

Integration of Public and Private Health Services: Health Gain in Finland from Clinical Cooperation of Patient Care between Inpatient Hospital Procedures and Outpatient Occupational Health Clinics

Ilkka Vohlonen¹, Kaj Husman², Juha Kinnunen³, Richard Saltman⁴, Hanna Hakulinen⁵, Liisa Pekkanen⁶, Jari Laukkanen⁷

¹Department of Public Health, University of Eastern Finland, Kuopio, Finland

²Finnish Institute of Occupational Health, University of Eastern Finland, Kuopio, Finland

³Department of Health Care Management, Tampere University Hospital, Tampere, Finland

⁴Department of Health Policy and Management, Emory University, Atlanta, USA

⁵Finnish Institute of Occupational Health, Helsinki, Finland

⁶General Hospital of Central Finland, Wellbeing Services County of Central Finland, Jyväskylä, Finland

⁷Institute of Clinical Medicine, University of Eastern Finland, Wellbeing Services County of Central Finland, Jyväskylä, Finland
Email: ilkka.vohlonen@uef.fi, kajhusman16@gmail.com, juha.kinnunen@pirha.fi, rsaltma@emory.edu, hanna.hakulinen@ttl.fi, liisa.pekkanen@hyvaks.fi, jari.laukkanen@hyvaks.fi

How to cite this paper: Vohlonen, I., Husman, K., Kinnunen, J., Saltman, R., Hakulinen, H., Pekkanen, L. and Laukkanen, J. (2026) Integration of Public and Private Health Services: Health Gain in Finland from Clinical Cooperation of Patient Care between Inpatient Hospital Procedures and Outpatient Occupational Health Clinics. *Health*, 18, 264-274.
<https://doi.org/10.4236/health.2026.183018>

Received: July 4, 2025

Accepted: March 16, 2026

Published: March 19, 2026

Abstract

Background: In 2002, the length of recovery period and sick leave of the Finnish working-age population after hospital discharge were found to be 2 - 4 times longer than those in comparative countries. The cost of health care (financed by municipal taxes) made up about 25% - 35% of the total cost to society. Extensive waiting and recovery periods caused a remarkable loss of productivity. A major proportion of subsequent public expenditure was paid through income subsidies (financed by Social Insurance Institution). The objective of this study is to report the main results of academic and health political work in Finland aimed at the improvement of health gain that reduces non-productivity due to work absence and sick leave. **Methods:** From 2017, a re-structuring and cooperation of clinical practices between public hospitals, private occupational services and public ambulatory care was undertaken. The objective was to implement a system where patients discharged from public hospitals were subsequently supported by occupational health services. **Results:**

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0). <http://creativecommons.org/licenses/by/4.0/>



Open Access

A crucial qualitative result was the development of e-referral from hospital to occupational health services. As quantitative results, lengths of Return-to-Work periods among lumbar discectomy (M51.1) patients decreased from 80 days to 40 days. Corresponding reductions were observed in 15 other DRG groups. Annual productivity of the Finnish work force was estimated to increase by 150 million euros by implementing the process for only a few patient groups. **Conclusions:** Change in clinical practices did not require legislative actions or monetary incentives. It required a commitment from multiple professionals to a common objective, a clear process of achieving it, and a sustainable monitoring of the change.

Keywords

Return-to-Work, Cooperation, Hospital Services, Occupational Health Services, Public, Private, Productivity, Monitoring

1. Introduction

If health care is not seen as a cost but rather as an investment of the society to sustain health, welfare, and functional capacity of inhabitants, then the return on investment should be defined accordingly. Among different health political actions, the investment in health care should lead to shorter periods of incapacity and immobilization among various population groups. Among the Finnish working-age population, the centuries-old notion of a healthy work force is still a valid objective for investing in health care services, especially occupational health services.

The first results of studies on lengths of work absence (sick leave) were published in Finland about 20 years ago. Of the total direct expenses among the Finnish workers due to income subsidies and health care, only 25 - 35 percent were due to health care [1]. Of the total direct societal expenses, 65 - 75 percent were due to the cost of income subsidies during extensive waiting and recovery periods and the corresponding sick leaves. If the indirect costs of work absences to the society, *i.e.*, the production lost, were carefully examined, the economic impact of timely health care services would be even more profound [2] [3]. In terms of measuring the health gain lost due to an unnecessarily long waiting and recovery period, the opportunity cost of each day of work absence is about 420 euros. In Finland, the lengths of sick leaves after hospitalization have been 2 - 4 times longer than in comparative countries [4]. It has become evident that in Finland, the lengths of sick leaves were not based on individualistic needs, as there has been traditionally a standard length of the absence from work due to each specific condition.

Health security for the working-age population is not only about providing health services. In Finland, the task of occupational health care is to prevent work-related diseases and to support full work ability [5]. The strength of Finnish occu-

pational health services is in their ability to propose supportive changes in the patient's work environment to the employer. The health gain that measures the return on investment needs to include an examination of changes in the societal opportunity costs. The interpretation of these changes cannot be done without understanding the role of the necessarily existing common objective of patient care among the various actors involved. Without commonly agreed and accepted objectives and corresponding clinical protocols, health gain in terms of work absence cannot be achieved. In Finland, implementation of new Return-to-Work (RtW) processes was expected to result in a win-win situation for multiple public and private healthcare actors. Moreover, it was estimated that by the implementation of new fast RtW processes, no stake holder or actor could be forecast to lose [6] [7].

There were four general prerequisites for the introduction of the new pattern: the formulation of a commonly agreed objective of care for each diagnosis group; the formulation of a commonly agreed clinical protocol extending across different providers for each patient group; the application of a digital referral system between different providers; and the empowerment of a case manager in occupational health. In Finland, hospital and primary health services are mainly public and occupational health services are privately produced. The case management in occupational health services is usually taken care of by a nurse specialized in occupational health. The revised protocols were developed and implemented first among orthopedic patients operated upon in public hospitals and from there referred to private occupational health care. Nowadays, the new RtW protocols already cover many different disease diagnosis groups and also referrals between public hospitals, public ambulatory care and private occupational care. Among patients with mental problems like major depression, the new RtW protocols involve, rather than hospital care, the cooperation of public ambulatory care and occupational health services. Adherence of various providers to the agreed protocols was assessed by twice-a-year clinical auditing of randomly selected patients in each disease area. Clinical auditing in each essential disease area provided information and evidence for correcting either the expected or observed actions of each participating professional provider.

In this study, "health gain" is operationalized as the economic and societal benefit of a faster Return-to-Work. Earlier studies had shown that in Finland, the largest opportunity costs were due to extensive lengths of recovery periods regardless of diagnosis. The aim of the five-year (2017-2023) development project was to reduce the lengths of extensive RtW periods by requiring custom/patient-specific procedures defining work absence and support to RtW instead of continuing the previous procedure of assigning sick leave without taking into account support from (private) occupational health care. This development of RtW process was parallel to a more extensive social and health systems reform in Finland that sought to re-configure the existing publicly operated health system to meet a new generation of fiscal and service delivery challenges [8] [9].

2. Materials and Methods

In accordance with the grant provided by the Finnish Ministry of Health and Social Affairs, in 2017-2020, in Central Finland Health Care District (with six occupational health care providers), the four prerequisites for implementation of the new clinical protocols were identified and further developed among orthopedic patients (lumbar discectomy/M51.1). The objectives and content of cooperation were first acknowledged and approved by the Finnish Association of Orthopedic Surgeons. Once it was demonstrated that among these patients, the lengths of RtW were reduced from about 80 days to less than 40, the new concept was to be widened to other patient groups in Central Finland and to at least one patient group in each of all 21 Finnish hospital districts. Employed working-age persons and thereafter patients with occupational health services (coverage over 90 %) were treated on the basis of routine referrals.

According to the assignment of the Finnish Parliament in summer 2020, from 2020-2023 with the guidance of the Ministry of Finance and financing from the Ministry of Health and Social Affairs, the new concept of reducing the average length of RtW by introduction of customized RtW support after hospitalization was to be implemented among at least one patient groups in each of Finland's hospital districts. In Central Finland, currently already 15 DRG groups have been included in the new RtW process. According to the 2020 national target, only the Lapland region has not yet been able to implement the operational tasks. Of all employable Finnish workers, the new RtW currently covers about 97 percent. Monitoring the effectiveness and cost-effectiveness of the new RtW process was done in the University of Eastern Finland by national registers: hospital discharge register (identification of orthopedic patients), ambulatory care register of occupational health (measurement of lengths of RtW), and register on income subsidies (during RtW sick leave). Although the data and the corresponding statistical rates in 1999 and 2014, compared to 2022 and 2023 situations, varied a bit in the definition of the target population and the means of collecting data, the Kappa value between these two patient-specific measurements was 0.82. KAPPA coefficient measures coherence of two or more measurement techniques.

3. Results

Results from implementing the tasks required by national assignment could be divided into two major categories: qualitative and quantitative results.

The first main qualitative result was the development of a referral system from hospital to occupational health services (**Figure 1**). The new RtW process could be described by three main components: the actions within hospital, the transfer of digitalized referral, and the actions within occupational care. In the hospital, the new crucial action was the prescription of a shorter sick leave by the attending physician. This was the steering mechanism for directing the patient after hospital discharge to timely assessment of work capacity by occupational health care. To deliver this e-referral from public hospital to private occupational health services

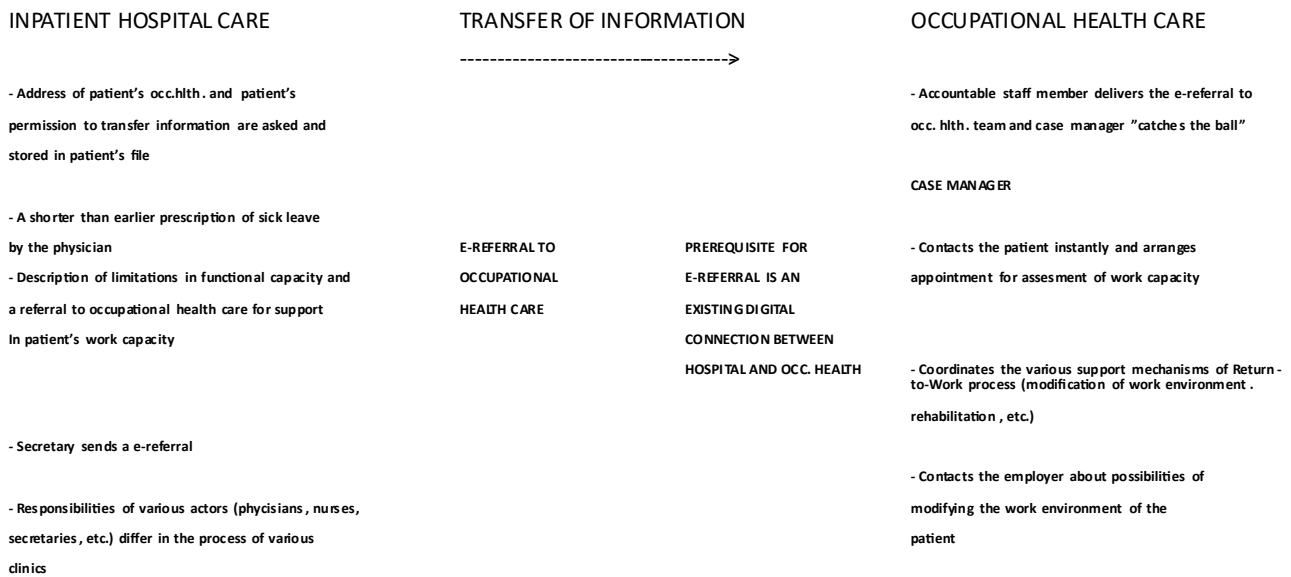


Figure 1. New Return-to-Work process.

required development of existing digital communication between the two organizations. In occupational health services, the e-referral from hospital was directed to the particular occupational health care team for the patient's work place. After the assessment of individual work ability, the case manager (usually a nurse) would contact the employer about needed modifications in the work environment to support the patient's return to work, e.g., among about a third of patients, returning to work was enabled by modifications of work or work environment.

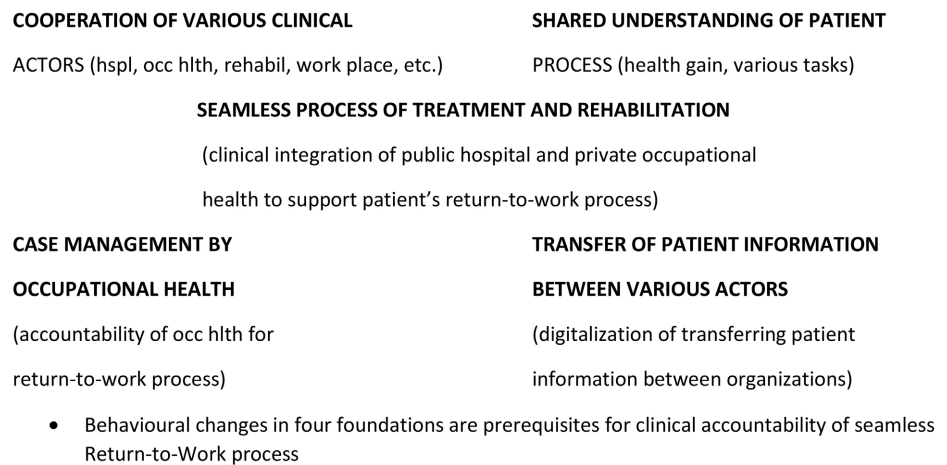


Figure 2. Foundations of clinical accountability for Return-to-Work process.

The second major qualitative result was the establishment of four prerequisites to implement the new RtW process and to sustain revised clinical behavior (**Figure 2**). These four operational prerequisites identified in order to achieve the objective—the seamless treatment and rehabilitation process—were: a commonly accepted conception of the objective of patient care and cooperation of various ac-

tors, a commonly accepted clinical process of patient's care, a commonly accepted task of occupational health case manager, and a commonly accepted digital transfer of referrals between providers (**Figure 2**). For cooperation, there was no need for extra clinical training or reimbursement.

The purpose of prescribing a shorter sick leave period is to steer the patient to contact occupational health services early enough for assessment of work ability, supportive RtW mechanisms and thereby a reduced length of sick leave. An important qualitative result in the development and implementation of the new RtW process was the development of digital e-referral system between the public hospitals and private occupational health care providers. Previously, this system did not exist and e.g., occupational health services were not aware of workers' sick leaves prescribed elsewhere.

The qualitative results also include the introduction of clinical auditing in various areas to ensure the realization of the earlier mentioned commonly accepted clinical protocol. A protocol and handbook for clinical auditing of the new RtW process were developed. In 9 of the 21 regions, clinical audits of randomly selected patients from certain diagnoses (etc., cardiology and orthopedics) groups that assess the operation of the new RtW processes have taken place at least once a year or repeatedly by 2023 [10]. The first main quantitative results include the change in lengths of RtWs among the working-age patients who underwent the new protocols for faster RtWs. The second quantitative results show the results of a cost-benefit analysis on the effectiveness of adapting the new clinical protocols.

Table 1. Average lengths of Return-to-Work periods in Finland before and after the new process among three orthopedic working-age patients, 1999-2023*.

	BEFORE THE NEW PROCESS		AFTER THE NEW PROCESS	
	(A STANDARDIZED SICK LEAVE)		(A CUSTOMIZED SICK LEAVE)	
	1999	2013	2022	2023**
Lumbar discectomy patients	72 (n = 3049)	82 (n = 2040)	63 (n = 465)	54 (n = 199)
Hip arthroplasty patients	123 (n = 337)	120 (n = 924)	82 (n = 530)	76 (n = 239)
Knee arthroplasty patients	80 (n = 967)	110 (n = 1655)	91 (n = 986)	89 (n = 365)

Note: *Since the rates were based on national register data, 95% CI could not be calculated. These are available on a previous publication ([13] by Lavikainen *et al.*, 2024); **2023 data consisted of the patients during the first 6 months of 2023.

The essential measure of effectiveness of the new RtW process was the reduction in the length of sick leaves among employed working-age patients (**Table 1**). This could be identified either by the national register on clinical prescriptions of sick leave by occupational health services providers at the National Institute of Health and Welfare or by the national register on monetary subsidies during sick

leave at the Social Insurance Institution of Finland. Since these rates were based on analyzing data in national registers, no confidence intervals could be calculated. However, these intervals are published in a previous study [11] with a different approach. Therefore, the comparison of the situation before and after the new RtW process is reliable and valid overall, although perhaps not exact due to different data. In a relatively short time, the new RtW process had shortened the length of RtW periods (Table 1).

The distributions of the lengths of RtW periods had also been reshaped [11] [12]. After the introduction of the new RtWs, the new distributions had smaller standard deviations and fewer outliers with extremely long lengths of RtW processes [13]. Although the new RtW process was customized, it decreased the number of causes for long RtW periods.

For the three orthopedic groups, the lengths of RtW periods decreased, especially in the areas that had implemented the new RtW for these patient groups. The amount of reduction varied between areas due to the variation in the success of introducing the new paradigm.

The cost of a missed work day due to sick leave was estimated by the University of Eastern Finland at 420 euros to the employer and the society. Only assumed working days are compensated and therefore taken into account in the above calculation of cost-effectiveness.

Table 2. Potential annual cost-effectiveness of new Return-to-Work process in Finland among three groups of orthopedic working-age patients.

PATIENT GROUP	R-t-W DAYS BEFORE	EFFECTIVENESS OF PERCENTAGE	REDUCTION AS DAYS	NUMBER OF PATIENTS WITH OCC.HLTH.	INCREASE IN ANNUAL PRODUCTIVITY
LUMBAR DISCECTOMY	74	40%	30	2178	26 M€
HIP ARTHROPLASTY	103	31%	31	2505	23 M€
KNEE ARTHROPLASTY	105	25%	26	3340	26 M€

Based on the example of the three orthopedic patient groups presented in Table 2, if the new RtW process was spread to all relevant DRG groups among employed working-age patients, the annual potential cost-effectiveness at the national level would be about 1.5 billion euros [13].

4. Discussion

In Finland, there is a great need for a sustainable work force. It has been estimated that currently about 600,000 workers have a limited work ability with a health-related problem. Even with a health-related problem, most workers have some work capacity and are prepared to be employed. Many of these workers are either waiting for treatment from health care or recovering from treatment. From this view, health care is a social means to maintain a suboptimal work force. The purpose of developing a new RtW process in Finland was to exit the previous practice

of a standardized sick leave by implementing effective cooperation between hospital and occupational health services in the care of each patient so as to achieve a shorter, less expensive, customized sick leave. Shared professional objectives and the perceived benefits to patient care were professionally internalized. The individualistic assessment of each patient's sick leave is influenced by their medical treatment and prognosis, types of given (invasive) interventions and rehabilitation, and possibilities for modifications in the working environment or in the work [14]. In Finland, the consideration of these factors in assessment of patient's work ability is the responsibility of occupational health services.

Instead of having a standardized length of sick leave prescribed in the hospital, at the time of discharge, the patient with occupational health services is prescribed a shorter sick leave, which is accompanied by a referral to occupational health services. This steers the patient and the providers to a shorter assessment of the patient's work ability and a need for rehabilitation.

The development and implementation of the new RtW process was started in Central Finland Health Care District with all occupational health services providers of the area and continued later in all other Finnish hospital districts.

The crucial qualitative results of the development of the new RtW process were the implementation of referring working-age patients from hospital to occupational health care without a delay and the description and implementation of the four behavioral prerequisites for seamless process of treatment and rehabilitation.

Previously, there was not a consistent and systematically used referral pattern from hospital to occupational health services. A digital e-referral system was developed. Its application required cooperation of multiple members of the staff in various organizations and permissions from patients. The prerequisite for this change could be described in four dimensions: cooperation, shared values, the concept of seamless process, and case management by the occupational health team.

These qualitative results were first developed in 2017-2020 among lumbar discectomy patients (M51.1) in Central Finland General Hospital as a prototype and a generic model of a new RtW process. The efficacy, effectiveness, and cost-effectiveness of the new model were assessed by a case-control study with a pre-post design and the remarkable results were published in 2019 by the Finnish Medical Journal [11]. Thereafter, in 2020-2023, this generic model was implemented at least in one patient group in all 21 geographic areas of Finland and the Central Finland Health Care District, the new model was spread to other patient groups, 15 different DGR groups.

The quantitative results demonstrated by the University of Eastern Finland showed that by the development and implementation of the new RtW process, the lengths of sick leave after hospitalization were reduced remarkably and the productivity of workers was increased by many millions of euros.

5. Conclusion

The potential for increased annual productivity was 1.5 billion euros in the whole

country. The change to achieve the prerequisites for seamless treatment and rehabilitation process for the patient did not require legislative or financial inputs. The implementation of the new RtW process from one patient group to all relevant groups (e.g., from orthopedics to cardiology, psychiatry, oncology, etc.) will be done from 2024 on in each of 21 districts. Management of this change is the responsibility of the Finnish Institute of Occupational Health (FIOH). The clinical auditing by regional staff and tutored by FIOH was to be carried out in all areas at least twice a year in different patient groups to identify possible operational problems and solutions of each actor in adhering to the new RtW process. FIOH monitors the number of patient groups included in the new clinical protocol in each hospital district. The monitoring of the effectiveness and cost-effectiveness of the new RtW is done annually by the National Institute of Health and Welfare and by the University of Eastern Finland. Given the financial pressures on many European health care systems in the post-COVID period, this type of public-private reform process suggests an important policy option for future consideration.

Authors' Contributions

These have been explained in the submission process elsewhere already. I.V. wrote the main manuscript and was in charge of proposing the exhibiting of qualitative and quantitative results. K.H. was in charge of describing the qualitative results in **Figure 1** and **Figure 2**, and in the text, J.K. was in charge of assessing and describing the quantitative results in **Table 1** and **Table 2**, and in the text, R.S. helped connect the Finnish model from 20 years ago with the new qualitative and quantitative results, as well as noting the relevance of these results to health economic and management problems in other countries. H.H. was in charge of describing the prerequisites of changing clinical behavior in order to shorten lengths of R-t-W. L.P. was in charge of describing the prerequisites of changing clinical behavior in orthopedic units and processes. J.L. was in charge of describing the prerequisites of changing clinical behavior in cardiological units and processes. All authors had the responsibility of individually reviewing the manuscript with respect to their 5-year-long experiences in changing the clinical behavior in order to shorten the lengths of R-t-W.

Ethics Approval and Consent to Participate

The study reports our results on improving the functioning of the Finnish health care. Therefore, according to the Finnish legislature, since we did not intervene with the actual treatment or personal care of the patients but rather with the actions of the different counterparts involved with the treatment and rehabilitation of the working-age patients back to work, we did not need to report to ethics committee of the General Hospital of Central Finland (IRB). However, anyhow our actions were viewed by the Ethics Committee of the Hospital District of the Central Finland, Jyväskylä, Finland.

Availability of Data and Materials

The data for quantitative analyses contains information from the national hospital discharge register (in Finnish Institute of Health and Welfare, Helsinki, Finland/<http://www.thl.fi/>) and from the national register of social subsidies (Social Insurance Institution of Finland, Helsinki, Finland/<http://www.kela.fi/>). The prerequisite for the analyses of these data is the approval of the research plan and the corresponding permissions from the Finnish government offices.

Funding

This research was funded by the Finnish Ministry of Health and Welfare: Ministry of Health and Welfare: VN/24288/2020-STM-2.

Acknowledgements

This study required the commitment of all Finnish regions in the implementation of the new Return-to-Work process.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Vohlonen, I., Ihalainen, R., Saltman, R.B., Karhunen, T., Palmunen, J. and Kinnunen, J. (2004) Improving Health Security: A Pilot Study from Finland Linking Disability and Health Expenditures. *Health Policy*, **67**, 119-127. [https://doi.org/10.1016/s0168-8510\(03\)00082-4](https://doi.org/10.1016/s0168-8510(03)00082-4)
- [2] Dowling, B. (1997) Effect of Fundholding on Waiting Times: Database Study. *BMJ*, **315**, 290-292. <https://doi.org/10.1136/bmj.315.7103.290>
- [3] Porsdal, V. and Boysen, G. (1999) Costs of Health Care and Social Services during the First Year after Ischemic Stroke. *International Journal of Technology Assessment in Health Care*, **15**, 573-584. <https://doi.org/10.1017/s026646239915311x>
- [4] Doyle, R. (1996) Medical Grand Rounds. In: Milliman and Robertson, Ed., *Healthcare Management Guidelines*, GMC, 65.
- [5] Wickizer, T.M., Franklin, G., Plaeger-Brockway, R., Mootz, R. and Drylie, D. (2002) Improving the Quality of Occupational Health Care in Washington State: New Approaches to Designing Community-Based Health Care Systems. *Journal of Ambulatory Care Management*, **25**, 43-52. <https://doi.org/10.1097/00004479-200204000-00006>
- [6] Wickizer, T.M., Franklin, G., Fulton-Kehoe, D., Gluck, J., Mootz, R., Smith-Weller, T., *et al.* (2011) Improving Quality, Preventing Disability and Reducing Costs in Workers' Compensation Healthcare: A Population-Based Intervention Study. *Medical Care*, **49**, 1105-1111. <https://doi.org/10.1097/mlr.0b013e31823670e3>
- [7] Asklöf, T., Martikainen, J., Kautiainen, H., Haanpää, M., Kiviranta, I. and Pohjolainen, T. (2015) Paid Expenditures and Productivity Costs Associated with Permanent Disability Pensions in Patients with Spinal Disorders: Nationwide Finnish Register-Based Study, 1990-2010. *European Spine Journal*, **25**, 275-281. <https://doi.org/10.1007/s00586-015-3775-7>
- [8] Saltman, R.B. and Teperi, J. (2016) Health Reform in Finland: Current Proposals and

Unresolved Challenges. *Health Economics, Policy and Law*, **11**, 303-319.

<https://doi.org/10.1017/s1744133116000013>

- [9] Tynkkynen, L., Alexandersen, N., Kaarbøe, O., Anell, A., Lehto, J. and Vrangbæk, K. (2018) Development of Voluntary Private Health Insurance in Nordic Countries—An Exploratory Study on Country-Specific Contextual Factors. *Health Policy*, **122**, 485-492. <https://doi.org/10.1016/j.healthpol.2018.03.008>
- [10] Morell, C. and Harvey, G. (1999) *The Clinical Audit Handbook. Improving the Quality of Health Care.* Bailliere Tindal.
- [11] Piitulainen, K., Korhonen, I., Husman, K., Jalkanen, T., Kallinen, M., Mastokangas, K., *et al.* (2019) Tukimalli työhönpaluuseen selkäleikkauksen jälkeen: asiakasohjaajana työterveyshuolto. (New Support for Return to Work of Temporarily Incapacitated Workers: Results of Operational Integration of Occupational Health and Other Health Services). *Finnish Medical Journal*, **17**, 1048-1053.
- [12] Piitulainen, K., Husman, K., Kervinen, V., Korhonen, I., Kuusamo, S., Laukkanen, J. and Vohlonen, I. (2022) Clinical Audits Improve the Functioning of Patient-Specific Processes. *Finnish Medical Journal*, **77**, e32462. <https://www.jaakarilehti.fi/e32462>
- [13] Lavikainen, P., Heiskanen, J., Jalkanen, K., Lehtimäki, A., Vehkala, S., Kangas, P., *et al.* (2024) Effectiveness of the Coordinated Return to Work Model after Orthopaedic Surgery for Lumbar Discectomy and Hip and Knee Arthroplasty: A Register-Based Study. *Occupational and Environmental Medicine*, **81**, 150-157. <https://doi.org/10.1136/oemed-2023-109276>
- [14] Donaldson, C. (2018) *How to Use the Official Disability Guidelines (ODG).* Advanced Personnel Management.