

# Practical aspects of change management at the Obstetrics and Gynecology Clinic at the University Hospital of Medical Sciences in Poznań, Poland

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## Abstract

**Introduction and objectives.** Recent changes to the Polish healthcare system have forced healthcare managers and administrators to implement modern instruments for strategic and operations management. The main aim of the study was to analyze the effect of managerial decisions in the area of human resources, resulting from the adopted restructuring program, on the economic situation of the OGCH, PUMS.

**Material and methods.** The research material comprised of secondary sources on finance, accounting and human resources data: financial statements, analysis of costs incurred by individual hospital departments, reports on the implementation of NHF contracts for providing health services and on hospital workforce at the time of the study, as well as the results of patient satisfaction survey at the OGCH, PUMS.

**Results.** After implementation of the restructuring program all clinics apart from one – Surgical Gynecology Clinic – reached better beds occupancy rates in 2012 as compared to 2009, as well as significantly improved profit/per hospital bed. Over the course of three years, since the launch of the hospital restructuring program, a significant (20%) increase in the revenues from selling healthcare services and a simultaneous decrease (2%) of the operating cost was observed.

**Conclusions.** Inclusion of department heads into the decision making processes of managerial accounting seems to be necessary to improve the overall financial condition of a hospital. However, it requires a more flexible hospital structure, what can be achieved by implementing a divisional organizational structure, which grants individual organizational units a certain autonomy in the process of making medical-financial decisions.

## Key words

Management, restructuring, healthcare

## INTRODUCTION

Recent changes to the Polish healthcare system have forced healthcare managers and administrators to implement modern instruments for strategic and operations management. The concept of efficiency has gained special importance in the functioning of contemporary health system entities. Dynamic changes in the hospital environment, particularly sensitive in terms of economic factors, have become the reason for management decisions to improve cost efficiency. Limited financial resources of health system entities, resulting among others from the absence of legal solutions allowing public entities to undertake commercial activities beyond the limit defined by the National Health Fund (NHF), combined with rising costs of hospital maintenance, have pushed hospital managers to seek organizational solutions for the optimal use of human, material, information and financial resources [1].

Thus, the question arises of how to improve hospital management. Management practitioners often respond that the decisions will largely depend on the profile of an organization, as well as the mission and strategic goals the managers wish to pursue. It is essential for tools and procedures supporting the management processes to be customized for

an organization, and not the other way round, and allow for the implementation of strategic goals. The process of making strategic decisions should be preceded by a thorough analysis of the environment in which an entity operates. The environment of health system entities is commonly analyzed in four areas: legal, economic, social and technological. In recent years, the majority of the dynamic changes have taken place in the first two of the above-mentioned groups of factors. These changes have significantly affected the financial situation of hospitals, both in terms of profit and operating expenses.

Analysis of the environment of Polish hospitals in the financial area revealed that changes in working time legislation for medical personnel have significantly influenced the value of costs in the profit and loss account, in particular the costs of the personnel. These changes have become the source of major problems in securing the supply of human resources that would correspond to individual needs of health system institutions.

In Poland, the changes took effect from 1 January 2008, and are the result of the obligation to implement the provisions of The Working Time Directive 2003/88/EC of the European Parliament and the Council from 4 November 2003, pertaining to certain aspects of the organization of the working time (OJ. EU L 299, 18.11.2003, p. 9). Article 93, introduced by The Act on Medical Activities, provides that the working time of employees in health system entities (subject to Art. 94, para. 1) cannot exceed 7 hours 35 minutes per day

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and an average of 37 hours 55 minutes per week in a standard 5-day working week within the agreed period of time. Other significant, i.e. followed by financial consequences, changes in the rules governing working hours of healthcare entities have been related to the following:

- 1) the necessity to include the on-call time at the hospital into the normative working time and at an overtime rate (this applies to doctors and other medical personnel with tertiary education);
- 2) introduction of the norm of maximum weekly working hours (48h), comprising of weekly working hours of a doctor (i.e. 37 hours and 55 minutes) and overtime work during on-call duty;
- 3) the necessity to assure 11 consecutive hours of rest in each 24 hour period, and 35 hours of rest per week (in the case of health system entities offering around-the-clock service the interval may be shortened to 24 hours on condition that a 14-day accounting period is observed);
- 4) the possibility to use the so-called 'opt-out clause' which allows an individual (doctor) to agree to an extended working time (over 48h per week).

It should be emphasized the working weekly time limit of 48 hours for doctors and other medical personnel with tertiary education applies only to permanent hospital staff. Such restrictions do not apply to doctors who are on a contract for providing services for the hospital, due to the fact that the legal relationship between them is not the employment relationship. Instead, it is based on civil law and is defined by both contracting parties in accordance with the principle of freedom of contract.

In light of the above, civil law contracts or the system of equivalent working time (instead of the traditional one-shift system with an obligation to take on-call duty), have become ways of minimizing the negative consequences for healthcare entities that resulted from the changes in the on-call duty principles, and the necessity to remunerate them at overtime rates.

The hospital management board decided to create and implement a restructuring programme. The main programme goal was optimize the current operating costs which are the largest expenditure on the profit-and- loss account of the hospital.

At the planning phase, remedial actions were focused on personnel costs (wages and social security contributions) and costs associated with maintaining hospital infrastructure (among others, raw material and energy consumption), amounting to approximately 80% of the total hospital expenses.

In the area of human resources, the management board of the Obstetrics and Gynecology Clinic at the Poznań University of Medical Sciences (OGCH, PUMS), decided to change the type of employment of doctors – from employment contracts to civil law contracts, (medical contracts) in order to minimize the negative consequences of the described above statutory changes concerning working hours.

Apart from the change in employment of doctors, a decision was taken to make the level of their salaries dependent on the financial outcome of their wards (revenue level and profit of a given hospital ward in a given month), which necessitated the implementation of solutions characteristic for a divisional organizational structure. Such a structure allows to bring closer the decision-making and problem-solving centres to places where the problems actually arise. Thus, power

and authority to shape the internal structure of wards were delegated to operations managers, i.e. department heads, in the case of the OGCH, PUMS.

The detailed procedure of calculating the monthly budget for remunerating doctors at the OGCH consists of the following steps: doctors who perform healthcare services on the basis of civil law contracts are billed according to the hour-task compensation system. The hourly part comprises approximately 25% of the total salary and flat-rate billing, as stated in the contract, and is used to calculate that part of the salary. The task part is billed on the basis of the number of points assigned to each medical procedure (e.g., ultrasound examination, surgery, surgical assistance, handling and preparation of medical records) that a medical team of a given hospital ward gathered.

Funds allocated for salaries are a specified percentage of the revenue achieved by a ward with an additional percentage of the profit (if achieved in a given month). Budget constitutes the basis for calculating the PLN value of 1 point. The value is multiplied by the number of points individual doctors gathered in a given month and constitutes the basis for their monthly salary.

It ought to be emphasized that the management board has also undertaken to restructure the types of employment in other occupational groups, assuring that a smaller number of employees will not result in a lower quality of healthcare.

**Objectives.** The main aim of the study was to analyze the effect of managerial decisions in the area of human resources, resulting from the adopted restructuring programme, on the economic situation of the OGCH, PUMS.

Specific aims included analysis of the following:

1. if there exists a relationship between the change in the type of employment of hospital staff (from employment contracts to civil law contracts), while using attributes characteristic for divisional organizational structure, and the financial condition of the ward, as well as work efficiency of a team of doctors;
2. whether making the salary level of doctors (civil law contract) dependent on the financial outcome of their wards resulted in increasing hospital revenue and lowering the operating costs of a given ward;
3. whether the change in the type of employment of doctors resulted in optimum beds occupancy in hospital wards;
4. whether the change in type of employment of medical personnel contributed to improved indices of patient satisfaction with medical services in the hospital.

## MATERIALS AND METHOD

The study was conducted at the Obstetrics and Gynecology Clinical Hospital, Poznań University of Medical Sciences (OGCH, PUMS) between June 2009 – July 2012. A restructuring programme, aimed at improving the financial condition of the hospital, was being implemented at that time.

The research material comprised of secondary sources on finance, accounting and human resources data: financial statements, analysis of costs incurred by individual hospital departments, reports on the implementation of NHF contracts for providing health services, and on the hospital workforce at the time of the study, as well as the results of patient satisfaction survey.



**Statistical methods.** To compare the number of beds, accepted patients, percent indicators in individual wards in 2009 and 2012, special tests were used in the model of variable links-up. When accordance with regular rules had been accepted, the t-Student test in the model of variable links-up was used, or the Wilcoxon distribution free test. The same tests were used to compare profits in particular months in 2009 and 2012. Particular percent indicators mapped-out in the wards were compared by using the u-Gauss test. The Mann-Whitney distribution free test was used to compare the questionnaire results of patients' satisfaction in 2009 and 2011. Calculations were made on the basis of the statistic suite called STATISTICA (data analysis software system), v 10, StatSoft.

**RESULTS**

**Optimization of employment in OGCH.** Comparison of data between 31 December 2009, when the number of regular posts was 1,074.40 – 30 to June 2012, when the number of regular posts was 919.08, revealed that the hospital reduced its workforce by a total of 155.32 posts. The largest reduction was noted in the group of doctors, where the employment rate dropped by 120.66 regular posts. That occupational group was made redundant mainly due to the process of transition from employment contracts to civil law contracts (medical contracts). It should be noted that on 30 June 2012 there were 77.24 regular posts for doctors, which included 26.80 regular posts for residents who did not burden the hospital budget with employment costs as they are covered by the Ministry of Health.

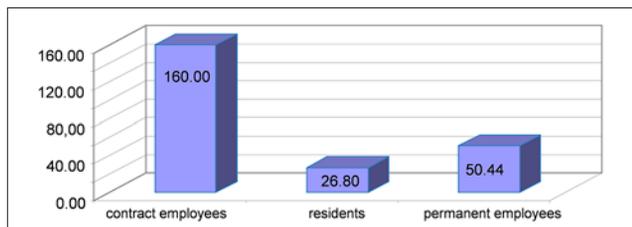


Figure 1. Employment structure for doctors on 30.06.2012

In the case of nurses and midwives, the plan to open a new neonatal unit was taken into account while estimating the level of redundancy (23.28 regular posts), as the management board intended to recruit internally. In addition, employment in this occupational group should be compliant with the employment standards of the National Health Fund (NHF) and the Ministry of Health. Finally, 24.18 regular posts were eliminated among the administrative staff and the remaining medical personnel.

**Optimization of hospital bed management.** Figure 3 illustrates statistically significant ( $p= 0.017$ ) better beds occupancy rates in 2012, compared to 2009, in all clinics apart from one – Surgical Gynecology. However, even despite the less favourable results of beds occupancy in 2012, the Clinic of Surgical Gynecology demonstrated higher profit/per hospital bed, resulting from a more balanced policy toward the internal structure of the provided health services.

Average monthly profit/per hospital bed in individual clinics of OGCH, PUMS, is presented in Figure 4. There is a statistically significant growth ( $p=0003$ , using t-Student test).

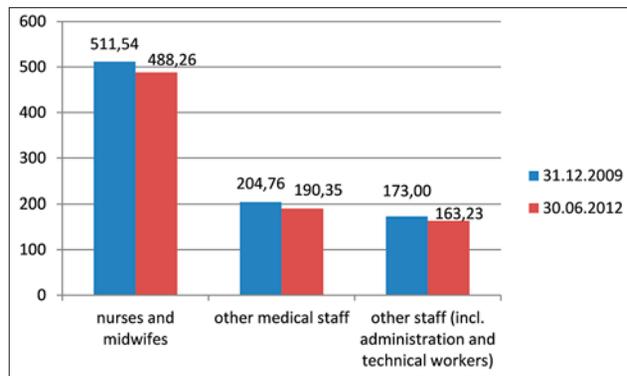


Figure 2. Employment structure in the remaining occupational groups

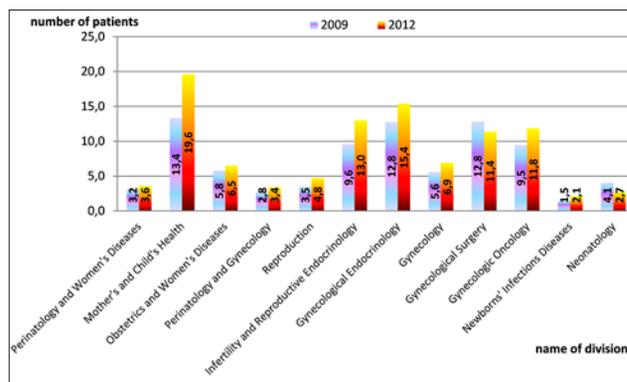


Figure 3. Average number of patients/per bed/per month in the first half of the year in 2009 and 2012

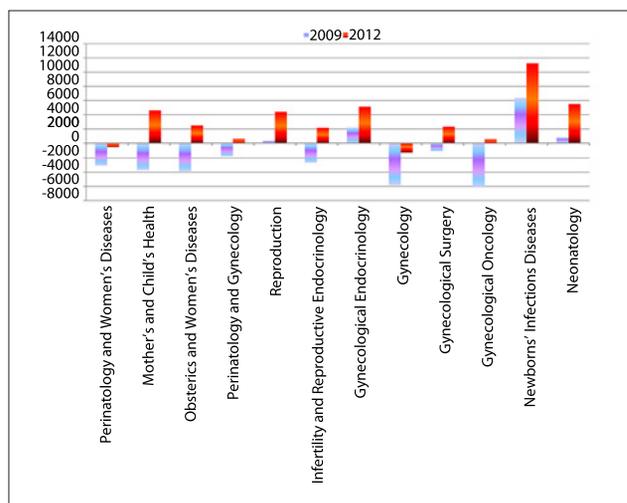


Figure 4. Comparison of average monthly profit/per hospital bed in individual clinics of OGCH in 2009 and 2012

**Effects of the restructuring programme on the economic situation of the hospital.**

**Revenues and expenses generated by the hospital during the investigated period of time.**

The most dynamic revenue rise can be observed when comparing the first half of 2009 and the first half of 2010 (11%), whereas comparison of the first half of 2010 and first half of 2012 revealed an 8% revenue rise from the provided healthcare services.

Apart from a steady increase in hospital revenue, analysis of the profit-and-loss account revealed a decrease in hospital operating expenses by approximately 1,000,000 PLN/per year



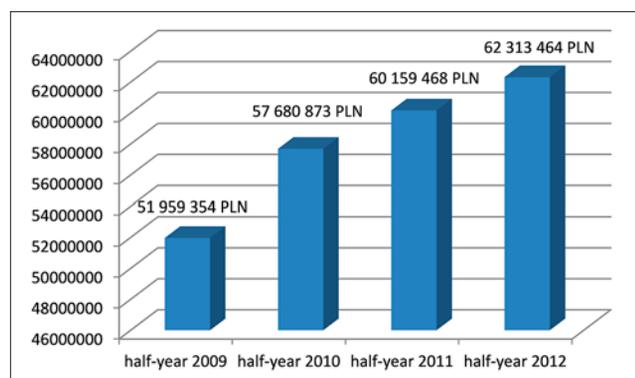


Figure 5. Healthcare services: sales revenue between 2009–2012

over the last three years (2009: 123,121,206 PLN; 2010: 122,018,002 PLN; 2011: 121,112,000 PLN)

The percentage structures of healthcare services provided by the hospital in 2009 (before implementing the restructuring programme) and in 2012 (after introducing the remedial actions) were similar (Fig. 6), with the exception of healthcare services in gynecology and obstetrics (a 3% increase in their share of the contract with the NHF).

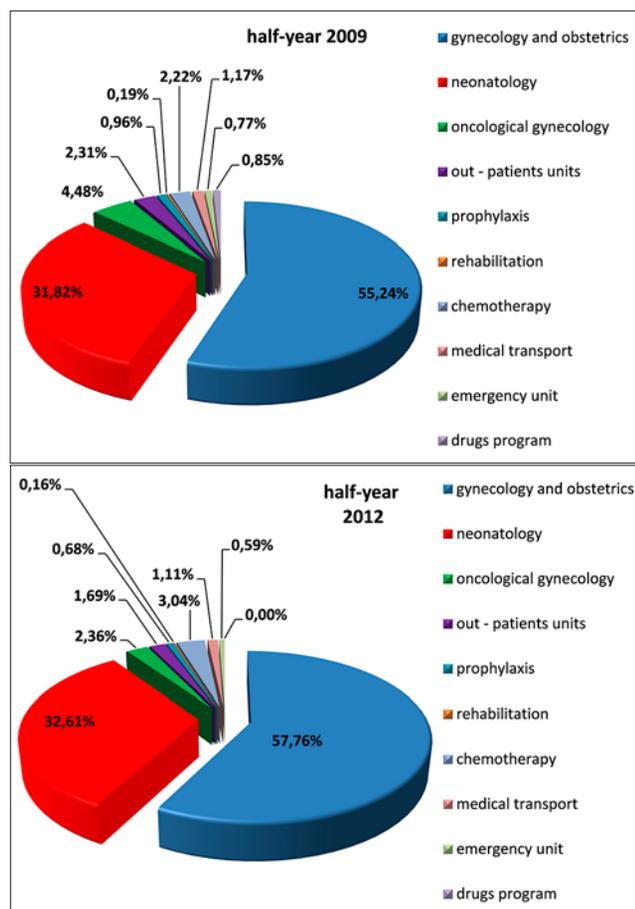


Figure 6. Internal structure of healthcare services contracted by the NHF and provided in 2009 and 2012

**Economic analytical indicators of the financial situation of the hospital.** During the course of the last 3 years, the values of all economic indicators presented in Table 2 have shown positive trends. The fact that the hospital attained a profit rise on the sale of healthcare services in 2012 is

particularly noteworthy. This resulted in the improvement of other indicators, among them liquidity, which almost reached the optimal level of 1.2.

Table 1. Comparison of the economic value of analytical indicators in 2009 and 2012

No. Indicator	Indicator for the year:		Changes in indicator 2012–2009
	2012	2009	
1 Total balance sheet	56 116.00	46 255.00	9 861.00
2 Net profit	3 931.00	-12 292.00	-8 361.00
3 Return on sales	5.2%	0.0%	+5.2%
4 Return on assets	7.0%	0.0%	+7.0%
5 Return on equity	66.6%	0.0%	+66.6%
6 Current ratio	0.88	0.51	0.37
8 Receivables turnover	4.74	21.28	-16.54
9 Debt-to-asset ratio	62.8%	81.1%	-18.3%
10 Equity-to-asset ratio	19.2%	14.3%	+4.9%

The debt-to-asset ratio is also essential to maintain the financial security of a hospital. The indicator notably improved (a decrease by nearly 20%) in 2012, compared to 2009, with a simultaneous increase in the percentage of the equity-to-asset ratio (from 14.3% to 19.2%).

Hospital profit, calculated cumulatively since the beginning of 2012, reached a total of 3,931,000 PLN by the end of July, which demonstrates the impact of the restructuring measures undertaken by the hospital, compared to the loss of 12,000,000 PLN at the end of 2009.

**Effect of restructuring measures in human resources management on the level of patient satisfaction with healthcare services.** A patient satisfaction survey conducted at the end of 2011 revealed that while individual aspects of medical care during hospital stay remained on a similar level for the last few years, several scores in various areas of medical care notably improved after implementing the restructuring programme.

Detailed results of the patient satisfaction survey about human factors between 2008–2011 are presented in Table 2.

Table 2. Results of patient satisfaction survey: human factors (\*statistically significant)

TIME OF STUDY:	2009	2011	Statistical significance (p)
NURSING CARE			
1 Clarification and information for patients	4.50	↑4.73	0.0006*
2 Maintaining privacy during nursing procedures	4.51	↑4.57	0.2430
3 Response to patient requests	4.61	↑4.75	0.0029*
4 Level of politeness toward patients	4.70	↑4.81	0.0011*
MEDICAL CARE			
5 Providing information about recommended treatment	4.32	↑4.46	0.0906
6 Maintaining privacy during examination procedures	4.23	↑4.33	0.3149
7 Time dedicated to talking with patients	4.03	↑4.22	0.0135*
8 Level of politeness toward patients	4.48	↑4.53	0.3332
<b>MEAN SCORE</b>	<b>4.40</b>	<b>↑4.42</b>	

**Table 2** (Continuation). Results of patient satisfaction survey: human factors (\*statistically significant)

TIME OF STUDY:		2009	2011	Statistical significance (p)
LABOUR AND PUERPERIUM CONDITIONS				
TIME OF STUDY:		2009	2011	
1	Level of politeness of midwives in the delivery room	4.39	↑4.56	0.1892
2	Level of politeness of doctors in the delivery room	4.43	↑4.81	0.0699
3	Level of assistance of midwives from the obstetric ward in caring for the baby	4.44	↑4.50	0.4574
5	Information about the condition of the baby given by a paediatrician	4.41	↑4.76	0.5620
6	Paediatrician-mother of the child rapport: politeness	4.51	↑4.76	0.0827
MEAN SCORE		4.42	↑4.61	

## DISCUSSION

Every organization, regardless of its size, line of business or specificity, at one point or another encounters obstacles that can be overcome only through transformation of its structures, processes and resources. The recent macro-economic situation, dynamics of the changes in the environment of a given organization, and technological advances have escalated the pressure to make changes.

Under the circumstances, contemporary managers are not satisfied with a vision of stagnation (survival). On the contrary, they are characterized by a dynamic approach to managing their organizations, which is based on the process of reconstructing an organization in order to improve its operating efficiency, and ensure its development [2].

The literature assumes that organizations which demonstrate reactive response to change are characterized by a decentralized management system [3,4]. An organizational structure which includes the so-called 'functional divisions', together with a hierarchical structure of the objectives, tasks and functions, works best in a decentralized system. Such a system creates good conditions for substantive division of the authority and responsibility for decision-making, which contributes positively to the outcomes of the planned activities.

The above-mentioned approach to management brings beneficial results in large, homogeneous units with a single-profiled activity, for example the Obstetrics and Gynecology Clinical Hospital, Poznań University of Medical Sciences. It is possible to demonstrate a cause-and-effect relationship between the services provided and tasks performed by individual hospital units and their financial results in the form of the final outcome of the entire institution.

The presented study demonstrates the usefulness of the so-called 'divisional organizational structure' in improving the economic efficiency of individual hospital units. Such a structure allows these units to participate in the management of the generated revenues and costs [5,6].

Braithwaite and Westbrook, in their study conducted in 2006 in 20 Australian teaching hospitals, demonstrated a similar concurrence. They proved the effect of an organizational structure on cost effectiveness, especially beneficial when using a structure based on separate entities, individually accounted for in terms of generated costs [7]. Similar results were obtained by researchers who conducted

a study in a group of 27 Italian hospitals, divided into two categories: hospitals managed and supervised directly by the Local Health Unit, and hospitals transformed into independent and autonomous entities. More efficient hospital bed management and lower operating costs were noted in the latter category of hospitals [8,9,10].

A general trend to gradually increase revenues from the implementation of health care services, in all ranges contracted with the NHF, was observed after introducing a number of optimization measures of hospital functioning, especially a different type of employment for doctors and remuneration that depends on revenue and profits generated by their wards. During the course of 3 years since the launch of the hospital restructuring programme, a significant (20%) increase in the revenues from selling healthcare services and a simultaneous decrease (2%) of the operating cost was noted. This was accompanied by a more efficient hospital bed management, increasing the so-called 'productivity' per hospital occupied bed. Thus, the hospital accomplished its objective to increase the average beds occupancy rate. The accessibility of first-class specialists and equipment resulted in a continuous increase in the number of patients and births. After a thorough analysis of the profit on sales of the provided medical services, a decision was made to increase the number of obstetric beds by decreasing the number of gynecological beds in some clinics (with particular focus on the pathology of pregnancy). This allowed the maintenance of efficient bed management and to performance of medical procedures with higher price tariffs. Importantly, mean monthly profit index per hospital bed at the Obstetrics and Gynecology Clinical Hospital, PUMS, has significantly improved over the last 3 years (Fig. 4).

The effect of the restructuring measures on the general economic situation of the hospital was expressed by presenting the financial ratios achieved by the hospital during the last three years.

Ratio analysis is a useful tool to measure financial performance of an entity, based on calculating the proportion between the values reported in the balance sheet and the profit-and-loss account. A set of indicators characteristic for various areas of a company's activity is obtained in that way. Ratio analysis allows the gauging of past, present and anticipated future activity of an entity on the basis of the calculated ratios.

The presented study focuses on the most important aspects, judged by the outcomes, from among the implemented restructuring measures and analytical indicators (Tab. 1). The values indicate a steady improvement in the economic situation of the hospital, as demonstrated, for example, by paying off all overdue liabilities and balancing current operating costs and revenues. In 2012, after implementation of the restructuring programme, the hospital's net profit improved by 14,891,838 PLN, compared to 2009, when a financial loss of 12,291,838 PLN was recorded.

Despite the significant improvement in the financial condition of the entity, the hospital management board continues their efforts to optimize operating costs and increase work efficiency. The next goal of the restructuring programme includes a change in the employment type of nurses and midwives, from time- to task-oriented, following the changes implemented in the group of doctors, in order to increase the benefits of a divisional organizational structure, as described in national and international publications.



## CONCLUSIONS

The definition of management as a process of re-adapting an organization to the changing internal and external operating conditions by initiating processes of continuous quality improvement seems to be the most relevant one when taking into account the specificity of hospital operations in a dynamic business environment.

Estimation of the salaries budget as the revenue and cost function, generated by individual hospital units, is an effective way of increasing work efficiency, in other words, productivity of the working hours.

Inclusion of department heads into the decision-making processes of managerial accounting is necessary for improving the overall financial condition of a hospital. However, it requires a more flexible hospital structure which can be achieved by implementing a divisional organizational structure. Such a structure will grant individual organizational units a certain autonomy in the process of making medical-financial decisions.

The introduction of a task-based compensation system does not adversely influence the quality of healthcare services.

A task-based compensation system has a beneficial effect on the optimization of hospital beds occupancy, thereby improving the potential of the hospital.

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