applied in nine out of ten cantonal agencies, as well as in the Federal Bureau of Health Insurance.

Conclusions

Today in Federation of Bosnia and Herzegovina exists only one information system of health insurance which is used by almost all cantonal fonds of health insurance as well as Federal fond of health insurance.

Characteristics of this system , presented in this work, show as that using this system can make datas more available easier for use and , generaly, more usefull.

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