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Best management practices of medicinal products in German hospitals, as a recommendations for medical facilities in Poland

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Abstract

Implementation of modern technological solutions and the results of pharmacoeconomic analyses into selecting drugs to a hospital formulary, as well as an appropriate supply management can bring substantial savings for a medical facility.

The aim of the study was to identify the best management practices of medicinal products in German hospital, which could be implement in polish realities.

The results of the research show, that regarding to the German solutions, Polish medical business practices should be put on the increase in decision-makers' awareness of the role of pharmaceutical drugs management in the process of medical facility management. Rational drug management can lead to substantial savings for a hospital and, more importantly, increase safety of patients.

Key words: **best management practices, medicinal products, Poland, Germany**

Słowa kluczowe: **najlepsze praktyki zarządzania, Niemcy, produkty lecznicze, Polska**

Introduction

In management terms, a medical facility (i.e. hospital, outpatient clinic, specialist clinic) is one of the most demanding forms of business, in particular due to the specific character of its activity, which is based on patients' unlimited health needs and continuous improvement of diagnosis and treatment methods [1]. Effective use of all resources (financial, human, material and time resources) is of considerable significance for the satisfaction of the needs of patients-clients. More importantly, the market of medical services is of specific nature, described in the source literature as a quasi-market, which means that it is not governed by all rules of free market economy [2].

Healthcare in Poland, or the whole sector of medical, social and economic activity to put it aptly, started to implement modern management methods as the last one of all sectors of economy. However, even though medical facilities in Poland are developing, procedures of pharmaceutical drugs management often remain unchanged. Many hospital directors and hospital pharmacy managers are unaware of the opportunities which the improvement of drugs management can bring. The objective of this paper is to provide a comparative analysis of the German

medical consortium Städtisches Klinikum München in Munich based on the DrugMan business model identifying best practices and their applicability to medicinal product management in Polish hospitals. The aim has been achieved by the analysis of the internal potential of organization on the basis of strategic balance.

Implementation of modern technological solutions and the results of pharmacoeconomic analyses into selecting drugs to a hospital formulary, as well as an appropriate supply management can bring substantial savings for a medical facility in a short time [3].

Methodology

This article is based on the results of a strategic analysis, conducted by the authors of this article in the German medical consortium Städtisches Klinikum München in Munich. The analysis was carried on the basis of authors' own DrugMan business model, whose parameters were used to analyse the consortium and define the best practices for the management of medicinal products (**Figure 1**). The parameters ware choosen by the authors in cooperation with industry experts. All parameters were collected in authors' own Balance Shett – Rating. The parameters ware estimated by managers's (of the examined facility) own experiences and knowladge in a process of individual in-depth interviews. An available range was from 1 do 5 (with 5 being the best). The interpretation of the results was disscussed and summarized with the managers of the examined facility and industry experts.

DrugMan is a two-level business model, which involves two types of activities – analysis and planning, both essential for the development of innovative methods of medical facility management. Parameters 1–4 (business portfolio, business environment, economics, human capital) refer to main elements which determine appropriate functioning of specific hospital wards on a market and are used to analyse the condition of a facility. The outcome of the numerical parameters analysis is a report which enables the preparation of relevant strategies for fields A–D (investment, marketing, quality, organizational culture). In the process of creating a strategy for a particular field (A–D), the results obtained for the neighbouring fields (1–4) are taken into account, e.g. factors attributed to fields 1 and 3 influence the strategy of field A.

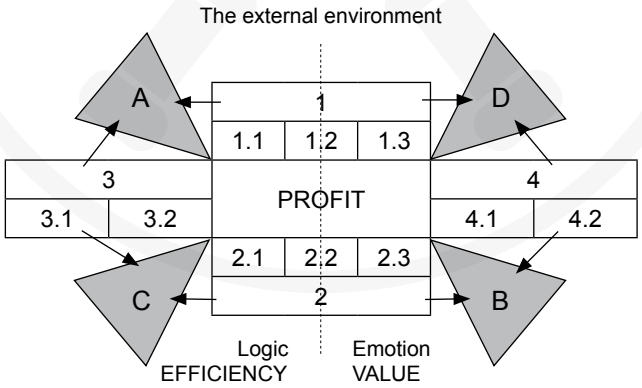
Each of the business model parameters presented below was examined with the use of two research methods:

a) examination of the consortium documentation (quality reports, internal documents, internal templates, materials, personal treinings course results, etc.);
b) qualitative research – an individual in-depth interviews (IDI), including a semistructured questionnaire, conducted with the managers of the examined facility (general director, pharmacy department head), as well as experts consultations with the staff of pharmacy department and quality department – low- and mid-level staff) and authors observations.

Strategic analysis of Städtisches Klinikum München medical consortium based on DrugMan business model

Identification of business portfolio

Städtisches Klinikum München (hereafter referred to as StKM) is the fourth-largest public medical consortium in Germany and it offers medical services which cover one third of the medical market in Munich. StKM consists of Klinik Thalkirchner Straße, four specialist hospitals, Akademie – a training centre for current and potential employees, Blutspendedienst – blood donation and transfusion medicine centre, and Medizinische Dienstleistungszentrum – medical services centre. The founder and the owner of the consortium is Munich city council. Jointly, StKM has 3400 beds and can admit 260 patients in one-day clinics. It provides inpatient care for



..... – division of the model into the areas of logic and emotions, which refer to efficiency and value respectively.

Figure 1. *Authors' own DrugMan business model.*
Source: Own work.

134,400 patients annually and partly residential care for 14,900 patients annually, in the scope of outpatient and specialist services, and one-day clinics. There are five facilities which are a part of StKM and offer medical services within 60 specialties. The mission statement of the consortium is to offer medical services, take over responsibility for patients' treatment and provide high quality healthcare in Munich [4, 5].

Business environment analysis

A medical facility operates on a quasi-market which is determined by the rules which are different from the standard rules of economy, therefore it can subject to specific assessment in terms of competitive environment analysis. In this research, competitive environment analysis was conducted with the use of adjusted Porter five forces analysis. Below there are factors included in the research method and in the evaluation of these factors' influence on the functioning of the examined medical consortium based on the cooperation process with the managers of the examined facility (**Table I**) [6].

Porter's Five Forces	Estimated level of impact				
	1	2	3	4	5
The impact of suppliers and the possibility of them putting pressure on a facility			x		
The impact of customers and the possibility of them putting pressure on a facility				x	
Intensity of competition within the sector					x
Threat of new competitors		x			
Threat of substitutes	x				

Table I. *Analysis of Porter's Five Forces by the managers of the examined facility.*

Source: Own work.

The impact of suppliers and the possibility of them putting pressure on a facility

The impact of suppliers and the possibility of them putting pressure on a facility is medium in the case of a medical facility, mainly due to the fact that both groups are focused on cooperation. Furthermore, contracts and agreements for the provision of products and services are signed for a longer period of time. It is worth pointing out that medical facilities (members of a network or a medical consortium) very often make group purchases, which guarantees the lowest, possibly stable prices, as well as timely delivery of a product or provision of a service [7].

The impact of customers and the possibility of them putting pressure on a facility

The impact of customers and the possibility of them putting pressure on a facility is considerable in the case of a medical facility. Customers on healthcare market are patients. They have a big impact in cities where medical services are offered by many healthcare facilities. This also proves to be true in the case of the examined consortium.

Intensity of competition within the sector

Intensity of competition within the sector can be described as strong although healthcare sector is characterized by the excess of demand over supply. This is due to the fact that there is a substantial number of medical facilities in the state of Bavaria, and in particular in its capital. In Munich there are over 40 hospitals offering diversified medical services. Factors which are significant for the functioning of a medical facility can be its geographic location or high standard of services, as they constitute natural barriers to market entry for the competition.

Threat of new competitors

Threat of new competitors on the market is marginal due to very high barriers to market entry. These barriers include high capital expenditure, difficulties in finding either highly qualified medical staff or a good venue, or in obtaining equipment (e.g. finding an appropriate building with an access road, finding medical equipment), insufficient knowledge of healthcare system, characteristics of the business, legal regulations and supervisory regulations on the market of medical services. Importantly, the break-even point is estimated to be achieved only after a medical facility has been operating in the business for a few years.

Threat of substitutes

Threat of substitutes is negligible, as it seems to be difficult to substitute a medical facility with another entity or organization. This is due to the specific character of a medical facility activity. Additionally, medical services are thought to be non-substitutable – the demand for them has accompanied humans for ages and, to take it intuitively, there are no indications that this situation will change in the future.

Evaluation of the consortium's strategic potential

The evaluation of the consortium's strategic potential was carried out on the basis of the authors' own questionnaire of evaluation of particular parameters. Individual aspects of the functioning of the company were firstly identified in the questionnaire and at the next stage they were evaluated by the management body within the following range: weak – average – strong – leading.

In the first group of analysed parameters which included quality (of both medical care and particular facilities of the consortium), characteristics of medical services, and marketing and communication, medical services were evaluated best. In majority, the aspects subject to evaluation were described as strong (over 33%) and leading (approx. 42%). This result shows that medical care is at a high level and constitutes an important factor in the strategic potential of the consortium. Marketing and communication are not leading for the consortium, however, it can be claimed that they are consortium's strong asset.

Another group of analysed parameters included the consortium's position on the market, important indicators, infrastructure and care for patients. These assets were evaluated as average (approx. 35%), strong (approx. 29%) and strong (approx. 35%). Among the abovementioned parameters infrastructure was evaluated best. In the centre of the city the consortium offers flats to its employees, as well as rooms which can be rented to patients who live outside Munich and their families. This asset decides about the competitiveness of the consortium and its policy to offer services to foreign patients who come from rich Arabic countries, Russia or other parts of the world. Among weak points of the consortium there is weak effectiveness of some processes, ineffective use of operating rooms, hospital bed occupancy in some hospital departments and long average stay of patients in hospital.

The group of parameters concerning research and development was evaluated as a strong asset of the analysed consortium. All parameters were characterized as strong and leading in terms of strategic potential of the medical consortium, whereby it is worth mentioning that the consortium carries out research and development activities in cooperation with Ludwig Maximilian Universität, which is both a leading university and university hospital in Munich.

Good management control in StKM is also a strong advantage of the consortium. The evaluation of individual aspects in terms of control gave good results (strong assets at the level of 80%). Most analysed parameters were assessed as strong and significant for the company's strategic potential, among them accuracy of cost analysis, settlements efficiency, level of budget plan completion and quality of IT processes.

The last of the analysed groups of parameters was the group of parameters for human resources management. Most parameters were assessed as strong (over 56%) and the consortium's leading assets were opportunities for employees' further development and good opportunities for promotion. Internal communication was considered to be at an average level with the result of approx. 11%. An unquestionably weak asset is employees assessment, which is the result of the lack of assessment systems, and continuity and regularity of the assessment procedures.

Identification of the best management methods for the medicinal products management in StKM

Identification of the best management methods in German hospital in the field of drug management was conducted on the basis of individual in-depth interview with pharmacy department head. The questionnaire was semi-structured and composed of four parts related to four management areas: investment planning, marketing, quality, organizational culture.

The research is a specific kind of case study which allow to conduct a diagnosis of the best practices used in German hospital in the area of medicinal management. Obviusly, the obtained results are not representative for all German hospitals and bearing in mind requirements for the articles – not extensive. However, the results could be the basis of recommendations for Polish hospitals.

Investment planning

On the base of the idividual in-depth interview it can be councluded that the level of technological advancement in terms of improvements used in the management of medicinal products in StKM differs significantly from the level of investment development in an average Polish medical facility. The said German hospital has been fully computerized for several dozen of years and its medical staff use cutting-edge equipment on a daily basis. There are advanced IT programmes which connect hospital departments with a hospital pharmacy. E-prescriptions and electronic medicine cabinets for hospital departments, managed by hospital pharmacy managers, have been in use for many years now. Individual administration of medicines per patient and continuous data update in the system make it possible to conduct various drugs analyses and to verify the correctness of medical orders.

Computer systems are also used to order medicines, as they improve the functioning of drug laboratories where medicinal products are prepared in individual doses for a patient.

Modernization of medicines stockrooms performed in 2010 deserves special attention. Currently there are robots which successfully take medicines to inventory automatically, update data in the computer system and put medicines into special boxes on the basis of scanned hospital department demand, which contributes to substantial time saving for pharmacists.

The hospital plans to increase the number of staff members working in the hospital pharmacy (especially pharmacists) in the next few years, as well as to purchase Unit Dose system, which is a computerized system which prepares medicines in individual doses per patient, together with additional appliances, such as a deblistering machine or barcode readers.

Marketing

According to individual in-depth interview, it is clear that an important element of everyday activity of the German consortium is a direct contact between pharmacists and patients. Patients highly appreciate it when pharmacists participate in hospital rounds, ask patients about their health condition and mood, and finally individually monitor patients' therapies.

Besides, StKM undertakes non-standard marketing activities. For a few years the consortium has been organizing outdoor parties for hospital employees, former patients and current ones. Such events are currently organized annually with the aim to promote the consortium. At these outdoor parties hospital employees inform patients about both introduced and planned for the future changes, newly purchased equipment or organizational modifications aiming at the improvement of the quality of patient care.

Quality

The quality of medicinal products and the safety of pharmacotherapy are controlled at every stage of medicinal products management, from ordering medicines to administering them to patients. After an order is received and before the medicines are transferred to a robot managing the medicines inventory, every medicine container is examined in detail with reference to the compliance with the order, expiry date and qualitative features which might suggest damage to the medicine. Expiry dates of medicinal products are checked automatically, and a computer programme informs employees in charge about the forthcoming expiry date. Every robot-operated delivery of medicines to hospital departments is checked twice by the pharmacists in order to minimize any mistakes.

Pharmacists in hospital wards monitor the correctness of administering medicines to patients, while the pharmacy department itself conducts monthly Drug Utilization Reviews (DUR) whose aim is to support the monitoring [8].

Medicines made directly in the hospital pharmacy are made in accordance with the Good Manufacturing Practice (GMP), whereby every order placed by the automatic system is checked twice by the medical staff with reference to an individual order.

Organizational culture

Supervision over drugs management in the German hospital is executed by a pharmacy manager, whose duties include organization of medical staff work processes, control of procedures involved in drugs management, contact with relevant government and international bodies (e.g. with reference to the monitoring of medicines safety), and other duties [9].

StKM employees regularly attend courses and trainings, and participate in research projects and internship exchanges. Furthermore, pharmacists advise doctors in the area of pharmacotherapy and they organize cyclical meetings in order to acquaint the doctors with the results of the latest scientific research or changes in legal regulations, as well as internal trainings dedicated to a particular subject, e.g. treatment of cardiovascular diseases. Majority of employees also attend domestic and international scientific conferences with a view to broadening knowledge from the area of effective and safe pharmaceutical drug treatment.

Proposals of solutions for medicinal products management in Polish hospitals

Investment planning

Investment planning should refer to the business portfolio of each medical facility (including hospital priorities, the size of the facility, the number of patients) and possessed financial resources. Lack of financial stability in many Polish medical facilities contributes to the difficulties in the development of detailed investment plans for the next 5–10 years. The development of each and every facility has to be analysed not only with reference to short-term employment plans, or long-term investment plans for the enlargement or renovation of particular hospital departments, which are often dependent on the availability of outer sources of financing, but also with reference to pharmaceutical drugs management. Low level of computerization in hospitals, lack of modern equipment or an insufficient number of staff members in hospital pharmacies – these are main investment problems of hospital pharmacies in Poland.

Taking into consideration the abovementioned issues, it can be recommended to the executive bodies of medical facilities to plan investments which involve the improvement in the management of medicinal products, both in hospital pharmacies and hospital wards. It can be argued that activities, such the purchase of modern IT systems which connect pharmacies with hospital wards, modernization of medicines stockrooms, organization or renovation of medicines laboratories, or the purchase of Unit Dose system used for the preparation of individual medicine doses for patients, are investments which should be planned in advance due to their high cost.

A summary of the main recommendation in the area of investment planning:

- To plan ivestement for the next 5–10 years which involve the improvement in hospital drug management.
- To consider a purchase of Unit-Dose system, as well as modernization of stockrooms and medicines laboratories.
- To improve the level of hospital computerization.

Marketing

Planning of marketing activities should be adapted to the hospital's strategic potential (including infrastructure and human resources) and business environment (including competitors and customers).

Hospitals which have medicines laboratories (e.g. cytostatic drugs laboratories) could consider concluding contracts with other facilities for the commercial preparation of medicines in order to generate additional profit. However, large scale activities require the implementation of appropriate marketing activities, such as preparation of informative brochures, offers, mailing lists to decision-makers, or organization of individual meetings (in the form of sales meetings).

Medical facility employees who have knowledge and experience might also offer trainings, workshops, lectures or individual expert meetings for the representatives of other facilities, with the aim of increasing the effectiveness of a pharmaceutical drug management in hospital. A facility organizing such events should be an expert in the area of issues mentioned at the meetings.

Pharmaceutical care provided by the patient's bed can be an important marketing element of every facility. In this aspect of marketing clinical pharmacists play a key role [10, 11]. Good opinion of and great trust towards a medical facility can certainly be gained among patients when there is a frequent contact between patients and specialists, interested in patients' health condition and response to medicines.

A summary of the main recommendation in the area of marketing:

- To consider contracts with other hospitals for the commercial preparation of medicines.
- To implement appropriate marketing activities which promote the hospital among other facilities as well as patients.
- To offer trainings for personnel from other facilities.
- To improve pharmaceutical care.

Quality

Plans to improve quality should be based on analysis of hospital business environment (including competitors activities and customers expectations) and be adapted to the available financial resources.

Medical staff in every Polish hospital should take care of the quality of services and the quality of medicines at every stage of their preparation, in the manner followed by the employees of German facilities. It is important to order products on time, control the status and the quality of an order, and provide storage conditions recommended by drug producers in hospital departments and in transportation (e.g. for the medicines which require storage in low temperature).

Drug preparation in a pharmacy should take place in aseptic conditions, which can guarantee safety both to a patient and medical staff who prepare medicines. It is unacceptable to prepare individual doses of drugs in hospital departments.

Each and every drug order should be ascribed to a patient and checked twice by the pharmacists. When a medicine is being administered to a patient, it should be controlled a few times whether the patient is being given an appropriate medicine at an appropriate time, in an appropriate dose and form. Additionally, the fact of the medicine having been administered should be marked in the patient's documentation (the so called 6-R rule) [12].

A summary of the main recommendation in the area of quality:

- To take care of the quality of offered services, including medicines.
- To provide storage conditions recommended by drug producers in hospitals.
- To prepare drugs in aseptic conditions.
- To check every drug which is order to the patient.

Organizational culture

The level of hospital organizational culture results mainly from business portfolio (hospital vision, mission, policy, priorities as well as the size of the facility) and the hospital's strategic potential (including human resources and infrastructure).

The obligations of a hospital pharmacy manager and pharmacy employees in Poland are stipulated in the Pharmaceutical Law Act. Although the cooperation between staff members in many pharmacies is assessed positively, the biggest challenge for the human resources management seems to be the cooperation between pharmacists and doctors. In order to develop high quality pharmaceutical care, Poland should follow the example of other European countries, such as Germany, and change the approach to the role of a pharmacist. In the opinion of medical staff working in hospital departments, pharmacists are often perceived as employees whose task is only to store and administer medicines. However, due to vast knowledge which they possess, pharmacists should be members therapeutic teams, having the same rights as others members, and should become decision-makers in the field of patient's treatment.

It is rare practice for pharmacists in Poland to organize trainings or study groups which could be addressed to doctors or nurses. Therefore, journal clubs, pharmacotherapy information centres or advisory centres, or other institutions which are popular in hospitals abroad, seem to be worth organizing and popularizing.

Pharmaceutical drugs management in Polish hospitals often seems to be a side topic. Even if pharmacy managers make attempts at changing the procedures, or they demand the modernization of their pharmacies, or the purchase of modern equipment, hospital directors often cannot see the necessity to finance such activities.

A summary of the main recommendation in the area of organizational culture:

- To improve cooperation between pharmacists and doctors.
- To increase the role of a pharmacist in hospital.
- To establish advisory centres for patients and personnel conducted by pharmacists.

Summary

The approach to the management of medicinal products in German and Polish medical facilities differs significantly in the context of the importance of this aspect for the management of a medical facility as a whole.

While Germany puts great emphasis on effective pharmaceutical drugs management and generating savings in this segment, many Polish decision-makers, employees in particular, do not realise how important pharmaceutical drugs management is for the economic effect and safety of patients [13].

German hospitals have been fully computerized for years. While in many Polish hospitals there are no electronic prescriptions or patient information databases, including databases of patients' therapies, German hospitals are introducing further software updates.

Insufficient funding of the Polish healthcare system also results in a number of irregularities which could be detected or resolved with the help of modern equipment. Incomplete computerization of medical facilities causes failure of the functioning of advanced technologies, such as Unit Dose System [14].

It should also be pointed out that there is strong resistance to changes in Polish mentality [15]. Strong habits and reluctance to implement new rules in the workplace can lead to failure in the implementation of various procedures. For example, the lack of updates in pharmacotherapy information in the computer system may result in the failure of effective functioning of the entire system.

To sum up, it can be argued that in Polish medical business practices, the stress should be put on the increase in decision-makers' awareness of the role of pharmaceutical drugs management in the process of medical facility management. Rational drug management can lead to substantial savings for a hospital and, more importantly, increase safety of patients.

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