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Factors Influencing Health Care Providers Payment Reforms in Central and Eastern European Countries

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Abstract

Central and Eastern European (CEE) countries have recently implemented reforms to health care provider payment systems, which include changing payment methods and related systems such as contracting, management information systems, and accountability mechanisms. This study examines factors influencing provider payment reforms implemented since 2010 in Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania. A four-stage mixed methods approach was used: developing a theoretical framework and data collection form using existing literature, mapping payment reforms, consulting with national health policy experts, and conducting a comparative analysis. Qualitative analysis included inductive thematic analysis and deductive approaches based on an existing health policy model, distinguishing context, content, process, and actors. We analyzed 27 payment reforms that focus mainly on hospitals and primary health care. We identified 14 major factor themes influencing those reforms. These factors primarily related to the policy process (pilot study, coordination of implementation systems, availability of funds, IT systems, training for providers, reform management) and content (availability of performance indicators, use of clinical guidelines, favorability of the payment system for providers, tariff valuation). Two factors concerned the reform context (political willingness or support, regulatory framework, and bureaucracy) and two were in the actors' dimension (engagement of stakeholders, capacity of stakeholders). This study highlights that the content and manner of implementation (process) of a reform are crucial. Stakeholder involvement and their capacities could influence every dimension of the reform cycle. The nine countries analyzed share similarities in barriers and facilitators, suggesting the potential for cross-country learning.

Keywords

healthcare providers, payment systems, health care reform, hospitals, primary health care, Eastern Europe

*** What do we already know about this topic?**
Health care provider payment reforms constitute one of the most important tools through which policymakers can impact health system performance.

*** How does your research contribute to the field?**
This study identifies and maps factors (barriers and facilitators) influencing recent health care provider payment reforms across nine Central and Eastern Europe countries by applying health policy triangle framework.

*** What are your research's implications toward theory, practice, or policy?**
The study's findings can help policymakers in better planning payment reforms and assist researchers in conducting evaluation and/or comparative studies in this area.

Introduction

Healthcare reforms are commonplace and are driven by changing health needs and the goal of enhancing accessibility, affordability, and patient-centeredness.[1-3] They can be defined as efforts or activities aimed at improving the performance of the healthcare system by making changes in the way healthcare is organized and financed and how legal mechanisms regulate care.[4,5] One of the most critical focuses of current healthcare reform efforts concerns changing payment systems for healthcare providers.[3,6] In a broader sense, a provider's payment system includes the payment method (mechanism for transferring funds to providers) as well as ancillary elements such as contracting, management information systems, and accountability mechanisms, which form an integral complement to the payment method.[7,8] They can help to steer providers' behaviors toward the realization of predefined health policy objectives.[6,7]

Central and Eastern European (CEE) countries have been actively implementing reforms in their health care provider payment systems.[8-13] Recent research has identified both similarities in the current payment methods across various types of health care providers and similar trends in reforms conducted in this field in recent years.[8] CEE countries are following international trends in payment reforms: they are increasingly using blended payment methods with a prevailing scope of activity-based payments, while add-on payments are often used for priority interventions. Primary health care (PHC) and hospital inpatient care have experienced the most frequent changes in their payment schemes in recent years.[8] The reforms have often aimed to expand PHC services—particularly in disease prevention, care coordination, and multidisciplinary care[8,13]—and improve hospital care efficiency.[9-12]

There is little original research on the factors that influence the successful implementation of such reforms. Two recent literature reviews focused on identifying factors that may influence the success of provider payment reforms in general.[14,15] The results showed that these factors span multiple dimensions. Both reviews included studies from around the world, but only a limited number of research results came from Europe, with only a few examples from CEE. The aim of the present study was to identify and map, using a pre-existing framework, factors influencing provider payment reforms conduced since 2010 in nine CEE countries: Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania.

Methods

A mixed-methods approach was employed. Initially, a data collection form was developed, and a desk research phase utilizing standardized data sources to identify and describe recent payment reforms across nine CEE countries. In the third phase, consultations with national health policy experts from these nine countries were conducted to validate and enhance the compiled data. The final phase involved a qualitative analysis of the gathered data using a thematic analysis approach. The specific details of each step are elaborated below.

Data Collection Form

The data collection form was developed based on the Health Reform Monitor guide,[16] which provides a structured way to describe and compare health reform initiatives. For each country, the data form included the following sections: the payment reform timeline, official objectives, categories of care providers, the reform content (including changes in payment schemes), attained or anticipated results, and the factors—barriers and facilitators—that impacted the reform.

Desk Research of Standardized Sources

The objective of the desk study, which spanned from March to May 2023, was to enter available information into data

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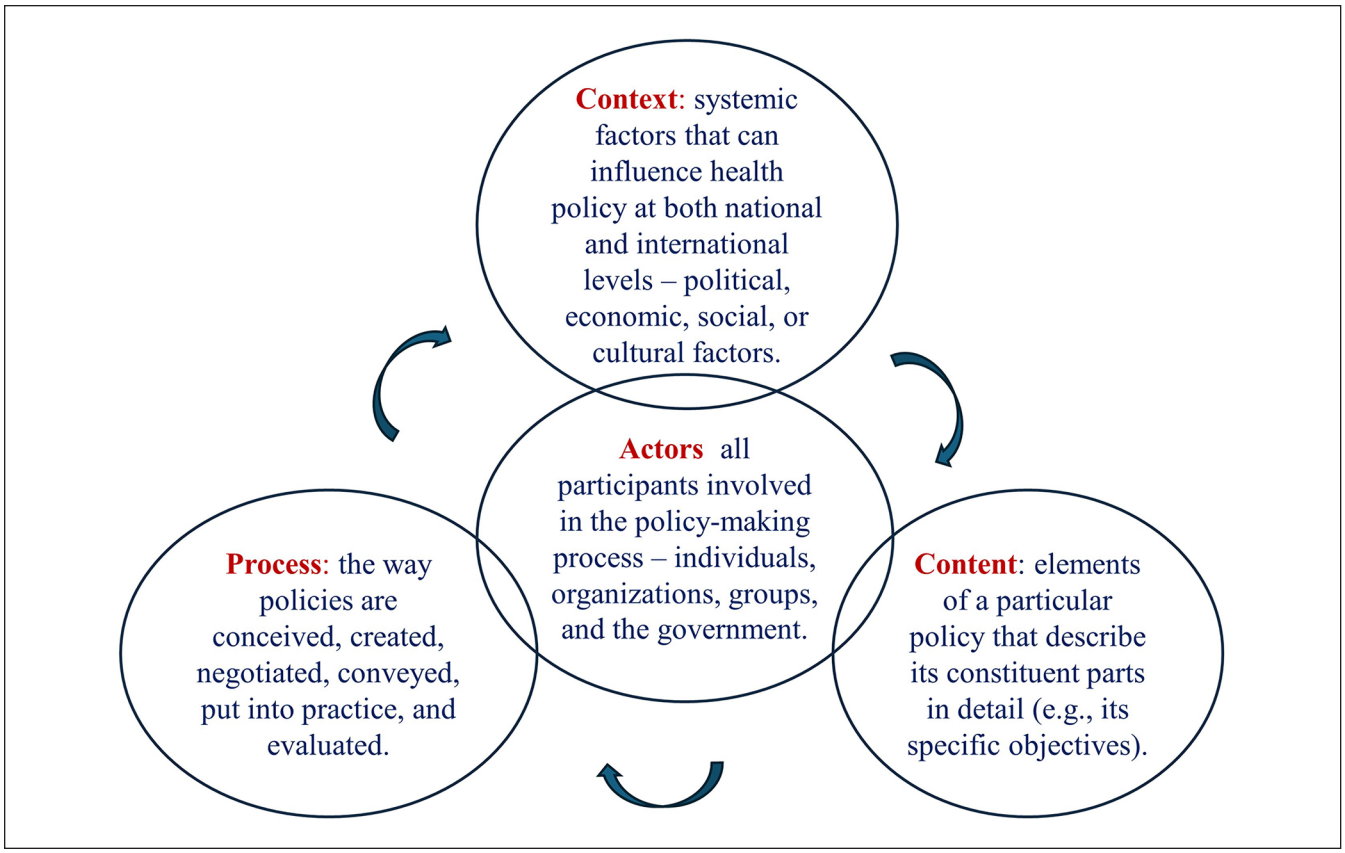

Figure 1. Components of the health policy triangle (own drawing based on the literature[22-25]).

collection forms. We focused on selected healthcare provider payment reforms in the public health system implemented from 2010 onward. The criteria for choosing the reforms were as follows: (1) the most relevant reforms with significant impact; (2) reforms for which evaluations are available. A minimum of two and a maximum of four reforms per country were considered, depending on data availability. COVID-19-related payment reforms that were halted after the pandemic were excluded.

Key sources of information included the following report series: Health System Reviews and Health Systems Summaries,[17] Health System and Policy Monitor (HSPM),[18] and Country Health Profiles – State of Health in the EU, available on the website of the European Observatory on Health Systems and Policies.[19] These reports, which apply to all EU Member States, follow a defined methodology, standardized structures for cross-country comparisons, and undergo regular updates.

National Expert Consultations

Experts from nine countries were purposefully selected and sent pre-filled data collection forms via email. These experts, who had largely authored the included country reports and were members of the Health Systems and Policy Monitoring Network, possessed in-depth knowledge of their countries' health systems.[20] In cases of non-participation, they were asked to recommend another qualified informant (snowball method). The instructions focused on validating and/or updating details of up to four recent and key provider payment reforms, with special emphasis on factors that contributed to the reform's implementation and success. The experts were specifically asked to provide relevant references where available. Three rounds of contact occurred. If necessary, additional questions and ambiguities were addressed iteratively through further correspondence. The national experts are listed as co-authors of this work.

Thematic Analysis

Two researchers (CN and KDJ) analyzed the data using inductive thematic analysis with a manual coding strategy[21] and identified major themes related to factors influencing payment reforms. For each theme, specific examples of reform cases were matched. The identified themes were then analyzed deductively using a pre-existing analytical framework known as the health policy analysis model or "health policy triangle." This framework includes "context," "content" and "process" as the three sides of the triangle, with "actors" at the center[22-25] (Figure 1). A recent review study

has demonstrated that this framework is widely used in the literature and is employed to rigorously analyze health-related policy decisions from multiple perspectives at all stages[25]

The outcomes derived from the deductive analysis were also reviewed and finalized by reaching consensus among all co-authors.

Results

Overview of the Analysed Payment Reforms

A total of 27 payment reforms were analyzed. The reforms targeted different healthcare providers: hospitals (ie, inpatient and outpatient care provided by hospitals, n = 13), primary care (n = 9), specialized care outside of hospitals (n = 4), and multiple providers (n = 1). In hospitals, the reforms often aimed to incentivize collaboration and coordination between healthcare providers, reduce unnecessary hospitalizations, and improve the quality and efficiency of healthcare services. In primary care, the focus was primarily on specific preventive services and, in some cases, on encouraging the establishment of multidisciplinary practices. The reform content included changes in payment methods of varying scope (eg, introducing a new method or modifying an existing one), often accompanied by complementary changes within the other elements of the purchasing system (eg, contracting rules). Supplemental Table S1 provides an overview of the analyzed payment reforms.

Inductive Thematic Analysis of Factors Influencing Payment Reforms

By applying inductive thematic analysis, we identified 14 major thematic factors. The number of payment reforms affected by each factor, where it was identified as either a barrier or a facilitator, ranged from 2 to 7, coming from a minimum of two and a maximum of six CEE countries (see Table 1). These factors share common characteristics and are often interlinked or overlapping.

Six reform examples from Czechia, Estonia, Croatia, and Lithuania highlight the importance of **clear performance/measurement indicators within the payment system**. For instance, in Lithuania and Croatia, the introduction of DRGs for inpatient hospital care was facilitated by well-developed monitoring and control mechanisms for coding. Lithuania further improved its PHC reform by revising the methodology P4P indicators. This revision helped establish a median value for each performance measure and included calculating the total number of national units for each indicator, with adjustments for the target age group (patients/enrollees).[26] On the other hand, Czechia introduced internationally refined DRGs (IR DRGs) as the base payment mechanism in acute inpatient hospitals in 2012 but faced challenges due to the lack of clear indicators and a standardized definition of DRG groups and codes in both clinical and economic terms. This led to inconsistencies in performance reporting, treatment disparities, and unpredictable costs (ie, actual costs did not reflect the diagnosis classification and could not be predicted with sufficient accuracy).[27]

The **availability and use of clinical guidelines for reporting parameters** were mentioned in two reform examples from Latvia and Estonia. In Latvia, the lack of such guidelines impeded the implementation of a pay-for-quality program in PHC in 2011. In Estonia, adherence to standardized guidelines set by the International Consortium for Health Outcomes Measurement (ICHOM) was essential for implementing bundled payments for stroke patients in 2020/21. These guidelines were designed to assess and report the quality and outcomes of stroke interventions. They include measurements from administrative and clinical data, as well as patient-reported information.[28]

Seven reform examples from Czechia, Estonia, Latvia, Lithuania, and Poland reported on the **motivation and favorability of the payment system for healthcare providers**. In most cases, obstacles arose due to the perception of the payment system as demotivating or disadvantageous for healthcare providers. However, in Estonia and Poland, incentives within the payment system were perceived as rewarding by providers, facilitating reform. For example, in Poland, the implementation of a coordinated care model with Fee-for-Service (FFS) financing in 2022 rewarded providers with relatively high fees.[29] Additionally, the introduction of P4P elements in 2017 provided clear financial incentives, effectively motivating healthcare providers.[30,31]

A further seven reform examples from Bulgaria, Estonia, Poland and Romania demonstrated factors stemming from **stakeholder support and engagement**. Notably, inadequate involvement of relevant stakeholders impeded reforms in these countries. In Bulgaria, for example, the ban on public payer contracting with new hospitals, activities, and medicines in 2018 to 2019 triggered strong criticism from stakeholders. This law incited numerous protests, particularly against the ban on medicines, led by patients, supported by non-governmental organizations (NGOs), and various political parties.[32] Similarly, in Romania, a reform initiative within the broader healthcare reform framework of 2008 to 2012 faltered primarily because stakeholders failed to reach a consensus due to technical reasons. Additionally, the lack of a structured campaign for public consultations, coupled with general public discontent in response to austerity measures, contributed to the initiative's failure.[33] In contrast, successful reform cases demonstrated inclusive stakeholder involvement and fair consideration of their interests. Estonia's 2020-2021 implementation of bundled payments under coordinated care for stroke patients involved various stakeholders,[28] while Poland's 2017 introduction of P4P elements in a coordinated care model for patients with acute myocardial infarction was strongly supported by cardiology experts, who were fully engaged in the reform planning.[30,31]

Table 1. Factors that influenced selected health care provider payment reforms conducted in CEE countries since 2010.

Factor	Example of reform where factor worked as barrier	Example of reform where factor worked as facilitator
Availability of clear performance indicators within payment scheme (n = 6 examples, 4 countries)	• **Czechia**: 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (lack of uniform DRG groups/codes led to non-standardized reporting of services, inequalities in treatment, unrealistic/unpredictable costs). • **Estonia:** 2015/16 – Upgrade of the Quality Bonus Scheme (QBS) for PHC (key dimensions performance such as clinical outcomes or patient experience were of limited use).	• **Croatia**: 2015 – Refined hospital payment parameters (clear and regularly published parameters for all hospitals enabled benchmarking and reporting). • **Estonia**: 2020/21 – Bundled payment for stroke patient (used international stroke metric to evaluate quality and outcomes). • **Lithuania**: 2012 – Introduction of DRGs for hospital care (surveillance and control on coding mechanisms were well developed). • **Lithuania**: 2022 – Revised methodology of calculating P4P indicators for PHC.
Availability/use of clinical guidelines on reporting parameters (n = 2 examples, 2 countries)	• **Latvia**: 2011 – Pay for quality (P4P) for PHC (lacked officially endorsed clinical guidelines or pathways).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (used standardized guidelines for stroke embedded in the international standards; these enabled reporting and comparability of stroke metrics).
Motivation/favorability of payment system for providers (n = 7 examples, 5 countries)	• **Czechia:** 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (the previous DRG system was not motivating eg, it was very unfavorable reimbursement for some healthcare). • **Estonia:** 2015/16 – Upgrade of the Quality Bonus Scheme (QBS) for PHC (QBs offers fewer opportunities to exempt patients from inclusion in the scheme, which penalize family doctors caring for patients with unusually complex needs). • **Latvia:** 2011 – Implementation of the Nord-DRG system (compliance with the DRG system in the purchasing process was low, leading to frustration among providers). • **Lithuania:** 2012 – Introduction of DRGs for hospital care (deemed unfavorable due to unreasonable variance of payments among some hospitals and/or clinical areas).	• **Estonia:** 2020/21 – Bundled payment for Stroke Patient (it was made favorable by carefully identifying high-risk providers and helping them identify opportunities to reduce costs and improve outcomes). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with acute myocardial infarction (financial incentives were clear and strong enough to encourage providers participation). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (high financial benefits motivated providers).
Support/engagement of stakeholders (n = 7 examples, 4 countries)	• **Bulgaria**: 2018/19 – Ban on public payer contracting with new hospitals/activities/medicines (lack of stakeholder involvement provoked criticism and protests). • **Estonia**: 2017 – New contracts to support multidisciplinary PHC reform – (solo practices and potential integration with hospitals led to resistance). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lack of involvement of key stakeholders impacted planning and implementation). • **Romania**:2008 to 2012 – General health reform (failure to reach an agreement among stakeholders led to the dismissal of a reform).	• **Estonia**:2020/21 – introducing bundled payment under coordinated care for stroke patients (different stakeholder engagement and balancing their interests). • **Poland**: 2017 – Introduction of P4P elements in a coordinated care model for patients with acute myocardial infarction (strong support from cardiology experts, involved in reform planning). • **Poland**: 2022 – New payment model within coordinated PHC (support of the largest association of PHC providers).
Capacity of stakeholders (n = 7 examples, 4 countries)	• **Croatia**: 2013 – Performance based payment for PHC (physicians and nurse shortage). • **Croatia:** 2015 – Changes in hospital payment model (lack of quality improvement programs; over-or-under capacity of some hospitals to meet service limits). • **Latvia:** 2011 – Implementation of the Nord-DRG system (incapacity of assigned "wrong" strategic purchaser). • **Lithuania:** 2012 – Introduction of DRGs in hospital care (lack of capacity for costing and economic evaluations among hospitals). • **Lithuania:** 2010 to 2023 – Gradual development of combination of payment methods in PHC (lack of: capacity to provide cost-effective, high-quality health care, measures to strengthen the "gatekeeping" role of GPs). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (medical personnel shortage; heavy physician workload; and lack of capacity to undertake additional tasks).	• **Lithuania**: 2010 to 2023 – Gradual development of combination of payment methods in PHC (the expansion of the PHC team members facilitated the implementation).
Political willingness/support (n = 7 examples, 7 countries)	• **Romania**: 2008 to 2012 – General health reform (was considered politically unfeasible and withdrawn). • **Bulgaria:** 2015 to 2022 – Diverse hospital payment reforms (lack of political will and government stability hindered changes proposed by the health policy experts).	• **Hungary:** 2016 – Cost weight adjustments of the Hungarian DRGs (the government established a committee to plan and oversee the process). • **Latvia:** 2011 – Implementation of the Nord-DRG system (to facilitate the implementation the Latvian MoH sought technical assistance from external experts and provided strong leadership for the reform). • **Lithuania**: 2010 to 2023 – Gradual development of combination of payment methods (government provided strong leadership to enhance performance payment). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (majority government strongly pushed toward reform implementation). • **Czechia**: 2023 – Introducing case payment for day surgery (the MoH supported the reform).

(continued)

Table 1. (continued)

Factor	Example of reform where factor worked as barrier	Example of reform where factor worked as facilitator
Piloting/feasibility study (n = 6 examples, 4 countries)		• **Estonia:** 2020/21 – Bundled payment for Stroke Patient (piloted before system wide implementation). • **Estonia:** 2013 – Remunerating new innovative e-consultations between GPs and medical specialists (piloted in ophthalmology). • **Lithuania:** 2012 – Introduction of DRGs for hospital care (pilots in selected hospitals before national implementation). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with acute myocardial infarction (initial program was evaluated and adjusted). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (a pilot for PHC tested some solutions). • **Romania:** 2020 to 2023 – Improving Romania's DRG system for hospital inpatient services (piloted in 50 hospitals).
Comprehensive approach/ coordination of implementation systems (n = 4 examples, 3 countries)	• **Croatia**: 2013 – Performance based payment (lack of coordination and integration with secondary care). • **Croatia**: 2015 – Changes in hospital payment model (fragmentation of care ie, inside hospitals and between primary and secondary care, lack of adequate reforms in LTC). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lack of coordination with other ongoing reforms).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (combination of centralized and local implementation was functional and well-coordinated, contributing to the successful piloting and system-wide implementation).
Availability of funds/investments (n = 3 examples, 2 countries)	• **Hungary**: 2011 to 2014, 2021 – Changing the method of setting the output volume limit for Specialist care providers (insufficient funding to complete the reform process).	• **Estonia:** 2017 – New contracts to support multidisciplinary PHC reform (long-term funding security; access to capital investment and lowering its costs helped overcome barriers faced by small, risk-averse providers). • **Estonia:** 2020/21 – Bundled payment for Stroke Patient (an innovation fund was established).
IT systems/tools (n = 3 examples, 2 countries)	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (challenges stemmed from lack of documentation systems/tools capable of incorporating multiple providers).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (strong IT systems to collect data, measure outcome/ performance, benchmarking). • **Estonia**: 2015/16 – Upgrade of the Quality Bonus Scheme (electronic billing data collection system ensured proper monitoring of GPs' activities). A prerequisite for e-consultation was also an e-health system (data exchange between PHC and specialists)
Regulatory framework/ bureaucracy (n = 3 examples, 2 countries)	• **Poland**: 2017 – Changes to hospital payment under the hospital network reform (there were legal barriers for hospitals to open new ambulatory clinics and thus follow the reform financial incentives). • **Poland:** 2022 – Implementing coordinated care model with services financed with FFS (bureaucratic barriers – the need to submit a complex application to participate in the model). • **Estonia**: 2017 – New contracts to support multidisciplinary PHC reform (hindered by the lack of the revision of the regulatory framework and formalization of the expanded scope of PHC).	
Trainings for providers (n = 3 examples, 3 countries)		• **Lithuania**: 2012 – Introduction of DRGs for hospital care (facilitated by training/teaching materials for hospitals). • **Estonia**: 2020/2021 – Bundled payment for stroke patients (stakeholder workshop helped develop and refine metrics). • **Poland:** 2022 – Implementing coordinated care model with new services financed with FFS method (enabled by training of healthcare providers).
Determining base rates/tariff valuation (n = 6 examples, 4 countries)	• **Czechia**: 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (discrepancy in base rates eg, individually negotiated with insurers). • **Latvia:** 2011 – Implementation of the Nord-DRG system (limited by reliance on historic case-mix volumes and cost weights per DRG). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (insufficient valuation of tariffs to cover actual hospital costs).	• **Estonia:** 2010 onward (all payment reforms) – Existence of dedicated costing methodology (defined by regulations) used for regular tariff adjustments. • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (beneficial financing for providers: fee-for-service, relatively high fee levels, that results from the negotiations). • **Czechia**: 2021 – Replacing IR DRG with CZ DR ensured the use of newly recalculated DRG tariffs after a DRG restart project launched in 2015.
Reform management/evaluation (n = 5 examples, 3 countries)	• **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lacked formally defined indicators to measure its realization). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with acute myocardial infarction (lacked better reporting data needed to evaluate clinical success of the program). • **Croatia**: 2015 – Changes in hospital payment model (affected by lack of reform management and evaluation). • **Croatia**: 2013 – Performance based payment (affected by lack of the reform management and evaluation). • **Lithuania**: 2012 – Introduction of DRGs for hospital care (affected by lack of sound evaluation of implementation/outcomes/impacts).	

Stakeholder capacity was noted as another critical factor, as evidenced by seven reform examples in Croatia, Latvia, Lithuania, and Poland. The reforms were hindered by the insufficient capacity of some stakeholders. For example, in Lithuania, the introduction of DRGs in inpatient hospital care (2012) was affected by a lack of capacity among stakeholders in costing and economic evaluations,[34] while stakeholders lacked capacity in terms of workforce (eg, physician and nurse shortages) during the implementation of performance-based payments for PHC in Croatia in 2013.[35,36] In Poland, barriers to implementing a coordinated care model with new services financed with the FFS method included shortages of medical personnel, heavy physician workloads, and insufficient capacity to take on additional tasks.[31,37]

Factors related to **political willingness and support** were reported in seven reform examples from Romania, Bulgaria, Hungary, Latvia, Lithuania, Poland, and Czechia. In most cases, strong political support served as a facilitator. This was evident in instances where a majority government actively pushed for the adoption of reforms (eg, the Polish hospital network reforms[38]) or where the government took a proactive approach to planning and demonstrated strong leadership during implementation (eg, the implementation of DRGs in Latvia and Hungary). Conversely, a lack of political willingness and government stability impeded the implementation of recent hospital payment reforms in Bulgaria, despite support from health policy experts. In Latvia, it is acknowledged that while the payment system should promote service efficiency, the introduction of P4P and value-based healthcare (VBHC) models requires greater political support and a long-term strategy.

Piloting/feasibility studies (reported in six reform examples) proved to be crucial reform facilitators in Estonia, Lithuania, Poland, and Romania. In all cases, conducting reform pilots before nationwide implementation supported reform efforts. For example, in Poland, the introduction of P4P elements within a coordinated care model for patients with acute myocardial infarction (AMI) underwent a regional pilot in 2017. Subsequently, the initial pilot was evaluated, leading to program adjustments, including an increase in financial incentives for hospitals' participation.[30,31] Romania conducted a pilot study in 2020 to refine the methodology for hospital cost collection and analysis, aiming to enhance the DRG system.[39] Lithuania piloted DRGs for inpatient hospital care in selected hospitals in 2012.[40] Estonia also piloted bundled payment for stroke patients from 2020 to June 2021, before the full-scale implementation of the system in mid-2021.[28,41]

Four reform examples of factors associated with a **comprehensive approach and coordination of implementation systems** were mentioned in reforms in Croatia, Poland, and Estonia. In Estonia, the successful implementation of bundled payments for stroke patients in 2020/21 was facilitated by a well-coordinated combination of centralized and local implementation. This effective coordination contributed to the successful piloting and system-wide implementation.[41] Conversely, in Croatia, the fragmentation of care, both within hospitals and between primary and secondary care, impeded changes to the hospital payment model in 2015.[35] In Poland, changes to hospital payments under the 2017 hospital network reform were adversely affected by a lack of coordination with other ongoing reforms.[38]

Factors related to the **availability of funds/investment** were mentioned in three reform examples from Estonia and Hungary. For instance, in Estonia, it acted as a facilitator in the implementation of bundled payments for stroke patients (2020/21). The Estonian Health Insurance Fund (EHIF) launched an innovative service delivery fund through a two-part solicitation process. Initially, hospitals applied for 15,000 euro planning grants to develop demonstration concepts, form provider teams, and create detailed plans, including IT solutions. The second round involved competitive bidding for higher grants (up to 300 000 euros) to implement and refine proposed solutions. This grant system played a pivotal role in establishing infrastructure, facilitating collaboration, and measuring outcomes across the project team. In contrast, in Hungary, changing the method of setting the output volume limit (2011-2014, 2021) faced challenges resulting from the lack of sufficient funding to complete the process.

The presence of dedicated **IT systems/tools** was identified as another factor influencing the success of payment reforms, as reported in three reform examples from Estonia. For instance, the electronic billing data collection system, which enabled the monitoring of family physicians' activities without additional data collection, was a key facilitator in the implementation of the upgraded (mandatory) performance-based payment system in 2015/2016 (known as the Quality Bonus Scheme, QBS).[42]

Three reform examples from Poland and Estonia concerned issues stemming from the **regulatory framework and bureaucracy**. For example, in Poland, legal impediments prohibiting the establishment of new ambulatory clinics had a consequential impact on the implementation of hospital network reform in 2017, thus hindering hospitals from following the reform's financial incentives to move toward outpatient care.[38] Similarly, in Estonia, the lack of revision of the regulatory framework and the formalization of an expanded scope of PHC through amendments to the Law on Health Organization were identified as barriers to implementing new contracts aimed at supporting multidisciplinary PHC reforms in 2017.[43]

Training for healthcare providers facilitated payment reforms in Estonia, Poland, and Lithuania (as shown in three reform examples). A stakeholders' workshop was convened as part of the implementation of bundled payments for stroke patients in Estonia (2020/2021). This workshop played a pivotal role in fostering stakeholder engagement and contributed to the development and refinement of metrics.[44] In Poland, the Federation-led training initiative for healthcare

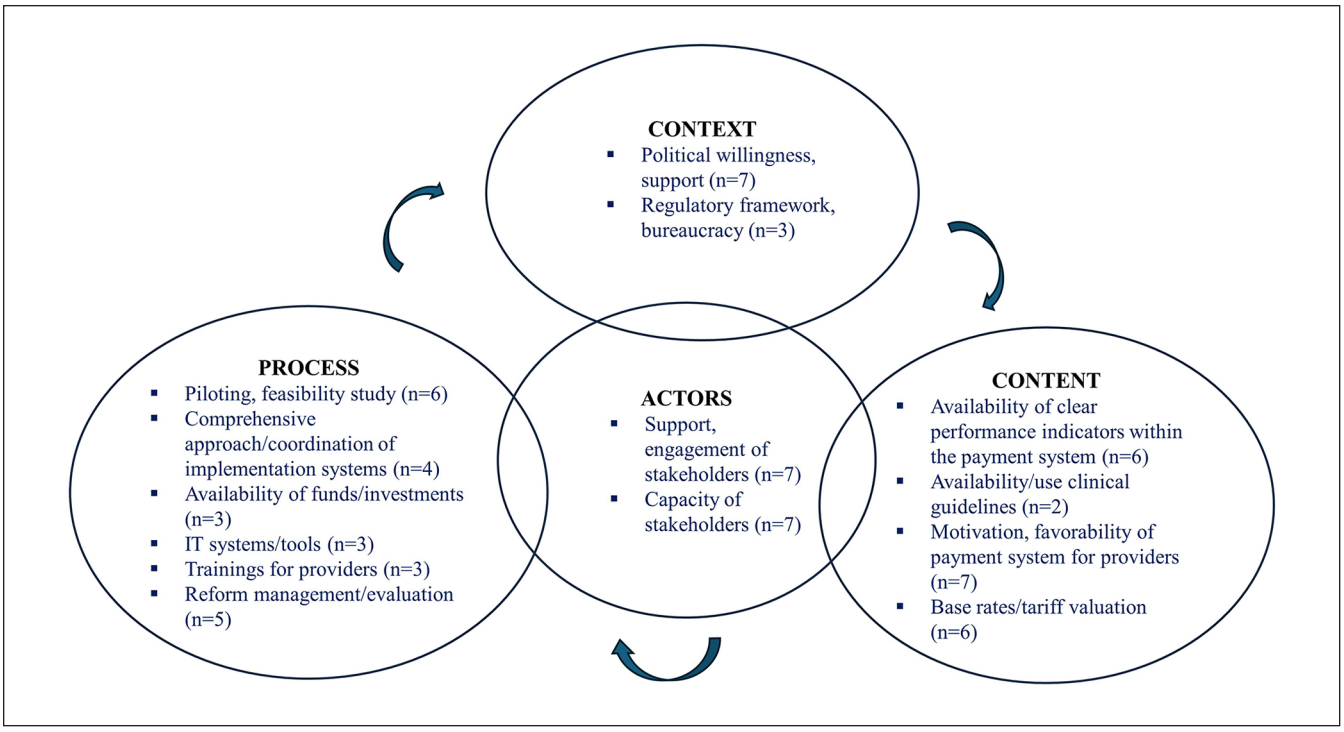

Figure 2. Health policy triangle of factors influencing health care provider payment reforms in CEE countries (n = number of reform examples in which a given factor was identified as either a barrier or a facilitator).

providers– the Zielona Góra Agreement – played a crucial role in facilitating the implementation of a coordinated care model with new services financed through the FFS method in 2022.[45] In Lithuania, the facilitation of training and provision of teaching materials for hospitals, organized by the National Health Insurance Fund (NHIF), played a key role in enabling the implementation of DRGs for inpatient hospital care in 2012.[34]

Determining base rates/tariff valuation represented another set of factors described in six reform examples from Czechia, Estonia, Latvia, and Poland. A key obstacle was the lack of standardized and reliable cost reporting and inadequate tariff valuation. For example, in Czechia, the introduction of IR DRG as the base payment mechanism in inpatient acute care hospitals (2012) was impacted by the disparity in base rates attributed to "individual base rates" (IZS) negotiated with the insurer.[27] In 2021, the issue was mitigated by replacing IR DRG with Czech refined DRG (CZ DRG) with newly recalculated DRG tariffs embedded in the latter. In Poland, the implementation of changes to hospital payment under the hospital network reform (2017) encountered insufficient valuation of tariffs to cover actual hospital costs.[38] Similarly, the successful implementation of the DRG payment system is hindered by the tariffs, which do not cover current costs in all cases, and hospitals must invest a lot of effort to justify their current expenses. In contrast, Estonian payment reforms from 2010 onward (encompassing all payment reforms) reported the existence of a dedicated costing methodology defined by regulations, which was employed for regular tariff adjustments.

Finally, five reform examples from Poland, Croatia, and Lithuania included factors arising from **reform management and evaluation**. For example, the implementation of DRGs for hospital inpatient care in Lithuania in 2012 faced challenges due to the absence of a robust evaluation of its implementation, outcomes, and impacts.[34] Similarly, in Croatia, the implementation of performance-based payments for primary/ambulatory care in 2013 lacked proper management and evaluation of the reform, with only limited financial controls in place.[35]

Deductive Thematic Analysis of Factors Influencing Payment Reforms

The 14 major factor themes identified were deductively categorized into 4 dimensions of the health policy triangle framework (Figure 2). While certain factors were interrelated and had characteristics that could correspond to more than one category, they were assigned to the most appropriate dimension based on the definitions of the health policy framework used (defined in Figure 1). The number of reform examples in which a given factor acted as either a barrier or a facilitator can serve as a proxy indicator of the factor's relevance in influencing the reform. Consequently, the reform process appears to be the most frequently affected dimension. There are six main theme factors with a total of 24

reform examples. The factors with the largest proportion of examples are reform piloting/feasibility study (n = 6), reform management/evaluation (n = 5), and comprehensive approach/coordination of implementation systems (n = 4). The reform content is represented by 21 reform examples under four main theme factors, where the three most common factors are motivation/favorability of the payment system for providers (n = 7), the availability of clear performance indicators within the payment system (n = 6), and the determination of base rates/tariff valuation (n = 6). Reform context and actors represent the least affected dimensions, with two main theme factors each (included in 10 and 14 examples, respectively). The most frequently listed factor for the former is political willingness or support (n = 7), while for the latter, both stakeholder support/engagement and stakeholder capacity were equally often mentioned (n = 7 each). Nevertheless, the "actors" dimension revealed the potential to influence all three remaining framework dimensions.

Discussion

The aim of this study was to identify factors that have influenced health care provider payment reforms conducted in nine CEE countries since 2010. The inductive analysis identified 14 major factors, which were then deductively classified into four categories of the "health policy triangle" framework: context (political willingness/support, regulatory framework, and bureaucracy), content (availability of clear performance indicators within the payment scheme, availability/use of clinical guidelines, motivation/favorability of the payment system for providers, determining base rates/tariff valuation), process (piloting/feasibility study, comprehensive approach/coordination of implementation systems, availability of funds/investments, IT systems/tools, training for providers, reform management/evaluation), and actors (support, engagement of stakeholders, capacity of stakeholders).

Our results are broadly consistent with current findings in the literature that highlight the diversity of factors influencing the success of provider payment reforms worldwide.[14,15] The deductive classification shows that most identified factors (and the reform examples where they were observed) were related to the reform process. This suggests that how the reform is implemented is crucial to its success. Within this dimension, conducting a pilot/feasibility study might be considered the most relevant factor for reform. This may be partly because it facilitates reform adjustments before widespread implementation. In general, research suggests that without an enabling reform process, efforts to reform health care provider payment systems may fail because they require systematic and coordinated actions, collaboration among agencies, and a strategic approach where various interventions align and reinforce one another.[12] However, previous studies indicate that policymakers tend to focus more on the content dimension of health reform rather than its process.[23,46-48] This might be because the reform content heavily relies on the presence or absence of evidence data, which is essential to inform and persuade decision-makers.[48,49] In our study, the factors associated with the content dimension were also influenced by the availability of evidence (eg, availability of performance indicators/clinical guidelines that can be used within the P4P programs or a robust methodology for the tariff valuation process).

The literature indicates that the reform context is influenced by a range of factors, such as changes in political regimes, ideologies, historical experiences, and cultural influences.[23,46,47,50] This is aligns with our results, particularly our finding that political willingness/support is the most relevant factor influencing reforms in CEE countries. This observation is consistent with previous studies indicating that healthcare provider payment initiatives that are not adapted to local political environments are less likely to be successful.[14,51] This is because these reforms typically require significant participation from politicians, political parties, and/or policymakers.[14,51,52] Further research shows that such reforms often involve political compromises, as they can alter financial flows within the system. They therefore require political negotiations that can weaken or hinder reform implementation.[52]

Regarding the actor dimension, we found that stakeholders play a vital role in provider payment reform as they impact multiple dimensions simultaneously. Stakeholder engagement might influence both the reform context (eg, when there is strong lobbying or public pressure for or against reform), content (eg, when they are involved in reform planning and payment scheme construction), and its process (eg, when providers participate in piloting prior to full-scale reform implementation or when their resource capacities are aligned with the reform content). This is consistent with previous studies highlighting the enormous importance of stakeholder engagement in payment reforms.[14,15,53] The major limitations of this study include potential bias from the subjective perspectives of country informants. To address this, we encouraged informants to provide references and sought to verify their input through additional data sources. We also assumed that the number of reform examples corresponded to their relevance, though this approach has limitations. Factors identified by experts may be subjective and vary by reform; a factor frequently noted in one country may be less relevant in others. Moreover, a factor with frequent occurrence but minimal impact might be less significant than one with rare occurrence but substantial effect. Future studies should aim to measure and rank the relevance and priority of these factors throughout various stages of reforms, from planning through implementation and evaluation. Research could focus on developing a framework to assess and rank factors affecting reform success. In our study, by combining both inductive and deductive analyses, we capture diverse perspectives on factors influencing health care provider payment reforms in CEE countries. We

enriched the framework that can be used to better plan future payment reforms with various elements that need to be taken into account. This can aid policymakers in designing, implementing, and evaluating payment reforms, and support researchers in conducting evaluations and comparative studies in this field.

Conclusion

Central and Eastern European countries share common patterns when implementing healthcare provider payment reforms, and the factors influencing these reforms are comparable. Our study shows that the reform process might be critical for success (eg, reform piloting/feasibility study, reform management/evaluation, and comprehensive approach/coordination of implementation systems), followed by its content (eg, motivation/favorability of the payment system for providers and availability of clear performance indicators within the payment system). However, dimensions with fewer factors, such as the reform context and actors, are also crucial. Therefore, focusing solely on one or a few aspects of reform might be insufficient. For a successful reform of healthcare provider payment systems, a comprehensive consideration of all reform dimensions with careful consideration of their interconnectedness is essential.

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Author Contributions

Study conception, design/methodology, formal analysis and interpretation of results: **CN, MT, KDJ**; Data collection: **CN**; Writing - original draft preparation: **CN, KDJ**; Validation and writing – review and editing: **MT, DB, AD, AD, AD, BE, PG, TH, PH, LM, TP, GSS, LS, CV, KDJ**; Supervision: **KDJ, MT** All authors reviewed the results and approved the final version of the manuscript.

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References

1. Warner JJ, Benjamin IJ, Churchwell K, et al. On behalf of the American Heart Association Advocacy Coordinating Committee. Advancing healthcare reform: the American Heart Association's 2020 statement of principles for adequate, accessible, and affordable health care: a presidential advisory from the American Heart Association. *Circulation*. 2020;141(10):E601-E614. doi:10.1161/CIR.0000000000000759
2. Korda H, Eldridge GN. Payment incentives and integrated care delivery: levers for health system reform and cost containment. *Inq J Heal Care Organ Provis Financ*. 2011;48(4):277-287. doi:10.5034/inquiryjrnl_48.04.01
3. Docteur E, Oxley H. Health-care systems: lessons from the reform experience. OECD Economics Department working papers, 2003.
4. Chtioui S. Health sector reform: issues and opportunities. *J US China Public Adm*. 2022;19(3):85-94. doi:10.17265/1548-6591/2022.03.001
5. Marušič D, Prevolnik Rupel V. Health care reforms. *Slov J Public Heal*. 2016;55(3):225-227. doi:10.1515/sjph-2016-0028
6. OECD. *Better Ways to Pay for Health Care*. (OECD, ed.) OECD Health Policy Studies, 2016.
7. Langenbrunner J. *Provider Payment Methods and Systems - A Short Overview*, 2010.
8. Ndayishimiye C, Tambor M, Behmane D, et al. Health care provider payment schemes across nine Central and Eastern European countries – a comparative analysis. *Prepr (Version 1) available Res Sq*. 1-15. Published online 2023. doi:10.21203/rs.3.rs-3732918/v1
9. Endrei D, Zemplényi A, Molics B, Ágoston I, Boncz I. The effect of performance-volume limit on the DRG based acute care hospital financing in Hungary. *Health Policy*. 2014;115(2-3):152-156. doi:10.1016/j.healthpol.2013.12.005
10. Bystrov V, Staszewska-Bystrova A, Rutkowski D, Hermanowski T. Effects of DRG-based hospital payment in Poland on treatment of patients with stroke. *Health Policy*. 2015;119(8):1119-1125. doi:10.1016/j.healthpol.2015.04.017
11. Buczak-Stec E, Goryński P, Nitsch-Osuch A, Kanecki K, Tyszko P. The impact of introducing a new hospital

financing system (DRGs) in Poland on hospitalisations for atherosclerosis: an interrupted time series analysis (2004–2012). *Health Policy*. 2017;121(11):1186-1193. doi:10.1016/j.healthpol.2017.09.009
12. Kalanj K, Marshall R, Karol K, Orešković S. The effects of diagnosis-related groups payment on efficiency of the hospital health care in Croatia. *Croat Med J*. 2021;62(6):561-568. doi:10.3325/cmj.2021.62.561
13. Sagan A, Kowalska-Bobko I, Bryndová L, Smatana M, Chaklosh I, Gaál P. What is being done to respond to the rise of chronic diseases and multi-morbidity in Czechia, Hungary, Poland, and Slovakia? *Front Public Health*. 2023;10:1-8. doi:10.3389/fpubh.2022.1082164
14. Ndayishimiye C, Tambor M, Dubas-Jakóbczyk K. Barriers and facilitators to health-care provider payment reform – a scoping literature review. *Risk Manag Healthc Policy*. 2023;16(16):1755-1779. doi:10.2147/RMHP.S420529. 2023.
15. Leao DLL, Cremers H-P, van Veghel D, Pavlova M, Hafkamp FJ, Groot WNJ. Facilitating and inhibiting factors in the design, implementation, and applicability of value-based payment models: a systematic literature review. *Med Care Res Rev*. 2023;80(5):467-483. doi:10.1177/10775587231160920
16. Health Policy. the Health Reform Monitor of Health Policy. Guide for authors. Published 2023. Accessed November 19, 2023. https://www.elsevier.com/__data/promis_misc/Health_Reform_Monitor_generic.pdf
17. European Observatory on Health Systems and Policies. Health system reviews (HiT series). Published 2023. Accessed May 25, 2023. https://eurohealthobservatory.who.int/publications/health-systems-reviews
18. European Observatory on Health Systems and Policies. Health Systems and Policy Monitor (HSPM). Published 2023. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor
19. European Observatory on Health Systems and Policies. Country health profiles - State of Health in the EU. Published 2023. Accessed May 25, 2023. https://eurohealthobservatory.who.int/publications/country-health-profiles
20. European Observatory on Health Systems and Policies. Health Systems and Policy Monitor (HSPM) Network members. Published 2023. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor/network
21. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101. doi:10.1191/1478088706qp063oa
22. Pettigrew A. *The Awakening Giant (Routledge Revivals): Continuity and Change in Imperial Chemical Industries*. (1st ed.). Routledge.
23. Walt G, Gilson L. Reforming the health sector in developing countries: the central role of policy analysis. *Health Policy Plan*. 1994;9(4):353-370. doi:10.1093/heapol/9.4.353
24. Stockdale R, Standing C. An interpretive approach to evaluating information systems: a content, context, process framework. *Eur J Oper Res*. 2006;173(3):1090-1102. doi:10.1016/j.ejor.2005.07.006
25. O'Brien GL, Sinnott S-J, Walshe V, Mulcahy M, Byrne S. Health policy triangle framework: narrative review of the recent literature. *Heal Policy Open*. 2020;1:100016. doi:10.1016/j.hpopen.2020.100016
26. Ministry of Health of the Republic of Lithuania. *Lietuvos Respublikos Sveikatos Apsaugos Ministro 2021 m. Gruodžio 17 d. Įsakymas Nr. V-2869* [Description of the Procedure for the Organization of the Provision of Primary Outpatient Personal Health Care Services and the Payment of the Costs of Services], 2021.
27. Kotherová Z, Caithamlová M, Nemec J, Dolejšová K. The use of diagnosis-related group-based reimbursement in the Czech Hospital care system. *Int J Environ Res Public Health*. 2021;18(10):5463. doi:10.3390/ijerph18105463
28. ICHOM. *Making VBHC Real – Experiences from Estonian Stroke Patient Pathway Pilot – presentation at the ICHOM* 2022 Conference, 2020.
29. Med Express. Lekarze rodzinni : Zainteresowanie opieką koordynowaną w POZ większe niż się spodziewano. *Health Care (Don Mills)*. Published online 2023.
30. Sagan A, Rogala M, Buszman PP, Kowalska-Bobko I. Improved coordination of care after acute myocardial infarction in Poland since 2017: promising early results. *Health Policy*. 2021;125(5):587-592. doi:10.1016/j.healthpol.2021.03.010
31. Basińska E. Program KOS-Zawał wymaga odświeżenia [Coordinate Care program for Stroke Patients – new adjustments needed]. Polityka Zdrowotna. Published 2023. Accessed November 19, 2023. https://politykazdrowotna.com/artykul/program-kos-zawal-wymaga/969414
32. Rohova M. Disputed budget of the NHIF for 2018. European Observatory on Health Systems and Policies: Bulgaria Updates 20 December 2017. Published 2017. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor/updates/hspm/bulgaria-2018/disputed-budget-of-the-nhif-for-2018
33. European Observatory on Health Systems and Policies. Romania Health Systems in Transition (HiT) profile. HSPM Country Updates 30 April 2020. Published 2019. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor/countries-hspm/hspm/romania-2016/principal-health-reforms/analysis-of-recent-reforms/
34. Couffinhal A, Jens W, Karolina SD. *OECD Reviews of Health Systems: Lithuania 2018. Assessment and Recommendations*, 2018.
35. European Observatory on Health Systems and Policies. Croatia health Systems in Transition (HiT) profile. HSPM Country Updates 20 March 2023. Published 2022. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor/countries-hspm/hspm/croatia-2022/principal-health-reforms/analysis-of-recent-reforms/
36. Džakula A, Vočanec D, Banadinović M, et al. *Croatia: Health System Summary*, 2022.
37. Lisowska K. System ochrony zdrowia. *Opieka koordynowana w POZ. Lekarze rodzinni za i przeciw*, March 2023.
38. Dubas-Jakóbczyk K, Kowalska-Bobko I, Sowada C. The 2017 reform of the hospital sector in Poland – the challenge of consistent design. *Health Policy*. 2019;123(6):538-543. doi:10.1016/j.healthpol.2019.03.013
39. Scintee S, Vladescu C. Improving Romania's DRGs system. HSPM Country Updates 30 April 2020. Published 2020. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor/updates/hspm/romania-2016/improving-romania-s-drg-system

40. European Observatory on Health Systems and Policies. Lithuania Health Systems in Transition (HiT) profile. HSPM Country Updates 25 June 2018. Published 2018. Accessed May 25, 2023. https://eurohealthobservatory.who.int/monitors/health-systems-monitor/countries-hspm/hspm/lithuania-2013/principal-health-reforms/analysis-of-recent-reforms/
41. Nordic Healthcare Group. NHG has been involved in a two-year pilot project to improve the patient pathway for stroke patients in Estonia. *Sev Interes Learn from Pilot*. Published online September 2022.
42. Forde I, Ploetz M, Dozol A, Postolovska I. *Revising Estonia ' s Quality Bonus Scheme in Primary Care*, 2018.
43. Habicht T, Kasekamp K, Webb E. 30 years of primary health care reforms in Estonia: the role of financial incentives to achieve a multidisciplinary primary health care system. *Health Policy*. 2023;130:104710. doi:10.1016/j.healthpol.2023.104710
44. Dozol A, Farley D, Forde I, Postolovska I. *Bundled Payment for Ischemic Acute Stroke: An Assessment of the Estonian Health Insurance Fund Pilot and Recommendations*, 2020.
45. Medexpress. Lekarze rodzinni: Zainteresowanie opieką koordynowaną w POZ większe niż się spodziewano [Family doctors: Interest in coordinated care in primary care is greater than expected]. Published online February 2023.
46. Reich M, Campos P. *A Guide to Applied Political Analysis For Health Reform*, 2020.
47. Torrez M. *The Health Policy Framework*. Department of Public Health Sciences, Karolinska Institutet, 2012.
48. Agyepong IA, Adjei S. Public social policy development and implementation: a case study of the Ghana National Health Insurance scheme. *Health Policy Plan*. 2008;23(2):150-160. doi:10.1093/heapol/czn002
49. World Health Organization. *Evidence, Policy, Impact: WHO Guide for Evidence-Informed Decision-Making*. World Health Organization, 2021.
50. Hernandez M, Gibb JK. Culture, behavior and health. *Evol Med Public Health*. 2020;2020(1):12-13. doi:10.1093/emph/eoz036
51. McClellan M, Mcclellan M. Reforming payments to healthcare providers: the key to slowing healthcare cost growth while improving quality? *J Econ Perspect*. 2011;25(2):69-92.
52. Atuoye KN, Vercillo S, Antabe R, Galaa SZ, Luginaah I. Financial sustainability versus access and quality in a challenged health system: an examination of the capitation policy debate in Ghana. *Health Policy Plan*. 2016;31(9):1240-1249. doi:10.1093/heapol/czw058
53. Cashin C, Ankhbayar B, Phuong H, et al. *Assessing Health Provider Payment Systems: A Practical Guide for Countries Working* T*oward Universal Health Coverage*. Joint Learning Network for Universal Health Coverage; 2015.