

THE ART OF INTELLIGENCE IN MEDICINE



A medical facility is a business. Regardless of its size, structure or owner, the rules of managing one are the same as in business projects from other industries. Proper management of a medical facility entails understanding the profitability of individual aspects of operation, analysis of returns on investments, proper assessment of the results.

In the recent years, the situation has been changing. The symptoms could have been noticed in the private sector, where generation of profits was as important as treatment and saving of lives. This is where the necessity of competing with other entities has enforced work on economic effectiveness. In turn, the act on information system in healthcare and the emerging need to fulfil the obligation of electronic documentation exchange (from 2014-08-01) has caused the state-owned hospitals and medical facilities to follow the private sector.

As the amount of collected data grows, the possibilities of using them increase as well. Usually, facilities have, or are implementing, ERP-class systems, used for the purposes of bookkeeping, stock levels, HR and wages. On the other hand, medical facilities are also implementing systems used to handle CIS – clinical information system. They provide storage of documentation concerning the patients, performed medical procedures, patient registration, etc. The market already offers systems providing com-

plete and integrated maintenance of both the CIS and administrative section, provided, e.g., by Comarch. The data collected in these systems provide significant support for the operations of the facilities, i.e. proper utilisation of resources, quicker patient service process, optimal planning of the staff working time, etc. Yet, it is important that such data can also be used for the purposes of analysing and making running decisions which are crucial for the operation of the facility. On

one hand, medical facilities are obliged to send reports, e.g. to the National Health Fund, in the scope of performed medical procedures and statistical information. On the other hand, they are regular companies which, in order to conduct activity, must be able to report their performance and have full insight into their operations. Analytical systems which enable complete and multi-dimensional analysis of the data collected offer assistance in this scope.

60%

This is the estimated optimization of health care costs provided by effective management

Yet, one should remember that implementation of an analytical solution involves several important factors and elements, which must be known and planned ap-

appropriately, to make the project proceed efficiently and easily. They include:

- Data integration
- Data protection
- Cost allocation
- Specification of analytical requirements

Data integration

This is one of the main challenges that must be faced during implementation of an analytical model for a medical facility. When implementing the solution, it is necessary to take into account the extent of integrating the individual, existing IT systems, to make the entirety of data available for analysis. Particularly if individual processes are supported by separate systems, it is worth to spend additional time to ensure and introduce the necessary corrections, which enable collection of all the data in a single set and to achieve the effect of a single data source, satisfying all the analytical requirements. The basic advantage of such a solution over separate reporting from individual systems is that it enables control and monitoring of all the information in a single place. Therefore the administrators can be certain that the data are coherent and correct.

Data protection

Data, particularly in the scope of CIS, are not only crucial from the perspective of the medical facility, but they are also vulnerable information from the perspective of the patients and protection of their data. The solutions applied should provide a possibility of isolating the vulnerable data and disclosing them only to authorized persons, according to their functions. In particular, the vulnerable data should be secured not only by access to the reports, but also by appropriate restriction of access at the level of database and structure and the method of constructing the analytical model.

Cost allocation

As it was mentioned before, one of the main difficulties of conducting medical activity is proper estimation of costs resulting from the medical procedures and conducted activity. Even the most elaborate plan of book-keeping accounts will not suffice for proper assessment of the medical facility operation in every aspect. This is why analytical systems are created, which also provide a possibility of additional, controlling cost allocation. One such solution is the Comarch BI analytical system.

“The data collected in these systems provide significant support for the operations of the facilities, i.e. proper utilisation of resources, quicker patient service process, optimal planning of the staff working time, etc.”

A suggested controlling costs allocation enables full, multidimensional presentation of the financial situation and business activity. Below are several examples of cost allocation scenarios provided by the Comarch BI tool.

Allocation of fixed charges costs, such as electric power, water, or property taxes, is frequently entered as the so-called general cost of operation, and therefore it is not transferred directly to the costs of services provided. This is one of the available approaches. In numerous companies and medical facilities, the cost allocation solutions utilize an allocation key in the form of the number of employees in the given clinic or ward and generate so-called surcharge. Thanks to allocation of surcharge, resulting from fixed charges, it is easier to assess profitability of individual clinics, or even the services provided, taking into account their share in

the fixed charges. The key may be either the surface occupied or the number of employees.

In the case of medical facilities, the staff costs allocation is difficult, due to various forms of employment. Yet, it is possible to use data coming from the area maintained by the HR module of the ERP system and allocate the costs resulting from permanent jobs, remunerations under contracts and charges for readiness of individual physicians, to the medical procedures they perform. Additional staff is usually allocated using the general key, all procedures in the given ward, whereas the physicians, particularly contractors, can be allocated directly to the procedures they perform, taking into account registration of time devoted to completion of individual procedures.

In the case of complicated ownership structure, actions of several physicians in a single clinic, in the form of a company or another association, an important aspect is appropriate division of costs resulting from surgeries performed in individual treatment rooms, or complete visits. The bills related to lease of surface, consumption of power, administration staff, are frequently accounted for individual physicians, taking into account the consumption level.

Allocation of costs resulting from material consumption

Apart from relatively expensive drugs, or diagnoses purchased from external laboratories, which should be allocated directly to medical procedures, it is also worth to make allocation resulting from consumption of basic materials, such as disposable gloves, needles, swabs, or dressings. By applying the cost allocation mechanisms, it is possible to calculate standards for consumption of individual materials, as part of various medical procedures, and allocation of costs resulting from purchase of materials to individual medical procedures, taking into account their direct

impact on consumption of materials and the number of completed procedures.

Allocation of costs related to investments in modern diagnostic equipment

Due to high costs of this type of investments, it is not always possible for them to pay for themselves as a direct result of examinations or medical procedures performed using these devices, or in the given organizational unit. Therefore, when allocating consecutive tranches of depreciation, it is work to consider other medical procedures possible thanks to the fact that the organization obtained an additional device, and to work into them the surcharge resulting from purchase of modern diagnostic equipment, as it can have significant impact on the quantity of other procedures offered by the facility.

Due to the specificity of individual medical facilities, the aforesaid examples should be considered as merely an information. Implementation of the cost allocation processes is in fact implementation of controlling processes which should be fully adapted to the organizational structure, the goals of the organization and the processes which take place therein. Therefore, the possibility of individual generation of division keys and allocation processes is important.

This allows the facility administrators to assess the profitability of individual units, concluded agreements, including sold medical packages. Those interested in optimal utilization of resources can make the required analyses and verify the cost-effectiveness of performing individual medical procedures.

Cost allocation is as important as income allocation. It provides the ability to build a controlling structure based on MPK and cost centres, which allows to fully verify the profitability of individual aspects of the

conducted activity. Income allocation can concern, for instance:

- Allocation of income from operation of a diagnostic laboratory
- Allocation of income from the extent of performing a contract with the National Health Fund
- Allocation of income from sold contracts and individual medical packages
- Allocation of income from completed, paid medical procedures and contracts

Specification of analytical requirements

A lot of attention was paid to the cost allocation, the income and cost issues. This is one of the major issues which must be tackled during creation of an analytical solution for a medical facility; it serves as the basis for building the controlling model. Other typical analytical models in a medical facility include:

- Medical procedures analysis model – providing overview of statistics related to completed medical procedures, including staff and resource consumption.
- Storehouse Model – allowing to browse information on stock levels of individual materials and raw materials, taking into account stock rotation, expired medications, vaccinations, stock levels in outpatient departments and in the central storage.
- HR model – includes reports on wages, absence, planned, completed and outstanding leaves, absence calendars
- Bookkeeping model - enables insight into accounting reports, but also into balances and turnovers of individual bookkeeping accounts

- Purchase model, which on one hand enables optimization of suppliers and purchase management, and on the other provides insight into individual purchase transactions and related invoices
- Model of receivables and liabilities, providing complete insight into information on ageing, maturity dates and facilitating the cash flow handling
- Sales model – applying in particular to non-public facilities, allowing to compare the results of sales for medical packages, procedures, summary of their margin and completion of the intended goals.
- Abuse monitoring model – this is a dedicated area used to monitor processes in a medical facility, which uses statistical and comparative mechanisms to detect potential abuses, such as prescribing of unnecessary medical procedures, uneconomical utilization of resources, etc.

unnecessary medical procedures, uneconomical utilization of resources, etc.

To sum up, the BI solutions for medicine enable broadly-defined analysis of medical facilities and the portfolio of medical services they offer. Thanks to application of proper mechanisms,

customized to the needs of the organization, they reveal redundant costs and non-optimal issues, while indicating the most profitable methods of operation. Taking into account the growing competition, both within the private sector and between the private and the public sector, utilization an element as obvious as knowledge provided by the data seems to be an essential element of success and survival.

More about Comarch
Business Intelligence

www.bi.comarch.com



MICHAŁ STADNICKI

Consulting Centre Director
Business Intelligence
phone: +48 12 687 73 52
business.intelligence@comarch.pl

Comarch SA

Al. Jana Pawła II 41g
31-864 Kraków, Polska
phone: + 48 12 687 73 52
e-mail: business.intelligence@comarch.pl

www.bi.comarch.com

www.comarch.com www.comarch.de www.comarch.ru www.comarch.fr www.comarch.pl

Comarch Spółka Akcyjna with its registered seat in Kraków at Aleja Jana Pawła II 39A, entered in the National Court Register kept by the District Court for Kraków-Śródmieście in Kraków, the 11th Commercial Division of the National Court Register under no. KRS 000057567. The share capital amounts to 8.051.637,00 zł. The share capital was fully paid.

NIP: 677-00-65-406

Copyright © Comarch 2013. All Rights Reserved.

EN-2013.01