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LEAN MANAGEMENT IN PROVISION OF EFFECTIVE CHANGES IN HEALTHCARE ORGANIZATIONS

The aim of this article is to present selected ways of developing the management in medical institutions in Poland with the help of Lean Management. The author concentrates on processes of changes in clinical hospitals which include: dealing with special tasks in healthcare system, diversity of tasks, medical technology, diversity of relationships with the surrounding, financing from few different sources, limits of resources (especially public ones). The article leads to a conclusion that Lean Management should be a way of thinking.

Keywords: lean, management, health services, health care units restructuring.

Relevance of the research topic. The effective functioning of medical entities depends not only on the course of internal management processes, but also on the flexible adjustment of their activities to the changing environment. The emergence of new health technologies, changing health exposures not yet occurring or occurring to a limited extent, demographic and epidemiological changes in combination with systemic factors force changes in which the use of «lean management» may be particularly useful.

Formulation of the problem. The production management system developed and implemented at the Toyota concern in the period after World War II was recognized as a kind of miracle in the area of management systems, enabling the improvement of productivity, quality and efficiency of enterprises. For years, it was introduced to production systems, as well as in health care and many entities operating in various sectors of the economy under the name Lean Management, Lean Production or simply Lean.

The purpose of this article is to indicate selected directions for improving change management in healthcare entities in Poland using the Lean Management concept. Changes in management were presented in the aspect of restructuring activities undertaken in healthcare entities. Particular attention will be focused on change processes in multi-specialized hospitals, which have the following features:

- performing specialized tasks in the field of health protection,
- multi-tasking,
- using highly advanced medical technologies,
- the multiplicity and diversity of relationships with the environment,
- financing from several sources.

Analysis of recent researches and publications. Lean in management means eliminating losses and any factors not adding value to a product or service. The key ingredient of Lean is continuous improvement (kaizen). (Niedziółka M., Piasek A., 2014, p. 79–87).

According to Graban M., Lean is a set of tools, management system and philosophy, whose introduction can change the way of organization and management of medicinal entities. «A lean system is a method that allows hospitals to improve the quality of patient care by reducing the number of errors and reducing waiting times» (Graban M., 2014, p. 2).

Permanent pursuit of perfection in the management of manufacturing processes is not without a negative impact on the satisfaction of healthcare system employees. It is often not connected with raising salaries, improving work safety or improving working conditions.

The important aspects of the research of a method of improving change management in healthcare organizations, conceptual approaches to its use were reflected in the works of Bernatek A. (2015), Souza L (2015), Glossmann J., Schliebusch O., Diehl V., Walshe R. (2016) Cholewicka-Goździk K. (2017), Humeniuk V. (2019), Zakharchenko P., Kostenko A., Kungurtseva-Mashchenko T. & Gorbachova I. (2019), and other researchers.

However, the problems of forming an effective health care services of Poland, necessity expanding the possibilities of restoring the health of the population, requires the development of a state policy for health services in the context Lean Management.

Presenting the main material. Understanding the Lean Management principle is a condition to avoid misunderstanding its essence. Correct interpretation is associated with its identification with activities aimed at eliminating waste (from Japanese Muda), and not with austerity measures consisting in limiting expenditures while providing value not fully desired for the patient (e.g. limiting the employment of persons in the positions of medical secretaries assisting the work of doctors or people working in the registration of medical entities, resulting in longer queues and patient waiting times, as well as employee dissatisfaction due to excessive workload) (Cholewicka-Goździk 2017, p. 21).

The key concept of Lean Management is the added value of the product or service for the recipient, while generating profit for their producer. Obtaining it requires meeting at least the following conditions:

- the customer (in the case of health protection, individual patient or institutional payer – public or private) is willing to pay for the product,
- the product (health service) has the value desired by the customer (it is not defective, has utility value, corresponds to the health need),
- the manufacturer (medical entity) rationalizes the use of production factors (labor input, expenditure on manufacturing instrumentation, expenditure on infrastructure, proper inventory rotation).

The term «Muda» is combined, among others with: production of defective products, production of products with low utility and low efficiency for the recipient, production of often unnecessary products, inefficient organization of employees' work resulting in so-called apparent actions (not having a real purpose), lack of synchronization in time and space of activities of individual employees or groups of employees (downtime related to time not worked effectively, resulting from non-delivery of products by the previous product manufacturing links).

To sum up, it should be emphasized that the concept of lean management, especially in the management of healthcare organizations, should be clearly understood. Elimination of waste (time, equipment and apparatus, money) should be distinguished from economical and limiting resources of medical organizations that cause disruptions in the course of medical processes, extending patient waiting time, offering defective health services and dissatisfaction of employees with work overload. Lean Management as a concept supporting the implementation of changes is not a way to generate profit at all costs, but is a way to reconcile the demand side with the supply side through the transformation of assets, the way of management, organization, relations with the environment understood not only as a market of health services, but much more widely (legislation, competition, outsourcing, general economic factors).

Techniques leading to the elimination of losses and adapting business results to external expectations should also be adapted to the specifics of healthcare organization entities. Selected techniques include, but are not limited to, techniques that may prove particularly valuable from the perspective of the effectiveness of implementing changes in healthcare organizations. These are among others:

- *Just In Time* or production on time – the use of this tool allows you to eliminate the unjustified expectations of patients, employees from the same or another organizational unit, recipients, suppliers, and as a consequence prevents the loss of contracts and income.

- *Kanban* – is a system of signals used in undertaking individual actions at various stages of product creation (at what point in time the next health service for the patient is needed, in which organizational part of the entity, which personal and

material resources are to be used). The condition of introducing the signal system is to create an undisturbed system of relations between individual groups of employees or organizational units of the therapeutic entity leading to the development of principles of close cooperation and a system of communication between them. A particularly desirable approach to patient management is treating the patient care path as an inseparable whole (successive phases of value creation), which is a condition for determining the cumulative value (final health effect) of individual services (medical procedures) performed for the patient. The condition is cooperation between individual organizational parts of the entity and a departure from treating services performed by individual organizational units as final or detached from the final effect for the patient.

– *Elimination of waste* – areas of waste can be: production of health services that do not correspond to the reported demand, breaks / downtime between the individual stages of the process of creating value (the final health effect) for the recipient, unjustified movement between the stages of creating value (transport of the patient between parts of the hospital or between hospitals), the appearance of defects in the manufacturing process or product (making an incorrect diagnosis based on a faulty performance of a diagnostic test), unjustified generation of inventory, unnecessary movement of employees, equipment and apparatus, documentation and an unfriendly way of delivering products to recipients (failure to comply with the dates and hours of health service). For example – obtaining incorrect results of a patient's diagnostic examination requires correction or repetition, i.e. the consumption of additional material resources and workload, as well as additional control. This, in turn, can cause «downtime» in other parts of the medical organization.

– *5 S (selection, systematics, cleaning, standardization, self-discipline)* – the use of this tool becomes possible to reduce in-hospital infections, which may also result from irregularities in waste storage, non-compliance with occupational hygiene, movement between hospital departments without adequate protection against exposure to infection biological agents.

– *Creating a value stream map (VSM)* – the essence of VSM is to analyze how to produce and deliver the product to the customer, and identify those activities that add value. The activity that creates the value of a patient's medical service is to conduct an interview with the patient by a nurse, as opposed to providing no interview with a patient waiting for direct contact with a doctor who only after entering the office orders or conducts the interview himself.

– *Jidoka* – is a way for employees to respond in the event of problems during the product manufacturing process. Prevents the penetration of the defective product or its parts into the next stages of manufacture and subsequent positions, e.g. in the event of incorrect preparation of the patient for a diagnostic test or surgery, the employee should break the chain of subsequent medical activities that may have a defective «effect» of the medical procedure.

The principles of Lean management in health care were adopted to be called Lean Healthcare. They have been introduced in many healthcare organizations in numerous countries (Souza L., 2015; pp. 121–139). However, experience shows that only part of the Lean Management tools and methods have been used to improve selected areas of activity of health care entities, especially hospitals. Given the specifics of the healthcare sector and operations, Lean Healthcare has a specific interpretation: a medical entity is an entity that produces specific products – most often they are health services; health service is a manufacturing process; the patient, together with the services provided to him which bring specific health effects, is a product. The applications of Lean Healthcare in healthcare organizations presented in the literature show that it is most often focused on improving the quality of health care (increasing the value of the product for the patient), improving access to health services, improving organizational processes and rationalizing costs. Improving access to healthcare understood as shortening the waiting time for health services, streamlining internal processes related to providing patients with services are the factors that allow rationalization of the costs of medical procedures. (Bernatek A., 2015, pp. 67–87).

The effectiveness of Lean Healthcare adaptation in strengthening employee roles in the value creation chain may be conditioned by transferring greater responsibility for the way the work is performed and its effects to individual employees who perceive it as an increased motivation to work (Glossmann J., Schliebusch O., Diehl V., Walshe R. 2016, p. 470–473).

In view of the international experience and Conclusion resulting from the implementation of Lean Healthcare in healthcare entities and the conditions for the functioning of healthcare organizations in Poland, an attempt can be made to indicate directions for improving management in healthcare entities. Particular attention will be focused on specialist hospitals. The starting point for determining the areas of the entity's operations that should become subject to improvement / restructuring is the diagnosis of the entity's activities, including:

- analysis of the economic situation (basic economic values and indicators as well as financial statements); in the conditions of growing financial debt of hospitals in Poland, the scope of analysis should include: financial efficiency ratios – receivables turnover, liabilities turnover, inventory turnover; debt ratios – total debt ratio, equity to liabilities ratio; productivity indicators);

- analysis of the causes of the entity's existing financial situation (impact of system changes on the entity's position);

- analysis of internal causes of organization and management irregularities (scope and structure of resources, degree of their adaptation to conducted activity, allocation of resources in the entity, organization of work processes, mutual relations between medical activities).

Conclusion. The Conclusion made as a result of the diagnosis should become the starting point for indicating the directions of improving the management of the

entity. However, creating a uniform list of directions, or «path of change» for all hospitals is not justified because existing profile, technological, organizational and financial differences that generate other problems. Potentially they may include:

- setting priority and other tasks in individual areas of conducted activity (medical, scientific, didactic) and medical specialties as well as individual activities constituting their implementation;

- organizational changes, e.g. laboratory diagnostics combined with a change in the location of diagnostic cells to reduce costs; allocation of archived documents in one «place» in the hospital building, which will allow faster access to information and adaptation of vacant rooms for other purposes;

- functional changes – restructuring of hospital beds in order to adjust the financing bed base (monitoring indicators of average period of stay of patients, waiting time for admission to a ward or clinic, the degree of bed use);

- resource changes: a combination of clinical units enabling consistent policy to intensify the use of medical equipment and apparatus; providing access to the departments' facilities providing health services as part of caring for the local population (eliminating duplication of purchases of the same equipment and apparatus as well as dispersion of equipment increasing operating costs); centralization of the distribution of diagnostic base elements;

- changes in personal resources in the aspect of assigning employees to diagnostic, hospitalization and outpatient tasks; formal assignment of employees to consulting tasks not only within one branch, but also for other organizational units;

- eliminating (by pooling) duplication of the same medical procedures by several hospital organizational units to improve resource management and eliminate unnecessary manufacturing factors;

- determining the centers of responsibility for the management of medical equipment and apparatus (taking over supervision over the management of diagnostic equipment by a separate department, plant, clinic or clinic);

- implementation of new medical technologies enabling more efficient diagnosis of disease entities, which is associated with shortening the waiting time for results and the time from diagnosis to intervention;

- implementation of an integrated IT system facilitating and accelerating the flow of information in the hospital (integrated management of drugs, medical equipment, centralization of material management),

- implementation of integrated management of medical materials, medical consumables and medicines;

- establishment of cost responsibility centers to strengthen supervision and eliminate waste;

- developing the principles of communication between the management and employees in order to explain and motivate, which allows reducing stress and social unrest associated with the economic uncertainty of the entity;

- compliance with the precise implementation of contracts with payers in order to eliminate any financial sanctions, including the termination of contracts; particular attention should be focused on the so-called over-limit benefits;
- property restructuring (e.g. when the hospital operates in several different buildings / rooms distant from each other or the infrastructure is not used due to poor technical condition) to eliminate unnecessary usable space and unnecessary transport, to rationalize maintenance costs and depreciation costs;
- outsourcing of non-medical services.

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