

EVALUATING THE EFFECTIVENESS OF THE PROCESS MANAGEMENT MODEL IN COORDINATED PATIENT CARE

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Purpose: The aim of this article is to provide a preliminary analysis of the benefits regarding the implementation of coordinated care mechanisms for patients with multiple sclerosis. On the basis of a literature review, the analysis was carried out on the example of a selected department in a clinical hospital.

Design/methodology/approach: The research was conducted by using a case study combined with the use of direct observation by the co-author of the article. The selection of a clinical hospital in the discussed scope allows for the formulation of appropriate final conclusions.

Findings: The analysis of the case study allows preliminary conclusions to be drawn regarding projects for the implementation of coordinated medical care for multiple sclerosis patients.

Research limitations/implications: Using a case study of one hospital confirms a limitation in the complete generalization of the final conclusions

Originality/value: The article points out important aspects of conducting research on the effects of coordinated care using a selected example. management. For practitioners involved in the health sector, the article can serve as a reference in seeking inspiration for in-depth research in this area.

Keywords: coordinated care; hospital, organizational change, process management

Category of the paper: case study.

1. Introduction

The problem of coordination of medical care is currently very strongly emphasized on the strictly medical ground, but also on the theory and practice of management in the health care sector (Guzek et al., 2023). In Poland, these experiences are primarily related to the area of cardiology (Wita et al., 2020), oncology (Różalska, Czech, 2017) and primary health care (Czerska, 2018).

Fragmentation and lack of continuity of care, resulting from the deepening division into narrow specializations, are perceived as one of the most serious imperfections of modern health care systems and pose challenges in the processes of improving the health care system at the national and regional level and in the context of the functioning of individual healthcare entities. Poor coordination between the sphere of treatment and the sphere of patient care seems to be particularly acute (Hermanowski, Rutkowski, 2015).

The authors of the article identified the problem in the context of care for patients with multiple sclerosis. The postulate to introduce activities in the field of coordinated care for patients with multiple sclerosis appeared taking into account medical (Wiktorzak et al., 2019) and technological aspects (Hogervorst et al., 2023), along with the identification of key success factors in this area (Kroll, Neri, 2003) and analyses of financial effectiveness (Weinstein et al., 2022). An attempt to analyze the basic effects associated with the introduction of mechanisms of coordinated care for patients with multiple sclerosis seems to be an inspiring research intention.

2. The essence and objectives of coordinated medical care

Currently, Polish society allocates most of its funds to restorative medicine, with a small share of expenditure on broadly understood prevention. Taking into account the aging of the society and the development of medical technologies, it is assumed that in the future Poles will not be able to afford to maintain these proportions. Therefore, it is necessary to introduce coordinated health care, from building a health-promoting foundation to coordinating the treatment process at all its levels. The so-called compliance, i.e. cooperation between the patient and the doctor, is also very important. Guiding the patient through the treatment process and the healthcare system will reduce costs and improve the patient's standard of living. Therefore, attention should be paid to the patient's cooperation both in the prevention of diseases and during the disease. To this end, it is worth creating supporting mechanisms in the public and private systems (Fal, 2013, pp. 50-51). Therefore, the subject of coordinated medical care is becoming an important trend in modern medicine, but also in health care management (Kowalska, 2008).

The specific objectives of coordinated care identified in many programs around the world are: to improve the design and delivery of patient-centered healthcare; to improve the quality of services for the elderly, chronically ill and disabled; to reduce fragmentation, fill gaps and remove surplus/increase resource efficiency; to ensure continuity and coordination of treatment; to prevent medical errors; to increase public satisfaction with the health care system and treatment processes; increasing the cost effectiveness of the processes carried out (Kozieł et al., 2017, p. 253).

Coordinated health care is a set of activities aimed at achieving a high level of health care while reducing unnecessary costs of health care through the use of a number of mechanisms, which include: economic incentives for doctors and patients to choose optimal forms of care; assessment of the medical necessity to provide selected services, balancing the distribution of costs borne by the beneficiary, control of hospital admissions and length of stay, Establish incentives for outpatient treatments, selective contracting of health care providers, and intensive management in cases of high healthcare costs (Różalska, Czech, 2017). In the literature, it is also sometimes called integrated health care, as well as comprehensive, holistic and shared care. This approach to the patient is the opposite of the currently popular form of fragmented care – focused on episodic provision of medical services. In the coordinated model, the scope of the patient's needs should first be identified: health and related to everyday functioning, and then services should be planned aimed at structured activities aimed at satisfying these needs. Care is provided by interdisciplinary teams of healthcare providers in a way that allows you to achieve your medical goals and daily life goals (Kieszkowska-Grudny, 2018).

The main principle of coordinated care is active involvement and strengthening the role of the patient, which translates into the effects of health care, patient and service provider satisfaction, and cost effectiveness. It is important to take a holistic approach that takes into account, in addition to the patients themselves, also caregivers, local communities, as well as minorities and more vulnerable groups (Czerska et al., 2019). As a result of coordination, the patient ceases to be a petitioner and becomes the center of attention. In a system without coordination, the patient's health problem is only his problem (Zawalski, 2016, p. 47). Coordinated care should ensure the continuity and consistency of the implemented health interventions. She is expected to have a planned, proactive and results-oriented care plan. The doctor, on the other hand, should determine the procedure that will allow to achieve the best therapeutic effect, maintain the best possible health condition for the patient, minimize the risk of exacerbations, inhibit or slow down the progression of the disease and, at the same time, limit the effects of deterioration of the patient's health both for himself and for society, including the health care system (Kozierkiewicz, 2017, pp. 23-24).

More attention should be paid to detailed monitoring and analysis of the results of the implementation and application of a coordinated system of organization of the provision of health services, not only in terms of justifying the investments incurred, but also in terms of considering the quality of care offered (Kozieł et al., 2017, p. 255). Healthcare management that takes into account coordination processes can be one of the ways to meet demographic, epidemiological, technological challenges or patient expectations, while at the same time facing economic pressure (Rudawska, 2011).

3. Research method

The motivation for the analysis was the assumption that uncoordinated health care in the treatment of patients with multiple sclerosis means a lack of effective cooperation between different service providers in the health care system. This can lead to a number of problems that have a negative impact on both patients and the system as a whole. Here are the top drawbacks of uncoordinated healthcare:

1. Communication problems - lack of information flow between doctors, specialists and hospitals can lead to diagnostic and therapeutic errors. Patients have to repeat the same information multiple times in different facilities, which is cumbersome and increases the risk of inaccuracies.
2. Unnecessary repetition of tests - uncoordinated care can result in ordering the same tests by different doctors, which generates unnecessary costs and burdens the patient.
3. Lack of continuity of treatment - when a patient is treated by different specialists without proper exchange of information, the therapy may be inconsistent, which reduces the effectiveness of the treatment.
4. Increased medical risk – without central access to full medical records, the risk of drug interactions, incorrect dosage or other medical errors increases.
5. Longer waiting times - patients may be referred for unnecessary consultations or tests, which increases the time it takes to get the right diagnosis and treatment.
6. Stress for patients – patients often feel frustrated and anxious when they have to coordinate different aspects of their healthcare on their own.
7. Higher costs – lack of effective coordination leads to wasted resources (e.g. repeat tests, unnecessary procedures), which puts a strain on both the patient and the healthcare system.

Currently, despite the equipment and personnel capabilities of the medical unit, the patient cannot use all the services that are necessary for his treatment to bring the expected medical results in one place on an outpatient basis. The lack of a contract in the field of outpatient rehabilitation means that patients are occasionally admitted to the hospital for one-day stays related to the treatment of multiple sclerosis and can also use the modern equipment at the disposal of the unit. The same problem is with the care of a psychologist. The patient can use it only during a hospital stay. Outpatient rehabilitation currently does not function in the hospital only or even due to the lack of a contract with the National Health Fund.

The study used data on the organization of the treatment process of patients with multiple sclerosis on the example of a selected neurological ward of a teaching hospital. The analysis concerned basic data from 2019-2023 in the field of medical statistics in terms of waiting time for admission, average length of stay in the ward and the number of patients treated as part of outpatient specialist care. In addition, data on drug programs implemented in this area by hospitals from the Silesian Voivodeship are presented.

4. Analysis of empirical findings

The National Health Fund finances drug programmes for patients with multiple sclerosis (Table 1).

Table 1.

Drug programs dedicated to patients with multiple sclerosis

Code	Name
03.0000.329.02	Drug program - treatment of multiple sclerosis
03.0000.346.02	Drug program - treatment of multiple sclerosis after failure of first-line drug therapy or rapidly developing severe multiple sclerosis or primary progressive multiple sclerosis
03.0001.329.02	Drugs in the drug program - treatment of multiple sclerosis
03.0001.346.02	Drugs in the drug program - treatment of multiple sclerosis after failure of first-line drug therapy or rapidly developing severe multiple sclerosis or primary progressive multiple sclerosis

Source: register of contracts of the National Health Fund.

The drug program - treatment of multiple sclerosis after failure of first-line drug therapy or rapidly developing severe multiple sclerosis or primary progressive multiple sclerosis was financed until the end of 2022. However, from 2023, all patients are treated under a single drug program called multiple sclerosis treatment.

Table 2.

Drug program – treatment of patients with multiple sclerosis (03.0000.329.02) – the largest implementers in the Silesian Voivodeship

	2019	2020	2021	2022	2023
Prof. Leszek GIEC Upper Silesian Medical Centre of the Medical University of Silesia in Katowice	11 146 666,72	11 181 192,68	12 603 424,00	12 883 293,47	15 852 778,04
Provincial Specialist Hospital No. 4 in Bytom	4 306 101,00	4 634 461,00	4 967 700,00	6 032 299,15	7 747 834,80
Prof. K. GIBIŃSKI University Clinical Centre of The Medical University of Silesia in Katowice	8 889 604,00	10 184 996,00	10 707 330,00	7 319 344,29	16 604 388,70
KMK-Clinical Limited Liability Company	5 878 355,00	6 106 501,00	5 625 109,00	5 494 884,89	7 085 951,44
Complex Of Health Care Facilities in Cieszyn	3 595 941,00	3 758 284,00	4 375 186,00	4 814 285,21	5 377 794,40
Independent Public Health Care Institution Provincial Specialist Hospital No. 3 in Rybnik	3 575 148,00	3 400 152,00	4 377 526,00	5 055 202,68	5 787 662,07
Independent Public Clinical Hospital No. 1 Named After Prof. Stanisław Szyszko Sum in Katowice	9 781 080,00	10 935 157,00	12 237 234,00	16 105 040,10	19 189 284,20
Total Expenditure in the Silesian Voivodeship	53 842 079,84	58 215 793,64	68 606 257,77	93 192 735,34	105 704 598,70

Source: Own work based on NFZ data.

The final financial plan of the National Health Fund for 2023 - the costs of health care services - drug programs amounted to PLN 10,128,272 thousand. of which 6.15% is expenditure on the drug program – treatment of multiple sclerosis (excluding children's centers).

The table below presents hospitals from the Silesian Voivodeship with contracts in 2023 above 5 million. PLN.

Moving on to the detailed analysis at the level of a specific neurological ward, the first analysis of the number of patients in outpatient health care and hospitalisation in the neurology ward was carried out in the unit.

Table 3.

Number of patients in 2019-2023

Number of patients in each year	2019	2020	2021	2022	2023
Branch	37	64	91	166	291
Clinic	301	324	368	427	532

Source: own study based on the data of the analyzed hospital.

The table below shows the number of outpatient visits and ward stays in 2019-2023.

Table 4.

Number of outpatient visits and ward stays in 2019-2023

Number of visits/stays in each year	2019	2020	2021	2022	2023
Branch	232	268	365	450	542
Clinic	3 217	1 746	1 498	1 630	2 050

Source: own study based on the data of the analyzed hospital.

In addition, analysed data on the number of days of stay in the ward in 2019-2023.

Table 5.

Number of days of stay in a hospital ward in 2019-2023

Number of days of stay	2019	2020	2021	2022	2023
1 day	217	211	248	254	416
2 days	1	18	62	126	55
3 days	3	14	19	30	17
4 days		5	10	19	15
5 days	2	4	15	10	7
6 days	2	6	9	3	19
7 days		5	1	5	5
8 days	2	1	1	2	3
over 8 days	5	4		1	5
together	232	268	365	450	542

Source: own study based on the data of the analyzed hospital.

The neurology department, which houses the Multiple Sclerosis Treatment Centre, can play a key role in diagnosing and treating patients with multiple sclerosis (MS) as a coordinated care centre. MS is a chronic autoimmune disease in which the immune system attacks the myelin sheaths of the nerves in the brain and spinal cord, leading to neurological disorders. Neurology departments are specialized in comprehensive care for these patients.

The introduction of coordinated care mechanisms in the analysed area would allow patients to be provided with an efficient treatment process by:

1. Diagnosis - imaging tests: magnetic resonance imaging (MRI) is crucial in detecting demyelinating lesions in the brain and spinal cord. Laboratory tests: analysis of cerebrospinal fluid (CSF) to detect oligoclonal bands, characteristic of MS. Neurological tests: assessment of motor, sensory and cognitive functions to confirm the clinical signs of MS.
2. Pharmacological treatment - disease-modifying therapies.
3. Treatment of relapses.
4. Symptomatic treatment: spasticity, neuropathic pain, bladder problems, fatigue or cognitive disorders – medications adapted to the symptoms.
5. Rehabilitation - physiotherapy: supporting motor functions, improving balance and muscle strength. Occupational therapy: help in adapting daily activities to the patient's abilities.
6. Psychological support: coping with depression, anxiety, and other emotional issues related to the disease.
7. Patient monitoring - regular check-ups to assess the effectiveness of the therapy and monitor the progression of the disease. Detection and treatment of complications, such as infections, that can exacerbate symptoms.
8. Multidisciplinary support - Neurologists often work with psychologists, speech therapists, urologists, and nutritionists to provide holistic care.
9. Participation in clinical trials: neurology departments can conduct research into new therapies for MS.

Enabling the centres to conduct outpatient rehabilitation should reduce the number of hospitalisations within the Department by about 30%. Such a situation in 2023 would reduce the number of man-days for patients with multiple sclerosis by 125 man-days.

Analyzing patients from the neurology ward who were enrolled in the stable queue, the average hospitalization time is 7.13 days. The lowest value was 6.07 in July and the highest in September was 8.61 days. The average waiting time is 32.6 days (the lowest in April 28, the highest in November 39).

On this basis, it can be concluded that the introduction of the analyzed organizational solution would allow to admit about 18 more patients each month and reduce the waiting time by about 2 days on average.

With advances in medicine and a multidisciplinary approach, neurology departments are able to significantly improve the quality of life of patients with multiple sclerosis as part of coordinated care for patients with multiple sclerosis.

5. Conclusions

Coordinated care for patients with multiple sclerosis (MS) has many benefits for both patients and the healthcare system. With an integrated approach that focuses on collaboration between different specialists, case management and an individual approach to the patient, it is possible to improve the quality of life of patients, optimize treatment and increase the efficiency of care.

Here are the main benefits of coordinated care for MS patients:

1. Coordinated care provides an integrated approach that takes into account all aspects of a patient's MS life:
 - physical: regular monitoring of health, adjustment of pharmacological and rehabilitation treatment,
 - psychological: access to psychological support, which is especially important due to depression, anxiety and other mental problems that often accompany MS,
 - social: assistance in the integration of the patient into social life, support in obtaining social assistance, benefits and advice on work.
2. Improving coordination between specialists:
 - a) patients with multiple sclerosis require care from various specialists, such as neurologists, physiotherapists, psychologists, dieticians or nurses specializing in MS,
 - b) Coordinated care: Increases the efficiency of collaboration between these professionals, preventing duplication of testing, delays in diagnoses, and unnecessary hospitalizations.
 - c) It enables rapid exchange of information between care team members, leading to better therapy consistency and tailoring treatment to the patient's current needs.
3. Faster response to changes in health:
 - a) In the coordinated care model, there is systematic monitoring of the patient's health. This allows you to react faster to exacerbations of symptoms or changes in your health, which prevents serious complications and reduces the need for hospitalization. Patients have easier access to doctors and specialists, which reduces the waiting time for needed interventions and reduces the stress associated with the disease.
4. Improving patients' quality of life:
 - a) Coordinated care improves patients' lives in many ways:
 - better control of the disease means fewer episodes of exacerbations and less need for hospitalization,
 - reduces the number of exacerbations and hospitalizations.
 - b) Improves symptom management – With better coordination, patients can better manage symptoms such as fatigue, balance disorders, pain, and cognitive problems.
 - c) supports patient autonomy – with tailored support, patients can maintain their independence and self-reliance for longer, resulting in a better quality of life.

5. Reducing the burden on caregivers, as a disease such as multiple sclerosis often places a heavy burden on patients' families and carers. Coordinated care:
 - relieves caregivers - by organizing medical and social care in a more coherent and predictable way,
 - It provides psychological and informational support for caregivers, which helps them to better cope with the challenges of daily care for patients.
6. Optimize treatment and reduce costs of care:
 - a) Coordinated care can lead to treatment optimization and savings in the health care system by:
 - reduction of the number of complications - better control of the disease allows for a reduction in the number of complications, such as infections or injuries caused by falls,
 - Reduce unnecessary medical interventions – patients receive coordinated care, reducing duplication of diagnostic tests and unnecessary hospital visits
 - Resource savings – Reducing hospitalizations and emergency interventions translates into lower long-term care costs.
7. Increased patient involvement in the treatment process:
 - a) Coordinated care gives patients more control over their treatment because patients are more involved in making decisions about their care. Their awareness of the disease increases, which improves cooperation with the medical team and leads to better adherence to therapeutic recommendations.
8. Increase patient satisfaction, as patients in coordinated care often express greater satisfaction with the quality of care because:
 - They feel more cared for, they feel that their needs are better understood and taken into account in the treatment plan. Care is more personalized. A patient-centred approach makes care more responsive to the individual needs of patients.

The above-mentioned benefits could, if further analyses are carried out in this respect, be the subject of in-depth analyses from the point of view of benefits for: the patient, the hospital ward, the entire hospital, the entire health care system including the social security system.

According to the few existing studies in this area, most have shown a beneficial economic impact of integrated care models. Nevertheless, there is still a high demand for well-designed models of economic evaluation of integrated healthcare models, also from the perspective of quality of care, to support informed decision-making (Desmedt et al., 2016).

Above all, the benefits of coordinated care for patients with multiple sclerosis are numerous and range from improved health outcomes to improved patient quality of life (Marrie et al., 2024; Petrin et al., 2023) and the efficiency of the healthcare system (Heinzlef et al., 2020). Thanks to an integrated model that focuses on cooperation between specialists, an individual approach to the patient and a quick response to changes in the state of health, patients with MS can count on more comprehensive and effective care.

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