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D6.7 – Overview of the literature on incentives for hospitals

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Glossary of terms

Financing mechanism - a mechanism used to transfer funds from the purchaser of health care services to the providers.

Hospital - an institution that is built, staffed, and equipped for the diagnosis of disease; for the treatment, both medical and surgical, of the sick and the injured; and for their housing during this process. The modern hospital also often serves as a centre for investigation and teaching.

Financial incentives - incentives that are created by the payment methods and the responses of the providers to those incentives, which can have profound effects on the way health care resources are allocated and services are delivered.

Third-party payer - an organization, usually an insurance company, prepayment plan, or government agency, that pays for the health expenses incurred by the insured. The third party (to the agreement) is distinguished from the first party, which is the individual receiving the services, and the second party, which is the individual or institution providing the services.

1. Introduction

1.1. Background

This report is a result of Deliverable D6.7: an overview of the literature on incentives for hospitals. This is the first deliverable in Task 6.5: "Hospital payment, incentives, and performance." This Task aims to provide empirical evidence on the impact of financial incentives for hospitals that are in use in European countries and a study of the mechanisms that Task 6.4 studies theoretically. The analysis starts with an overview of incentive schemes currently in place in Europe, especially in those with DRG-like main payment mechanisms. The inclusion in this sample of a limited number of non-EU countries for comparative purposes will also be considered (eg. US, Australia). Our research approach aligns with Ellis's (1998)[1] perspective; if there exists an optimal payment system, it is likely to be a mixed system.

The purpose of this project is to identify financial interventions that aim to influence changes in inpatient health care provider behaviour. This report categorizes and summarizes preliminary findings of a systematic review of the literature, which can be useful for formulating guidelines for decision-makers.

1.2. Methodology

1.2.1 Assumptions of the systematic review

A systematic review is a type of review of the literature that aims to provide a comprehensive and bias-free synthesis of results from multiple studies in a single document. It requires a rigorous and transparent methodology. As a result, systematic reviews are considered the highest level (strongest) of scientific evidence. Systematic

[1] Randall P. Ellis, Creaming, skimping and dumping: provider competition on the intensive and extensive margins1This is a substantially rewritten version of a paper entitled `Creaming, Skimping, and Dumping: Provider Competition for Patients'.1,, Journal of Health Economics, Volume 17, Issue 5, 1998, Pages 537-555, ISSN 0167-6296, https://doi.org/10.1016/S0167-6296(97)00042-8.

reviews make it possible to synthesize and summarize the current state of knowledge regarding the specific area under review.

The creation of a systematic review is based on several steps: formulation of the research question, defining criteria for the inclusion and exclusion of studies, search for studies and then their selection, extraction of results, and quality assessment. The final step is to analyze and synthesize the results from the included studies. The synthesis of results, depending on the studies included in the review, can be qualitative or quantitative.

In addition to establishing the current state of knowledge, systematic reviews also allow us to identify which research areas have been saturated and where there is a significant gap. Systematic reviews, especially those that include a meta-analysis, are also an important component of evidence-based guidelines and decision-making[2]. They can be used for decision-making by representatives of many different disciplines, such as health care, public health, or policy[2].

Because of their many advantages, we decided to perform a systematic review of the literature. To identify articles regarding financial interventions that aimed to influence changes in provider behaviour we performed the overall search in a systematic way to minimize the potential bias. Specifically, the PRISMA-P (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were followed to design the search strategy[3].

Data Sources and Search Strategy

In the first stage of searching for scientific reports, we reviewed free electronic medical information databases: PubMed and Cochrane. The search strategy was developed by the research team.

[2] Lesley Uttley, Daniel S. Quintana, Paul Montgomery, Christopher Carroll, Matthew J. Page, Louise Falzon, Anthea Sutton, David Moher, The problems with systematic reviews: a living systematic review, Journal of Clinical Epidemiology, Volume 156, 2023, Pages 30-41, ISSN 0895-4356, https://doi.org/10.1016/j.jclinepi.2023.01.011.

[3] Eden J, Levit L, Berg A, Morton S. Finding What Works in Health Care: Standards for Systematic Reviews. Washington, DC: The National Academies Press; 2011.

Given the search objective to build the search terms for the identification of key financial and organizational aspects affecting health providers, we identified a list of keywords related to the intervention used, population, and results achieved. Moreover, different forms of the above words as well as relevant synonyms and subject heading terms appropriate for each database, were considered. The keywords needed for the search were combined with Boolean logical operators, which allowed us to create a search strategy that allows searching the most important medical information databases. Additionally, Medical Subject Headings (MeSH) were used to optimize search results. The keyword selection and exact keywords for each database can be found in Annex 3.
We also searched the following databases of reports: World Health Organisation, Health Observatory, Organisation for Economic Co-operation and Development, and World Bank.
The search was limited to literature published between 2013 and 2023 (the last 10 years).

Eligibility Criteria

Studies were included if the study population concerned hospitals and inpatient care. Studies were excluded if they focused on the primary or outpatient care population. We also excluded studies related to African or South American countries.

Studies were eligible if their focus was on payment mechanisms, methods of financing services, and the organisation of financing services in hospital care. However, studies that did not describe any of the interventions, referred to a general description of the mechanism of financing health services, or described non-financial interventions were not included.

In addition, studies had to evaluate the following effect (endpoint): change in the behaviour of healthcare providers, change in the quality of treatment, change in waiting time for services, change in numbers of patients, and change in spending funds by providers and payers.

All primary epidemiological observational study designs (i.e., cross-sectional, cohort, case-control studies), ecological studies, and experimental studies were eligible.

The exclusion criteria included articles classified as interviews, opinions, reviews, commentaries, editorials, and publications with a lack of access to full-text publications. Systematic reviews were excluded from the analysis, but we used this for an Introduction and Discussion. The literature search limits included articles published only in English.

The process of selecting and classifying data

After searching the databases, we removed duplicates in the found articles, and the found systematic reviews were additionally searched for studies included in the analysis.
The study selection process included two stages:

- Stage 1: Title and Abstract Screening:

In the first stage (verification of titles and abstracts), the selection was made independently by three teams with two analysts in each team: Barbara Więckowska and Katarzyna Byszek, Monika Raulinajtys-Grzybek and Anna Krawczyk, Agnieszka Siatka and Agnieszka Głąb. At this level, all reports deemed useful by at least one of the analysts were included in the next stage.

- Stage 2: Full-Text Review:

In the next stage - verification of full texts - the selection was made independently by analysts. At this stage, the pair of analysts independently decided to ultimately include the study in the analysis. Any disagreement about the eligibility of studies was resolved through discussion and consensus among all co-authors, as recommended in the literature. In case of discrepancies during the verification of the studies, the final position was established by consensus, or the assistance of a third analyst was used based on the full texts of the reports.

1.2.2 Assumptions for the analysis of results

A data extraction form was developed and pre-tested. Standardized tables were created a priori to extract the following data: author, year of publication, country of research (intervention), the study objective, study design type, period of the research, population, intervention/incentives, category of the financial mechanism, and the assessed final effect related to the financial mechanism and other important information regarding the financial mechanism.

Heterogeneity was observed across the included studies, primarily due to differences in study design, healthcare systems, and outcome measures. This heterogeneity necessitated a narrative synthesis rather than a meta-analysis.

We identified the categories (themes) relevant to the review objective.

First, in our study, we classified incentives (mainly payment mechanisms) using the OECD/WHO classification[4] and the Urban Institute classification[5], as shown in the table below.

Table 1 ***Classification of payment mechanisms used as incentives with brief characteristic.***

The main category of payment mechanism	Payment mechanism	Brief characteristic
Activity-Based Payment	Fee-for-service (FFS)	Fixed payment for each unit of service without regard to outcomes. It is typically paid retrospectively by billing for each service or patient contact.
	Per diem	Fixed amount per day for inpatient stay, which may vary by department, patient, clinical characteristics, or other factors.
	DRG	Payment is paid to hospitals per admission or discharge, whereby patients are classified (DRGs) based on diagnosis and procedures.
Budget	Global budget	A prospective lump-sum payment to a healthcare provider to cover aggregate costs over a specific period for a set of services independent of the actual volume providers.
Consolidated	Bundled payment	A single payment covers a bundle of distinct goods and services required for the treatment of a given medical condition based on clinical practice guidelines.
	Capitation	Prospective fixed lump-sum payment per person enrolled for care with a provider within a given period (typically one year) covering a defined set of services, independent of whether the services are provided.
Incremental	Pay-for-performance (P4P)	Payments to health care providers for meeting specific performance targets, such as process quality or efficiency measures, or penalties for poor outcomes, such as medical errors or avoidable readmissions.
	Shared savings	A form of payment in which a provider or a provider organization shares generated savings with the payer when actual spending

[4] Barber SL, Lorenzoni L, Ong P. Price setting and price regulation in health care: lessons for advancing Universal Health Coverage. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2019. Licence: CC BY-NC-SA 3.0 IGO.

[5] Berenson, Robert A. et al. "Payment Methods and Benefit Designs : How They Work and How They Work Together to Improve Health Care Payment Methods : How They Work." (2016).

The main category of payment mechanism	Payment mechanism	Brief characteristic
		for a defined population is less than a target amount. Under shared savings—also referred to as one-sided or upside-only—the recipient is not at risk for overspending.

Source: OECD 2019, Urban Institute 2016

Different categories of effects of financial mechanisms were identified in our systematic review, including impact on availability, quality, healthcare providers' finances, and impact on the spending of payers. The classification of the final effects, along with a brief characteristic of each, is presented in the table below.

Table 2 ***Classification of effects with brief characteristic***

General effect	Specific effect	Brief characteristic
Access	Casemix (patient/services)	A broad group of behaviours related to the quality of services provided, the condition of the treated patients, and the activity of health care providers in the context of providing health services, including but not limited to: - Change in use of low-value care (like low-value preoperative testing services among surgical inpatients over time)[6], - Performance volume limit (PVL) – upper-performance ceiling on annual activity, defined in DRG cost-weight[7], - Adjustment of output mix to maximize profits[8], - Combination of different DRG caseloads (termed the output mix)[9], - Performance of health care services[10], - Medical service utilization[11],

[6] Chien, Ling-Chen, et al. "Reducing Low Value Services in Surgical Inpatients in Taiwan: Does Diagnosis-Related Group Payment Work?" *Health Policy*, Oct. 2019, www.sciencedirect.com/science/article/pii/S0168851019302507, https://doi.org/10.1016/j.healthpol.2019.10.005. Accessed 29 Oct. 2019.

[7] Endrei, Dóra, et al. "The Effect of Performance-Volume Limit on the DRG Based Acute Care Hospital Financing in Hungary." *Health Policy*, vol. 115, no. 2-3, Apr. 2014, pp. 152–156, https://doi.org/10.1016/j.healthpol.2013.12.005. Accessed 30 Nov. 2023.

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[10] Kristensen, Søren Rud, et al. "Who to Pay for Performance? The Choice of Organisational Level for Hospital Performance Incentives." *The European Journal of Health Economics*, vol. 17, no. 4, 10 Apr. 2015, pp. 435–442, https://doi.org/10.1007/s10198-015-0690-0. Accessed 30 Nov. 2023.

[11] Dai, Tao, et al. "Effects of New Rural Cooperative Medical Scheme on Medical Service Utilization and Medical Expense Control of Inpatients." *Chinese Medical Journal*, vol. 129, no. 11, June 2016, pp. 1280–1284, https://doi.org/10.4103/0366-6999.182842. Accessed 30 Nov. 2023.

General effect	Specific effect	Brief characteristic
		- Decisions about the number of treatments provided in different diagnosis-related groups; connected with up-coding or "cherry-picking"[12], - Differences in performance of health care services (for example: operations)[13], - Patient characteristics[14].
	Number of patients	Total number of admitted/treated patients; hospital treatment utilization rate[15,16,17]).
	Number of services	Several provided services (e.g., consultations, visits, admissions, procedures)[18,19,20,21]. This outcome also includes

[12] Melberg, Hans Olav, et al. "Did Hospitals Respond to Changes in Weights of Diagnosis Related Groups in Norway between 2006 and 2013?" *Health Policy*, vol. 120, no. 9, Sept. 2016, pp. 992–1000, https://doi.org/10.1016/j.healthpol.2016.07.013. Accessed 30 Nov. 2023.

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[21] Ellegård, Lina Maria, and Anna Häger Glenngård. "Limited Consequences of a Transition from Activity-Based Financing to Budgeting: Four Reasons Why according to Swedish Hospital Managers." *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, vol. 56, Jan. 2019, p. 004695801983836, https://doi.org/10.1177/0046958019838367.

General effect	Specific effect	Brief characteristic
		the likelihood of providing certain services (e.g., innovative)[22].
	Waiting time	An indicator tracking waiting time measured from a specific point in time to the performance of a service, e.g. waiting time for surgery from the time of admission to the hospital not exceeding 48 hours. This indicator allows for comparisons of care between hospitals[23,24].
Quality	Survival/life expectancy	The impact of the intervention on mortality or life expectancy or quality-adjusted life-years[25,26,27,28]).
	Indicators of clinical quality of treatment	A broad range of indicators connected with quality of treatment, which includes inpatient quality indicators (IQIs) - standardized, evidence-based measures, constructed using detailed algorithms available on the Agency for Healthcare Research and Quality (AHRQ) website[29],

[22] Or, Zeynep, et al. "Impact of Competition versus Centralisation of Hospital Care on Process Quality: A Multilevel Analysis of Breast Cancer Surgery in France." *International Journal of Health Policy and Management*, 30 Sept. 2020, https://doi.org/10.34172/ijhpm.2020.179. Accessed 30 Nov. 2023.

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General effect	Specific effect	Brief characteristic
		indicators which refer to the clinical practice guidelines for diseases[30].
	Cure/Prevention	Broadly defined improvement of engagement in and the impact of quality-improvement initiatives, not only improvement in selected clinical outcomes[31,32].
	Adverse events	Hospital-acquired conditions like injury from falls, pressure ulcers, catheter-associated bloodstream infections[33],[34].
	Patient satisfaction	Patients' satisfaction with medical procedures and their results measured at different time points as well as patients' quality assessment of life[35,36]).

[30] Zhou, Wuping, et al. "Impact of Global Budget Combined with Pay-For-Performance on the Quality of Care in County Hospitals: A Difference-In-Differences Study Design with a Propensity-Score-Matched Control Group Using Data from Guizhou Province, China." *BMC Health Services Research*, vol. 21, no. 1, Dec. 2021, https://doi.org/10.1186/s12913-021-07338-8. Accessed 30 Nov. 2023.

[31] Moloo, Husein, et al. "Leveraging Financial Incentives and Behavioural Economics to Engage Physicians in Achieving Quality-Improvement Process Measures." *Canadian Journal of Surgery*, vol. 65, no. 2, 27 Apr. 2022, pp. E290–E295, www.ncbi.nlm.nih.gov/pmc/articles/PMC9188803/, https://doi.org/10.1503/cjs.017320. Accessed 30 Nov. 2023.

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General effect	Specific effect	Brief characteristic
Healthcare providers' finances	Upcoding	The intentional manipulation of the coding of patients by hospitals (for example the wrongful addition of more diagnoses) to receive higher reimbursement[37,38,39]).
	Revenues	The actual or estimated revenue of funds in connection with the delivery of medical services[40,41,42].
	Costs	This outcome measures the impact of interventions on costs, such as cost of care, cost containment/growth[43,44,45].
	Financial risk	Insurers and hospitals allocate financial risk in a changing contracting environment differently. Financial risk is associated with medical spending[46].

[37] Anthun, Kjartan Sarheim. "Predicting Diagnostic Coding in Hospitals: Individual Level Effects of Price Incentives." *International Journal of Health Economics and Management*, 6 Oct. 2021, https://doi.org/10.1007/s10754-021-09314-5.

[38] Chalkley, Martin, et al. "The Sensitivity of Hospital Coding to Prices: Evidence from Indonesia." *International Journal of Health Economics and Management*, vol. 22, no. 2, 7 Sept. 2021, pp. 147–162, https://doi.org/10.1007/s10754-021-09312-7. Accessed 30 Nov. 2023.

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General effect	Specific effect	Brief characteristic
Efficiency of spending funds	LOS (Length of stay)	Length of hospital stay, usually measured in days from admission to discharge; treatment duration[47,48,49].
	Readmission	A repeated hospitalization within a specified interval after the patient is discharged from the hospital. The time before which there should be no readmission to the hospital may depend on various factors, such as the disease entity[50,51,52,53]).
	Patient transfer	Unnecessary transfer of patients (for example critically ill) to other hospitals due to cost-saving issues or other reasons[54,55]).

[47] Zhang, Tao, et al. "Impacts of a New Episode-Based Payment Scheme on Volume, Expenditures, and Efficiency in Public Hospitals: A Quasi-Experimental Interrupted Time-Series Study in Jinhua, China." *Risk Management and Healthcare Policy*, vol. Volume 15, Sept. 2022, pp. 1659–1669, https://doi.org/10.2147/rmhp.s376516. Accessed 30 Nov. 2023.

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[52] Stone, Philip W, et al. "Does Pay-For-Performance Improve Patient Outcomes in Acute Exacerbation of COPD Admissions?" *Thorax*, 16 July 2021, p. thoraxjnl-2021-216880, https://doi.org/10.1136/thoraxjnl-2021-216880.

[53] Zogg, Cheryl K., et al. "Learning from England's Best Practice Tariff." *Annals of Surgery*, vol. 275, no. 3, 22 Jan. 2021, pp. 506–514, https://doi.org/10.1097/sla.0000000000004305.

[54] Huang, Pei-Fang, et al. "Characteristics and Related Factors of Emergency Department Visits, Readmission, and Hospital Transfers of Inpatients under a DRG-Based Payment System: A Nationwide Cohort Study." *PLOS ONE*, vol. 15, no. 12, 9 Dec. 2020, p. e0243373, https://doi.org/10.1371/journal.pone.0243373.

[55] Schumacher, Christoph. "Effectiveness of Hospital Transfer Payments under a Prospective Payment System: An Analysis of a Policy Change in New Zealand." *Health Economics*, vol. 31, no. 7, 5 Apr. 2022, pp. 1339–1346, https://doi.org/10.1002/hec.4508. Accessed 30 Nov. 2023.

General effect	Specific effect	Brief characteristic
Payer	Spendings	Medical insurance spending for inpatient care[56,57,58]).

Source: OECD 2019, Urban Institute 2016

[56] Zhang, Tao, et al. "Impacts of a New Episode-Based Payment Scheme on Volume, Expenditures, and Efficiency in Public Hospitals: A Quasi-Experimental Interrupted Time-Series Study in Jinhua, China." *Risk Management and Healthcare Policy*, vol. Volume 15, Sept. 2022, pp. 1659–1669, https://doi.org/10.2147/rmhp.s376516. Accessed 30 Nov. 2023.

[57] Brown, R, et al. "Features of Health Care Interventions Associated with Reduced Services and Spending." *The American Journal of Managed Care*, vol. 27, no. 11, 15 Nov. 2021, pp. e378–e385, https://doi.org/10.37765/ajmc.2021.88781.

[58] Wilcock, Andrew D., et al. "Hospital Responses to Incentives in Episode-Based Payment for Joint Surgery." *JAMA Internal Medicine*, 17 May 2021, https://doi.org/10.1001/jamainternmed.2021.1897. Accessed 30 Nov. 2023.

2. Results

2.1 Analysis by country

The systematic review results, categorized by country, revealed descriptions of twenty-four countries within the articles included in the analysis, with eleven of them being EU countries. Basic information about the healthcare system and hospital sector can be found in Annex 1. It is noteworthy that the primary method of hospital financing in each country may not necessarily align with the financing system scrutinized in the articles. The articles were classified based on the introduced financing models, often implemented selectively or as part of a pilot program, within the analyzed healthcare systems.

Table 3 *Classification of payment mechanisms used as incentives with brief characteristic.*

Country	Type of main financing system of the hospital sector
USA	Mixed (DRG, global budget)
Canada	Global budget (some limited adoption of activity-based payments for hospitals in some provinces)[59]
China	the recent development of provider payment reforms in China, focusing particularly on the ongoing pilot programmes, namely diagnosis-related groups (DRGs) and diagnosis-intervention packets (DIP), that have been piloted in a dual-track fashion since 2020.[60]
Denmark	DRG[61]
France	DRG[62]
Germany	DRG
Hungary	DRG

[59] Marchildon G.P., Allin S., Merkur S. Canada: Health system review. Health Systems in Transition, 2020; 22(3): i–194.

[60] Alex Jingwei He, Scaling-up through piloting: dual-track provider payment reforms in China's health system, Health Policy and Planning, Volume 38, Issue 2, March 2023, Pages 218–227,

[61] https://sundhedsdatastyrelsen.dk/da/english/health_finance

[62] Or Z, Gandré C, Seppänen AV, Hernández-Quevedo C, Webb E, Michel M, Chevreul K. France: Health system review. Health Systems in Transition, 2023; 25(3): i–241

Country	Type of main financing system of the hospital sector
Indonesia	Payments to primary care providers are through capitations, and to hospital providers through DRG episodes of service payments (INA-CBGs)[63]
Iran	A global payment system covers 60 common surgical operations by the average cost for each specified surgery case in Iran.[64]
Israel	Hospitals are financed through 50 differential daily fees and activity-based payments based on procedure-related groups. The government publishes maximum-price lists for inpatient care and sets hospital revenue caps to contain hospitals' income increases.[65]
Italy	DRG[66]
Japan	Japan utilizes a case-mix system called the diagnosis-procedure combination (DPC) for inpatient care to pay healthcare providers. Diagnosis-related groups (DRG) are calculated based on disease category, while DPC is calculated based on per-hospital admission.[67]
Mexico	Funding for health services for Mexicans not protected by a social insurance programme is mostly through the MoH and state governments and was channeled directly to federal hospitals and state providers through SPSS, which outlined a set of laws and rules to establish a mix of historical-based funding, capitation, and activity-based funding. Federal hospitals are funded through historical budgets and case-based reimbursement.[68]
Netherlands	DRG[69]
New Zealand	Publicly owned hospitals provide comprehensive free-of-charge health services. DHBs were funded via a global budget, using a series of complex weighted population-based funding formulas that vary across services (Penno et al., 2012). Many individual hospital

[63] Mahendradhata Y. Trisnantoro L. Listyadewi S. Soewondo P. Marthias T.
The republic of Indonesia health system review, Health systems in transition Vol-7 No.1.
WHO Regional Office for South-East Asia, 2017

[64] Behzadi A, Bayati M, Bashzar S, Jaafaripooyan E. The Effect of Prospective Payment Systems on Health Care Providers' Behaviour: A Case Study of Global Surgeries Payment System in Iran. Med J Islam Repub Iran. 2022 Apr 9;36:32. doi: 10.47176/mjiri.36.32. PMID: 36128284; PMCID: PMC9448475.

[65] Rosen B, Waitzberg R, Merkur S. Israel: health system review. Health Systems in Transition, 2015; 17(6):1–212.

[66] de Belvis AG, Meregaglia M, Morsella A, Adduci A, Perilli A, Cascini F, Solipaca A, Fattore G, Ricciardi W, Maresso A, Scarpetti G. Italy: Health system review. Health Systems in Transition, 2022; 24(4): pp.i–203.

[67] Sakamoto H, Rahman M, Nomura S, Okamoto E, Koike S, Yasunaga H et al. Japan Health System Review. Vol. 8 No. 1. New Delhi: World Health Organization, Regional Office for SouthEast Asia, 2018.

[68] González Block MA, Reyes Morales H, Cahuana Hurtado L, Balandrán A, Méndez E, Allin S. Mexico: Health system review. Health Systems in Transition, 2020; 22(2): i–222.

[69] Kroneman M, Boerma W, van den Berg M, Groenewegen P, de Jong J, van Ginneken E (2016). The Netherlands: health system review. Health Systems in Transition, 2016; 18(2):1–239.

Country	Type of main financing system of the hospital sector
	services were paid using a case- and complexity-based diagnostic-related group approach.[70]
Norway	financed, in equal parts, through block grants and case-based financing from the central government to the RHAs.[71]
Poland	DRG[72]
Portugal	Public hospitals are funded through global budgets, but with an increasing role of activity-based funding using diagnosis-related groups, and private insurers and health subsystems pay providers.[73]
South Korea	DRG[74]
Sweden	Global budget[75]
Switzerland	Fee-for-service is the dominant method of provider payment in Switzerland. The tariffs for ambulatory care and, since 2012, also for acute inpatient care, are based on national frameworks developed jointly by associations of insurers and providers. For inpatient rehabilitation and inpatient psychiatry, work on developing national tariff frameworks is ongoing.[76]
Taiwan	Hospitals in Taiwan derive revenues from a global hospital budget set by the NHIA; this system differs from those of many other countries, in which hospitals receive hospital-specific budgets. The global hospital budget is divided into six regional budgets, each administered by one of six NHIA regional offices. Under this arrangement, competition for revenues is intense among hospitals within each region. Hospital business strategies include mergers, to expand market share, and direct-to-consumer advertising.

[70] Cumming J. New Zealand Health System Review. New Delhi: World Health Organization, Regional Office for South-East Asia; 2022.

[71] Saunes I S, Karanikolos M, Sagan A. Norway: Health system review. Health systems in Transition, 2020; 22(1): i–163.

[72] Sowada C, Sagan A, Kowalska-Bobko I, Badora-Musiał K, Bochenek T, Domagała A, Dubas-Jakóbczyk K, Kocot E, Mrożek-Gąsiorowska M, Sitko S, Szetela A, Szetela P, Tambor M, Więckowska B, Zabdyr-Jamróz M, van Ginneken E. Poland: Health system review. Health Systems in Transition, 2019; 21(1): 1–235

[73] Simões J, Augusto GF, Fronteira I, Hernández-Quevedo C. Portugal: Health system review. Health Systems in Transition, 2017; 19(2):1–184.

[74] Jeon, Myung Jae, et al. "The Effect of Diagnosis-Related Group Payment System on the Quality of Medical Care for Pelvic Organ Prolapse in Korean Tertiary Hospitals." *PLOS ONE*, vol. 14, no. 8, 20 Aug. 2019, p. e0220895, https://doi.org/10.1371/journal.pone.0220895. Accessed 22 Aug. 2021.

[75] Janlöv N, Blume S, Glenngård AH, Hanspers K, Anell A, Merkur S. Sweden: Health system review. Health Systems in Transition, 2023; 25(4): i–198

[76] De Pietro C, Camenzind P, Sturny I, Crivelli L, Edwards-Garavoglia S, Spranger A, Wittenbecher F, Quentin W. Switzerland: Health system review. Health Systems in Transition, 2015; 17(4):1–288.

Country	Type of main financing system of the hospital sector
	Hospitals are paid fee-for-service according to uniform national fee schedules and diagnosis-related groups (DRGs) set by the NHIA with input from stakeholders. As of 2016, there were 401 DRGs, accounting for 22 percent of all hospital payments. The uptake of DRGs has been slow, owing to provider resistance.[77]
Turkey	In Turkey, a mixed reimbursement scheme, based on the diagnosis-related group (DRG) model and global budget, was gradually introduced as part of the country's 2003 healthcare reforms.[78]
UK	DRG[79]

The individual countries, along with the number of publications from them, are shown in the figure below.

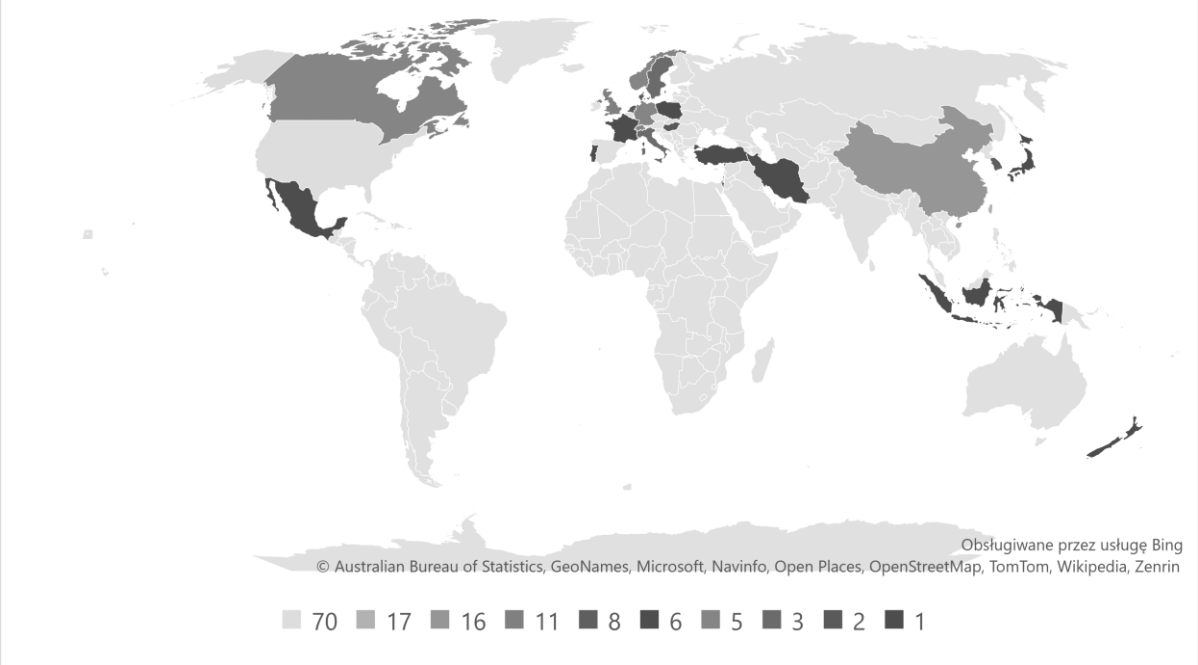


Figure 1. Number of publications by country of origin.

Source: own study.

[77] https://www.commonwealthfund.org/international-health-policy-center/countries/taiwan

[78] Aktas P. Physician perspectives on the implications of the diagnosis-related groups for medical practice in Turkey: A qualitative study. Int J Health Plann Manage. 2022 May;37(3):1769-1780

[79] Anderson M, Pitchforth E, Edwards N, Alderwick H, McGuire A, Mossialos E. The United Kingdom: Health system review. Health Systems in Transition, 2022; 24(1): i–192.

The largest number of publications addressing the impact of financial incentives on provider behaviour is for countries such as the United States, China, Taiwan, the United Kingdom, and South Korea. Publications about these five countries correspond to 71% of all publications included in the systematic review. The number of publications on the subject under study in the remaining nineteen countries does not exceed six over the period 2013-2023. For eight countries, only one article was published over the years under review. The number of publications published in the five countries with the highest number of publications by year is shown in the chart below. Detailed data for all countries from which publications included in the systematic review originated can be found in Annex 4.

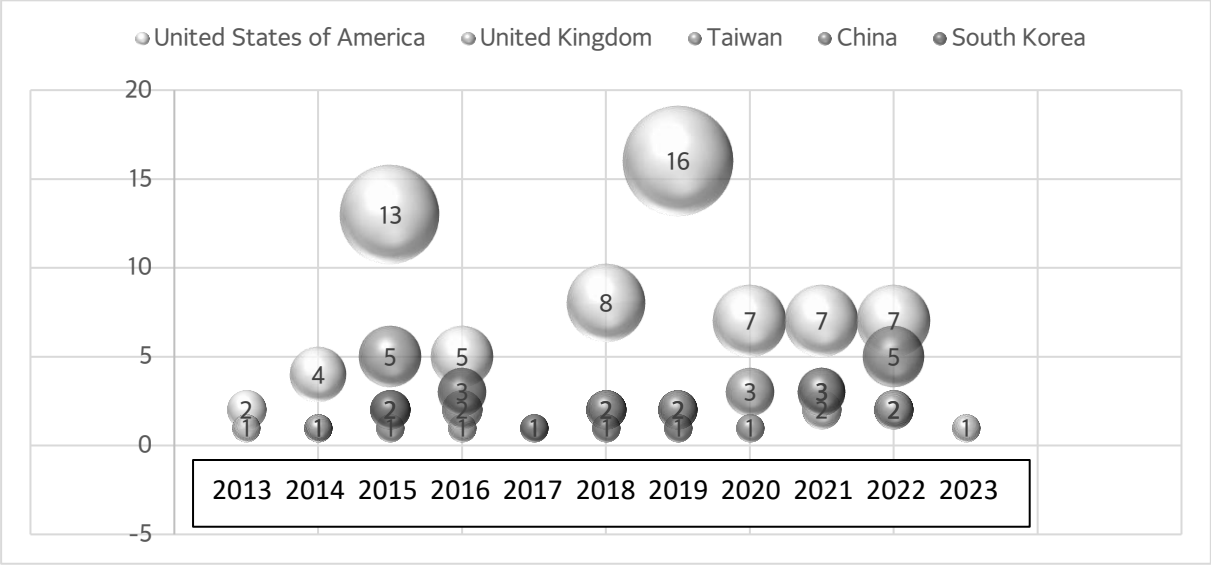
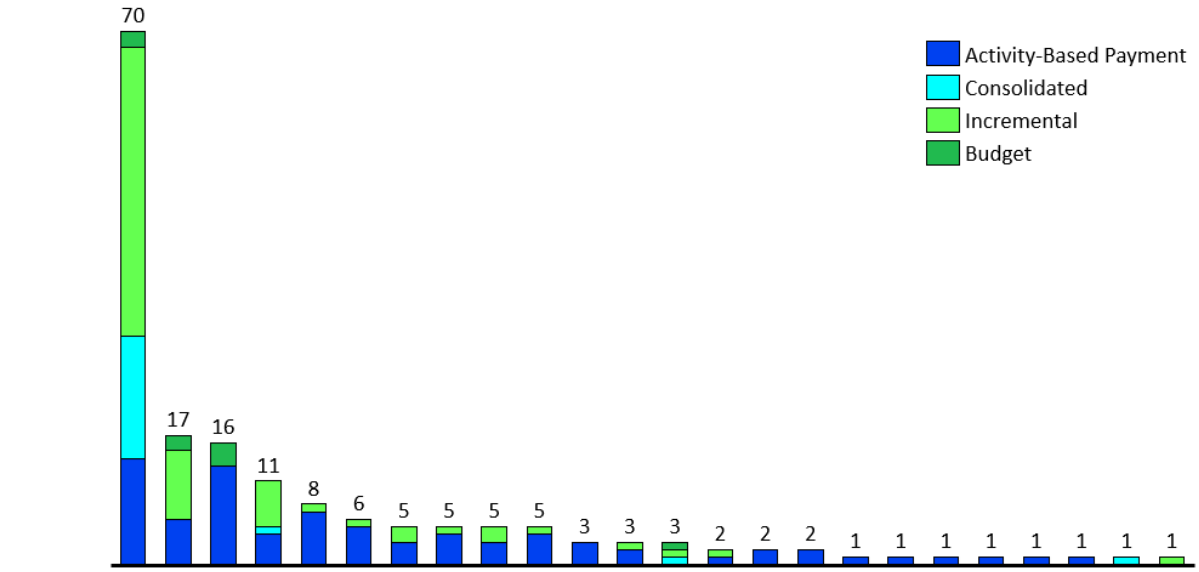


Figure 2. Number of publications by country of origin and year – 5 selected countries with the highest number of publications.

Source: own study.

2.2 Analysis by country and financing mechanisms



	US	TW	CN	GB	KR	FR	CA	DE	NO	CH	IL	IT	SE	DK	HU	NL	ID	IR	JP	MX	NZ	PL	PT	TR
Activity-Based Payment	14	6	13	4	7	5	3	4	5	4	3	2	0	1	2	2	1	1	1	1	1	1	0	0
Consolidated	16	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Incremental	38	9	0	6	1	1	2	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	1
Budget	2	2	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

Figure 3. Number of publications by country of origin and financing mechanism (main category).

Source: own study.

Figure 3 shows in which countries particular financing models dominated. The largest number of publications in total concerned the United States (70 publications). Publications on incremental models dominated among them (38 publications, 54%). The consolidated and Activity-Based Payment models were comparable at a similar level (16 and 14 publications, respectively).

The next countries with the highest number of publications are Taiwan (17), China (16), and the United Kingdom (11). In other countries, the total number of publications in the entire analyzed period did not exceed ten. The structure of publications and the dominant category of financing models are characteristic. In Taiwan and the UK, as in the US, publications on incremental models dominated. In all other countries, publications on Activity-Based Payment were the most common. Except for the United States, no country has seen greater popularity of publications on consolidated models - although, in the case of Portugal, the only publication in the database concerns this model.

Table 4 ***Number of countries by financing mechanism (main category)***

Financing mechanism - main category (number of countries)	Countries
Activity Based Payment (21)	Canada, China, Denmark, France, Germany, Hungary, Indonesia, Iran, Israel, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Poland, South Korea, Switzerland, Taiwan, UK, US
Consolidated (4)	Portugal, Sweden, the UK, the US
Incremental (12)	Canada, Denmark, France, Germany, Italy, South Korea, Sweden, Switzerland, Taiwan, Turkey, UK, US
Budget (4)	China, Sweden, Taiwan, US

Source: own study.

Table 4 shows the popularity of publications on individual financing models measured by the number of countries in which research on financial incentives was conducted under a given financing model. Publications examining the incentives resulting from Activity-Based Payment were published in the largest number of countries – 21, located on four continents - North America, Europe, Asia Australia, and Oceania. Publications on incremental models were published in twelve countries, including North American and European countries, as well as two Asian countries. Studies on consolidated models and the budget were published in four countries each. Publications that explored consolidated models were published in the United States and three European countries, while the studies that focused on the budget impact were published in the United States, two Asian countries, and Sweden.

Table 5 ***Number of publications from countries by financing mechanism (main category) and year***

Year	Activity-based Payment	Consolidated	Incremental	Budget
2013	Norway (1) UK (1) US (1)	-	Italy (1) US (1)	-
2014	Hungary (1)	Portugal (1)	Switzerland (1) Taiwan (1) UK (1) US (4)	-
2015	China (1) France (1) Germany (1)	UK (1) US (1)	Taiwan (1) Turkey (1) US (8)	Taiwan (1)

	Poland (1) South Korea (2) Switzerland (1) Taiwan (3) UK (1) US (4)			
2016	Canada (1) China (1) Germany (1) Norway (1) South Korea (3)	US (2)	Canada (1) Denmark (1) Taiwan (1) US (3)	China (1)
2017	Italy (1) Netherlands (1) Norway (1) Switzerland (1) US (1)	-	France (1) South Korea (1)	-
2018	Canada (1) China (2) France (1) South Korea (1) Taiwan (1) US (1)	US (3)	Germany (1) Taiwan (1) US (4)	-
2019	China (1) Israel (1) Mexico (1) South Korea (1) US (2)	US (5)	UK (2) US (7)	China (1) Sweden (1) US (2)
2020	China (1) Switzerland (1) Taiwan (2) US (2)	US (1)	Sweden (1) US (4)	Taiwan (1)
2021	Canada (1) China (2) France (1) Germany (1) Israel (1) Italy (1) Japan (1) Norway (1)	US (2)	Taiwan (3) UK (1) US (4)	China (1)

	Switzerland (1) UK (1) US (1)			
2022	China (5) Denmark (1) France (2) Germany (1) Hungary (1) Indonesia (1) Iran (1) Israel (1) Netherlands (1) New Zealand (1) Norway (1) US (2)	Sweden (1) US (2)	Canada (1) Taiwan (2) UK (2) US (3)	-
2023	UK (1)	-	-	-

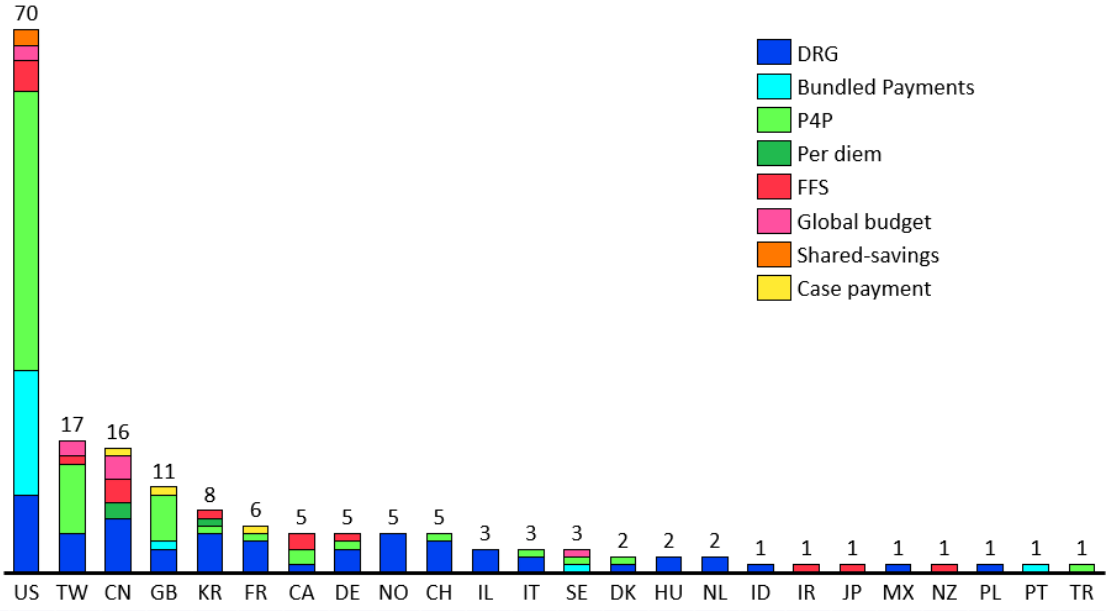
Table 5 presents the distribution of publications over time, broken down into main categories and by country. Some fluctuation over time can be observed in the number of publications in total, as well as by category. The popularity of the Activity-Based Payment model can be observed in 2015 (9 countries, a total of 15 publications), and then in 2021 and 2022 (11 and 12 countries and 12 and 18 publications, respectively). The countries with the highest number of publications in this category are the United States (14 publications), China (13 publications), and South Korea (7 publications). In the United States, most articles appeared in 2015 (4 publications). Also in Korea, the period 2015-2016 is the period of the greatest popularity of Activity-Based Payment models (5 publications in total). In China, the popularity of this solution, measured by the number of published articles, appeared later - in 2022 (5 publications).

Consolidated models gained popularity in the United States after 2018, and in the following years, a total of 13 publications were published in the country presenting incentives resulting from this model. In other countries, this concept was presented sporadically.

The popularity of incremental models over time, measured by the number of countries, was similar (between two and four countries per year), and the total number of publications was greater in those years in which publications appeared in the United States - most in 2015 (8 publications), 2019 (7 publications) and in 2014, 2018, 2020 and 2021 (4 publications each).

This country dominated in the total number of publications in this category (38 publications). In Taiwan, the second largest publication in terms of the number of publications (9 in total), articles presenting incentives resulting from the incremental model were presented in the period 2014-2022 with an even frequency.

In the case of other countries, the smaller total number of publications does not allow for drawing information about trends in the popularity of individual models.

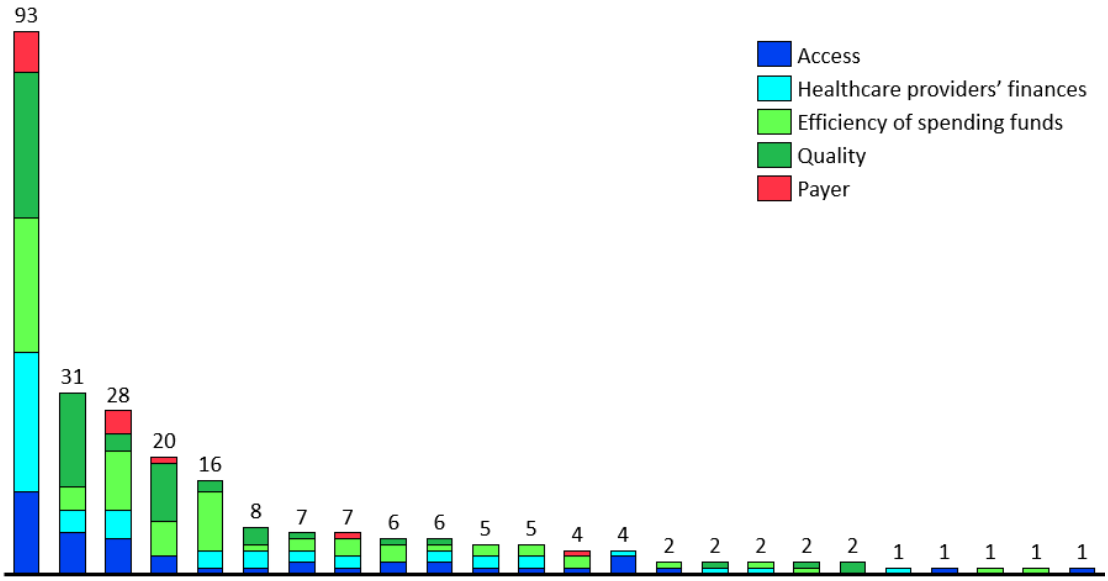


	US	TW	CN	GB	KR	FR	CA	DE	NO	CH	IL	IT	SE	DK	HU	NL	ID	IR	JP	MX	NZ	PL	PT	TR
DRG	10	5	7	3	5	4	1	3	5	4	3	2	0	1	2	2	1	0	0	1	0	1	0	0
Bundled Payments	16	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
P4P	36	9	0	6	1	1	2	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	1
Per diem	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FFS	4	1	3	0	1	0	2	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
Global budget	2	2	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Shared-savings	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Case payment	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 4. Number of publications by country of origin and financing mechanism.

Source: own study.

2.3 Analysis by country and effects



	US	TW	CN	GB	KR	DE	SE	CH	CA	FR	IL	NO	HU	IT	DK	JP	NL	PL	PT	ID	IR	MX	NZ	TR
Access	14	7	6	3	1	1	2	1	2	2	1	1	1	3	1	0	0	0	0	0	1	0	0	1
Healthcare providers' finances	24	4	5	0	3	3	2	2	0	2	2	2	0	1	0	1	1	0	0	1	0	0	0	0
Efficiency of spending funds	23	4	10	6	10	1	2	3	3	1	2	2	2	0	1	0	1	1	0	0	0	1	1	0
Quality	25	16	3	10	2	3	1	0	1	1	0	0	0	0	0	1	0	1	2	0	0	0	0	0
Payer	7	0	4	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

Figure 5. Number of publications by the country of origin and effect (main category).

Source: own study.

Figure 5 presents which effects were most frequently studied in individual countries. Several studies described the impact of financial incentives on more than one effect, which is why the total number of results in this part is larger than in the description of the financing tools themselves.

In the United States, the country with the most publications, studies on healthcare providers' finances, efficiency of spending funds, and quality appeared with similar frequency. It was rarer to find studies on accessibility, and least often on the payer. Interestingly, among other countries, there is diversity in the most frequently researched areas, and it is difficult to identify visible trends. Research from Taiwan is focused on the impact of incentives on quality and - less often - on availability. In China, the most popular research was on the efficiency of spending funds, while all other areas appeared with almost the same frequency in research. In studies from the UK, the most frequent analyses included the impact on the area of quality and, less frequently, efficiency, while the issues of healthcare providers' finances and payers were unresearched. In South Korea, the most frequently published

studies concerned the efficiency of spending funds, far exceeding the popularity of all other categories.

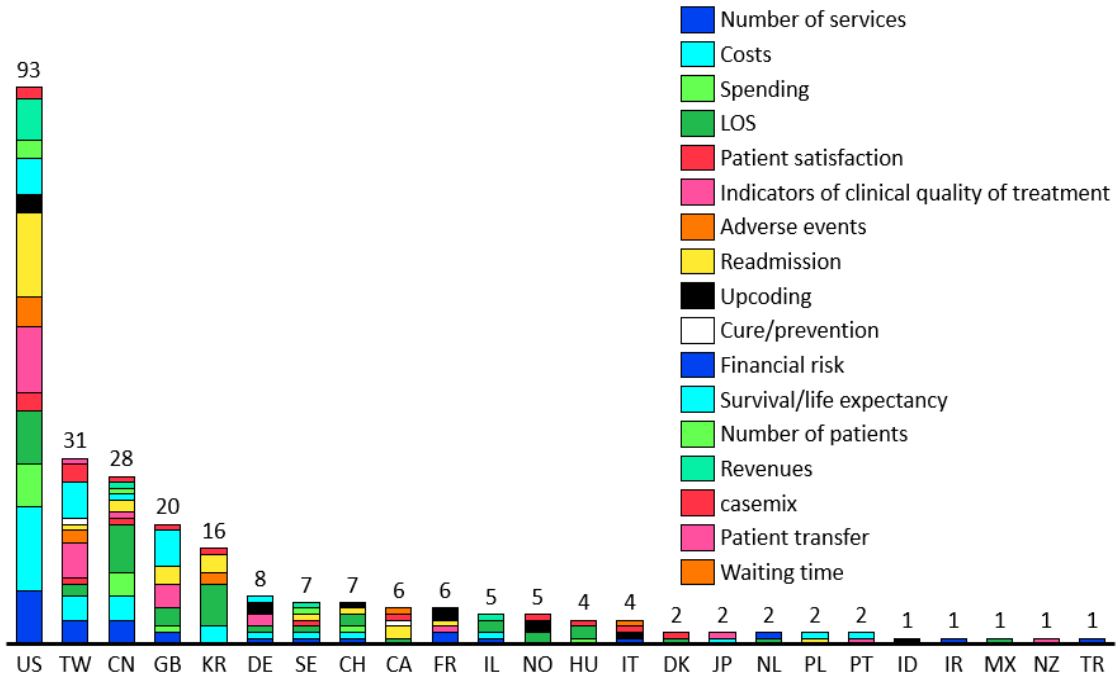
In other countries, the impact on availability, healthcare providers' finances, and efficiency of spending funds was more often described than the impact on quality and payer. However, there were exceptions - for example, in Portugal, the research concerned only the impact on quality and two parameters were examined.

Table 6 ***Number of countries by effects (main category)***

Effects - main category (number of countries)	Countries
Access (17)	Canada, China, Denmark, France, Germany, Hungary, Iran, Israel, Italy, Norway, South Korea, Sweden, Switzerland, Taiwan, Turkey, the UK, the US
Healthcare providers' finances (14)	China, France, Germany, Indonesia, Israel, Italy, Japan, Netherlands, Norway, South Korea, Sweden, Switzerland, Taiwan, the US
Efficiency of spending funds (18)	Canada, China, Denmark, France, Germany, Hungary, Israel, Mexico, Netherlands, New Zealand, Norway, Poland, South Korea, Sweden, Switzerland, Taiwan, the UK, the US
Quality (12)	Canada, China, France, Germany, Japan, Poland, Portugal, South Korea, Sweden, Taiwan, UK, US
Payer (5)	China, Hungary, Switzerland, the UK, the US

Source: own study.

Table 6 shows the popularity of research in specific areas measured by the number of countries in which research was conducted. Research analysing the impact of incentives on the efficiency of spending funds was conducted in 18 countries from four continents - North America, Europe, Asia, Australia, and Oceania. Accessibility research, although not dominant in any country, was conducted in 17 countries on three continents - North America, Europe, and Asia. In the same area, in fourteen countries, research was conducted on healthcare providers' finances, and in twelve countries on quality. The least common were payer studies conducted in the United States, China, and three European countries.



	US	TW	CN	GB	KR	DE	SE	CH	CA	FR	IL	NO	HU	IT	DK	JP	NL	PL	PT	ID	IR	MX	NZ	TR
Number of services	9	4	4	2	0	1	1	1	0	2	1	0	0	1	0	0	0	0	0	0	1	0	0	1
Costs	14	4	4	0	3	1	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Spending	7	0	4	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
LOS	9	2	8	3	7	1	1	2	1	0	2	2	2	0	1	0	1	0	0	0	0	1	0	0
Patient satisfaction	3	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indicators of clinical quality of treatment	11	6	1	4	0	2	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Adverse events	5	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Readmission	14	1	2	3	3	0	1	1	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Upcoding	3	0	0	0	0	2	0	1	0	2	0	2	0	1	0	0	0	0	0	1	0	0	0	0
Cure/ prevention	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financial risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Survival/life expectancy	6	6	1	6	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Number of patients	3	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenues	7	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Casemix	2	3	1	1	1	0	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
Patient transfer	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Waiting time	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Figure 6. Number of publications by country of origin and effect.

Source: own study.

Table 6 *Number of publications from countries by effects (main category) and year*

Year	Access	Healthcare providers' finances	Efficiency of spending funds	Quality	Payer
2013	Italy (1)	US (1)	Norway (1)	UK (2) US (1)	-
2014	Hungary (1)	-	Hungary (1) Switzerland (2) UK (1)	Portugal (2) Taiwan (1) UK (2) US (5)	Hungary (1)
2015	China (1) Taiwan (3) Turkey (1) UK (2) US (1)	France (1) Germany (1) South Korea (1) Switzerland (1) Taiwan (2) US (6)	China (1) Poland (1) South Korea (1) Taiwan (1) US (2)	Poland (1) South Korea (2) Taiwan (4) UK (1) US (6)	UK (1) US (2)
2016	Canada (1) China (1) Denmark (1) Norway (1) US (1)	Germany (1) South Korea (1)	Canada (1) South Korea (4) US (2)	Germany (2) Taiwan (2) US (1)	China (2) US (1)
2017	Italy (1)	Italy (1) Norway (1) South Korea (1) Switzerland (1) US (1)	Netherlands (1) South Korea (2)	France (1)	-
2018	Canada (1) South Korea (1) US (4)	China (1) Taiwan (1)	China (2) France (1) Germany (1) South Korea (2) Taiwan (1) US (4)	Germany (1) Taiwan (2) US (2)	US (1)
2019	Sweden (1) US (3)	China (1) Sweden (1) US (7)	China (1) Israel (1) Mexico (1) South Korea (1) UK (2) US (8)	China (2) UK (1) US (1)	US (1)

Year	Access	Healthcare providers' finances	Efficiency of spending funds	Quality	Payer
2020	Sweden (1) Switzerland (1) Taiwan (3) US (1)	Sweden (1) Taiwan (1) US (4)	China (1) Taiwan (2) US (3)	US (2)	Switzerland (1)
2021	China (2) Israel (1) Italy (1) US (3)	China (1) France (1) Germany (1) Israel (2) Japan (1) US (2)	Canada (1) China (2) Norway (1) Switzerland (1) US (1)	China (1) Japan (1) Taiwan (5) UK (2) US (4)	US (2)
2022	China (2) France (2) Germany (1) Iran (1) Taiwan (1) US (1)	China (2) Indonesia (1) Netherlands (1) Norway (1) US (3)	China (3) Denmark (1) Hungary (1) Israel (1) New Zealand (1) Sweden (2) UK (3) US (3)	Canada (1) Sweden (1) Taiwan (2) UK (2) US (3)	China (2)
2023	UK (1)	-	-	-	-

Table 7 presents the distribution of studies over time, by area and by country. The number of studies has changed over time and was greater in some years than in others - 2015 and 2021-2022 are the periods with a larger number of studies. The number of publications on accessibility was distributed according to a similar pattern - there was an increase in interest in 2015-2016 and then after 2020. At the same time, in the United States, the country with the largest number of studies, a greater number of publications related to accessibility impact assessment appeared after 2018. Studies in Taiwan and China - the next two countries with the largest number of publications - were published in 2015.

Research on healthcare providers' finances was also published with greater intensity in 2015 (and as many as 6 of these studies concerned the United States), and then after 2020.

Research on the efficiency of spending funds began to be published more frequently after 2018. During this period, several publications about the United States and China appeared. In South Korea, where a total of 10 studies concerned these issues, the peak of popularity was in 2016-2017

Research on quality linked to financing mechanisms was published more intensively in 2014-2015 and then in 2021-2022. During both of these periods, research appeared from the United States, Taiwan, and the United Kingdom, the three countries with the most research in this area.

Payer-related studies appeared in the form of single publications throughout the analyzed period, and due to their relatively small total number, it is difficult to conclude publication trends around this topic.

Analyzing the distribution of publications over time reveals a cyclically increasing interest in healthcare financing mechanisms. Despite the growing number of publications, there is no apparent evolution in the structure of the presented mechanisms or the thematic areas explored.

2.4 Summary for countries with the highest numbers of publications

UNITED STATES OF AMERICA

Main mechanism of financing inpatient services:	Mixed
Number of publications:	70
Year with the highest number of publications:	2016
Most frequently studied payment mechanism as an incentive:	P4P
Most frequently studied effect (behaviour) under the influence of a financial incentive:	Cost & Readmission
Most frequently studied pairs of financing mechanism (incentive) and effect (behaviour)	P4P & Indicators of clinical quality of treatment. P4P & Readmission

Taiwan

Main mechanism of financing inpatient services:	Global budget
Number of publications:	17
Year with the highest number of publications:	2015
Most frequently studied payment mechanism as an incentive:	P4P
Most frequently studied effect (behaviour) under the influence of a financial incentive:	Indicators of clinical quality of treatment and survival or life expectancy
Most frequently studied pairs of financing mechanism (incentive) and effect (behaviour)	P4P & Indicators of clinical quality of treatment

China

Main mechanism of financing inpatient services:	Global budget
Number of publications:	16
Year with the highest number of publications:	2022
Most frequently studied payment mechanism as an incentive:	DRG
Most frequently studied effect (behaviour) under the influence of a financial incentive:	LOS
Most frequently studied pairs of financing mechanism (incentive) and effect (behaviour)	DRG & LOS

United Kingdom

Main mechanism of financing inpatient services:	DRG
Number of publications:	11
Year with the highest number of publications:	2015, 2019, 2021, 2022
Most frequently studied payment mechanism as an incentive:	P4P
Most frequently studied effect (behaviour) under the influence of a financial incentive:	Survival or life expectancy
Most frequently studied pairs of financing mechanism (incentive) and effect (behaviour)	P4P and Survival or life expectancy

South Korea

Main mechanism of financing inpatient services:	Global budget
Number of publications:	8
Year with the highest number of publications:	2016
Most frequently studied payment mechanism as an incentive:	DRG
Most frequently studied effect (behaviour) under the influence of a financial incentive:	LOS
Most frequently studied pairs of financing mechanism (incentive) and effect (behaviour)	DRG & LOS

Annex 1 – Table with overview on select European health systems and hospital financing

	Denmark	France	Germany	Hungary	Italy	Norway
Financing: General principles	The social protection system is predominantly financed by general taxation. No earmarked taxes. Contributions for supplementary schemes, and in the case of accidents at work and unemployment. No single overall set of rates. Involvement of local authorities for healthcare, social assistance, long-term care, sickness benefits, and disability benefits. Municipalities are responsible for co-financing some services (e.g. healthcare, care for the elderly, rehabilitation outside of hospitals, etc.) and cash benefits (e.g. unemployment benefits, sickness benefits, etc.). The regions are primarily responsible for the healthcare system, but they cannot levy taxes. Pay-as-you-go system for old-age pension/early retirement pension (folkepension/tidlig pension) and disability pension/senior pension	The social protection system is financed by social contributions and taxation. The social security budget is set out within the framework of the law on financing social security ("Loi de financement de la sécurité sociale," LFSS). Each year, the LFSS determines the revenue projections and assigns expenditure targets for each branch. Balancing tables make it possible for each branch to know its own situation and its projected developments taking into account the provisions contained in each LFSS. The revenue projections are presented per branch but transfers between branches and between social security institutions are possible according to needs. Social security resources can be broken down into six categories: * social contributions (49% of total resources planned in 2023), * general social security contribution (contribution	Contributions (insured people and employers) and taxes. Financing mainly through social contributions. Statutory regulation for determining the contribution rate as well as for updating the federal funds. No earmarked taxes. No risk-based contribution rates. No participation of other authorities. Funding for old-age pensions and other long-term benefits: Pay-as-you-go system.	The Hungarian social security system is based on social solidarity and covers the entire population. Membership is compulsory for all citizens living in Hungary. It is financed by contributions (paid by insured persons, including the self-employed) and payroll taxes (i.e. "social contribution tax" paid by the employers and the self-employed). There are also minor earmarked taxes. There is no overall set of contribution rates. The State guarantees to cover deficits for most benefits. Old-age pensions and other long-term benefits are managed on a pay-as-you-go basis.	In Italy, a clear-cut distinction needs to be made between the insurance-based and the social assistance system, the first, being financed through work contributions according to the pay-as-you-go system, the second, financed through general taxation. Therefore, the system as a whole is funded essentially through social security contributions with the government providing for a minor part of the financing to cover deficits when they arise (e.g. to partly cover unemployment in case of economic crisis). The proportion of funding to be provided by taxation is specified by way of budget allocation. No earmarked taxes are used to finance social protection. Social security contributions rates are set for each risk separately. Both state and regional authorities are involved in the financing of the public health care system.	The National Insurance Scheme (NIS, folketrygden) is financed by social contributions (paid by employees/self-employed and employers) and to a lesser extent general taxation. Expenditures of the NIS are included in the National budget in line with other expenditures. The income of the NIS is formally related to employer's and employee's SC, and certain smaller sources of income (fees/charges, etc.). The difference between expenditures and income is financed through central government support, i.e. general taxation. In the 2023 National budget, the estimated shares are: Employee: 29.9%, employer: 41.6% other NIS income: 0.5%, and government support: 28 %. The proportion of funding is not specified. Social contribution rates are specified in legislation. A single overall set of rates is

	(førtidspension/senior pension). Funded system for supplementary pensions. Mixed system for accidents at work and occupational diseases: compensation for permanent injury due to occupational disease is financed through contributions in a pay-as-you-go system - compensation for permanent injury due to an accident is financed through premiums in a funded private insurance system.	sociale généralisée, CSG – 20%), * taxes and other social contributions (19%), * State public contributions to the civil servants' pension scheme (8%) * net transfers (2%), * other income (1%). Around fifty taxes are earmarked for financing the social protection, including the general social contribution (CSG) and the contribution for the repayment of the social debt (contribution au remboursement de la dette sociale, CRDS). Some social benefits such as the active solidarity income (revenu de solidarité active, RSA) and the allowance for loss of autonomy (allocation personnalisée d'autonomie, APA) are financed by the Départements. Five types of risks are distinguished and form five branches of social security: * the sickness branch (sickness, maternity, invalidity, death);			Insurance-based old-age pensions and other long-term benefits (invalidity and survivors) are based on the pay-as-you-go system.	applied to all risks taken together. No earmarked taxes. Only the central government is involved in the financing of social protection. The funding of old-age pensions and other long-term benefits are based on a pay-as-you-go basis.

		* the family branch (including disability and housing); * the accidents at work and occupational disease branch; * the retirement branch (old age and widowhood – scheme based on the pay-as-you-go principle); * the "autonomy" branch (long-term care). A 6th branch is added (recovery) for the collection of social contributions and other contributions. The rate is specific to each contribution for each risk.				

Financing: Overall social contributions (Rates)	No single set of contribution rates.	No single set of contribution rates.	No specific contribution rates.	No single set of contribution rates.	No single set of contribution rates.	There is a single overall set, calculated as a percentage of earnings. Employers: the contribution varies according to the municipality where the employer is located. The standard rates are 14.1%, 10.6%, 7.9%, 6.4%, 5.1% or 0% of gross wages. The highest rate applies to central parts of southern Norway. The weighted average rate is approximately 13%. In 2023, employers pay an additional rate of 5% on the part of salaries exceeding NOK 750,000 (€71,090). This extra rate is temporary and applies to the entire country. Employees: 7.9% of gross wages. This rate also applies to all social security benefits. Self-employed: 11.1% of personal professional income (7.9 %of income from fishing/catching, and from childminding at the self-employed home) Old-age pensions: 5.1%.

Risk-specific principles	Same as general principle. Tax-financed. No earmarked taxes. Financed by local and regional authorities except for the participation by the insured. There are no minimum periods of employment, insurance, or residence, which must be completed before someone is entitled to healthcare. Entitlement as from registration in the National Register of residence in Denmark.	Same as general principle. Overall rate for sickness and maternity contributions (healthcare and benefits in cash), invalidity and death): 13% by employer. No ceiling. On low wages (annual earnings below 2.5 times the minimum wage (salaire minimum interprofessionnel de croissance, SMIC)): reduced social charges for employers (contribution rate: 7%). Contribution paid by the employer and based on full wage.	Financing: as with the basic principle. Assessment basis: see above "Assessment basis" Minimum amounts: see above "Minimum/maximum amounts" Statutory health insurance Single contribution rate of 14.6%; of which * 7.3% paid by the employer, * 7.3% paid by the employee. In addition, health insurance companies may charge their members an income-related supplementary contribution. The average supplementary contribution rate for 2023 is 1.6%. Employers and pension insurance companies each pay half of the supplementary contribution rate. For those voluntarily taking out statutory health insurance without entitlement to sick pay, the single reduced contribution rate of 14.0%, plus the company's specific	Same as general principle. The Health Insurance Fund is financed mainly by employees' and employers' contributions; and to a lesser extent by the "public health product tax" (népegészségügyi termékadó). Employee: included in the payment of the "social security contribution" (társadalombiztosítási járulék), which is of 18.5% of total gross earnings. 37.9% of this is allocated to the Health Insurance Fund. Employer: included in the payment of the "social contribution tax" (szociális hozzájárulási adó), which is 13% of gross earnings. 28.37% of this is allocated to the Health Insurance Fund.	The health care system (benefits in kind) is universal and largely tax-financed through state's and regions' general taxation. No earmarked taxes.	Universal scheme financed Healthcare is not part of the NIS and is financed by taxation. However, some healthcare services and medicines etc. are covered by the NIS and are therefore financed same way as general principle. No specific rates. No earmarked taxes.

			supplementary contribution rate, applies. When claiming sick pay, maternity pay or family benefit, members do not need to pay contributions; this applies only to the stated benefits. Special provision for wages of up to €520 gross per month Employers pay a flat-rate contribution of 13%, for employees with marginal earnings, and 5% in private households. However, these flat-rate contributions are only payable if the employee already has statutory health insurance coverage. Special legal conditions regarding contributions apply for employees in the transitional period (remuneration between €520.01 and €2,000 per month); see “Assessment Basis”.			

Applicable statutory basis	Consolidated Health Act No 903 of 26 August 2019 (sundhedsloven). Amendment Act 1053 of 30 June 2020. Amendment Act 1855 of 9 December 2020. Amendment Act 2070 of 21 December 2020. Amendment Act 128 of 30 January 2021. Amendment Act 160 of 3 February 2021. Amendment Act 292 of 27 February 2021. Amendment Act 1184 of 8 June 2021. Amendment Act 2617 of 28 December 2021. Amendment Act 2619 of 28 December 2021. Directory of legal acts – see here.	Social Security Code (Code de la sécurité sociale), Book I, chapter 6 articles L. 160-1, et seq. Common universal health protection (protection universelle maladie, PUMa) between employees' regimes and independent regime (common rules for benefits in kind). Directory of legal acts – see here and here.	Social Insurance Code (Sozialgesetzbuch), Book V, introduced by the Health Reform Act (Gesundheits-Reformgesetz) of 20 December 1988, last amended by Article 1b of the law of 20 December 2022 (BGBl. I p. 2793). SGB 5 – unofficial table of contents (gesetze-im-internet.de).	Act LXXXIII of 1997 on the Benefits of Compulsory Health Insurance (törvény a kötelező egészségbiztosítás ellátásairól). Act CXXXII of 2006 on developing the health care system (törvény az egészségügyi ellátórendszer fejlesztéséről). Act XCVIII of 2006 on safety and efficient supply of pharmaceuticals and medical devices as well as on the general rules of pharmaceuticals distribution (törvény a biztonságos és gazdaságos gyógyszer- és gyógyászati segédeszköz-ellátás, valamint a gyógyszerforgalmazás általános szabályairól). Act CXXII of 2019 on the Entitlements to Social Security Benefits and on funding of these services (törvény a társadalombiztosítás ellátásaira jogosultakról, valamint ezen ellátások fedezetéről). Directory of legal acts – see here.	Law No. 833 of 23 December 1978 instituting the National Health Service (Legge 23 Dicembre 1978 n. 833 - Istituzione del Servizio Sanitario Nazionale, S.S.N.). Legislative Decree No. 502 of 30 December 1992 (Decreto Legislativo 30 Dicembre 1992 n. 502 - Riordino della disciplina in materia sanitaria). Legislative Decree No. 517 of 7 December 1993 (Decreto Legislativo 7 Dicembre 1993 n. 517 - Modificazioni al Decreto Legislativo 30 Dicembre 1992, n. 502). Legislative Decree No. 229 of 19 June 1999 (Decreto Legislativo 19 Giugno 1999 n. 229 - Norme per la razionalizzazione del Servizio sanitario nazionale). Legislative Decree No. 230 of 22 June 1999 (Decreto Legislativo 22 Giugno 1999 n. 230 - Riordino della medicina penitenziaria). Prime Ministerial Decree of 29 November 2001 (Decreto del Presidente del Consiglio dei Ministri 29 Novembre	National Insurance Act (folketrygdloven) of 28 February 1997, Chapter 5. Health and Care Services Act (lov om kommunale helse- og omsorgstjenester) of 24 June 2011. Specialised Health Services Act (lov om spesialisthelsetjenester) of 2 July 1999. Mental Health Care Act (lov om psykisk helsevern) of 2 July 1999. Dental Health Services Act (lov om tannhelsetjenesten) of 3 June 1983. Patient's and User's Rights Act (lov om pasient- og brukerrettigheter) of 2 July 1999. Health Enterprises Act (lov om helseforetak m.m.) of 15 June 2001. Directory of legal acts – see: here

					2001 - Definizione dei Livelli Essenziali di Assistenza). Prime Ministerial Decree of 12 January 2017 (Decreto del Presidente del Consiglio dei Ministri 12 Gennaio 2017 - Definizione e aggiornamento dei Livelli Essenziali di Assistenza, di cui all'articolo 1, comma 7, del decreto legislativo 30 dicembre 1992, n. 502). Directory of legal acts: https://www.normattiva.it	

Basic principles	Tax financed universal public health service for all residents. It is an integrated direct system (i.e. the cost of treatment is paid by the social security scheme although the patient may have to pay a small contribution for selected health services (e.g. dentalcare, psychological therapy, prescription, drugs, etc.))	Compulsory social insurance scheme with affiliation based on professional criteria and on residency, and financed by social security contributions and special contributions. System of benefits in kind (refund of all or part of care). Third-payer system applicable in some cases. Additional health coverage mandatory for private sector employees (collective insurance policy subscribed by the employer).	Statutory Health Insurance: Compulsory social insurance scheme for employees and assimilated groups up to a certain income limit and with income-related contributions. Benefits-in-kind system with exceptions (third party payment system with exceptions). Individuals without another entitlement to sickness insurance, who reside in Germany or have their habitual residency in Germany, there is a general obligation to be insured under statutory or private health insurance since 1 January 2009.	Compulsory social insurance scheme for employees and self-employed, and assimilated groups, financed by tax and contributions. Third-payer system: the National Institute of Health Insurance Fund Management (Nemzeti Egészségbiztosítási Alapkezelő) reimburses fully or partially the cost of treatment to healthcare providers. Healthcare contribution (egészségügyi szolgáltatási járulék) is mandatory for all residents who have continuous residence in Hungary for a year and who are not otherwise entitled to health care services: HUF9,600 (€24) per month to benefit from healthcare.	Universal, tax-financed National Health Service scheme for all inhabitants (based on residency). It is based on the direct or third-payer system, i.e. the main cost of treatments is paid by the social security scheme, although the patient may have to pay a small contribution.	Compulsory and universal social insurance scheme, in general tax-financed public health services for all residents. Mainly a benefits in kind system. The system is a mix of the third-payer system and reimbursement system. No additional mandatory health coverage for defined groups of people.

Hospitals	Denmark has an integrated healthcare system. Public hospitals: the regional health authorities are responsible for and owns public hospitals. The national government allocates healthcare funding to regions, mostly as block grants, which is financed via general taxes. The regional authority's budgets are highly based on previous spending, but the differences between regions are primarily due to demographic and social differences. Each individual region can decide on the own design for allocation funding to the hospital within the region. Private hospitals: the regional health authorities may enter into agreements with private hospitals. Private hospitals only receive financing from regional health authorities when providing services instead of public hospitals (e.g. in case of excess waiting time, see Table II, "2. Hospitalisation, Choice of and access to	The creation of any health institution must be approved by the executive director of the regional health agency (Agence régionale de santé, ARS). Funding mechanism in public hospitals and private institutions: payments linked to activity. Specific flat rate for admission to an emergency service.	The sickness funds pay in-patient care for their insured persons if this is provided in approved hospitals. These include university clinics and hospitals included in the respective Land's hospital requirement plan or hospitals with which the Länder associations of sickness insurance funds have concluded care agreements. It is irrelevant whether the hospital is publicly, non-profit, or privately owned. The fees for general hospital services must be calculated on a uniform basis for all hospital users. The basis for remuneration is a service-related hospital budget, which for services provided by general hospitals is aligned to a single price level per Land in case of a diagnosis-related flat-rate per case (DRG). The settlement towards the sickness funds takes place through a diagnosis-related flat-rate per case in case of acute in-patient services. Since 2020, costs for care	Hospitals are contracted and financed by the National Institute of Health Insurance Fund Management (Nemzeti Egészségbiztosítási Alapkezelő). Reimbursement of acute inpatient care is based on DRG system (Diagnosis Related Groups). The performance unit of chronic inpatient care is measured in care days, and the provider is paid in proportion to the number of nursing days. But a fixed amount is paid in case of expensive medical interventions (e.g. transplantations) and other therapeutic procedures. No differences between private and public hospitals.	Public hospitals are distinguished between: * those acting as a hospital trust with a proper legal status which are based in each region (i.e. highly specialised and/or University hospitals); * hospital structures which are under the responsibility of the Local Health Authority (Aziende sanitarie locali - ASL). The following structures are allowed to provide hospital care services covered by social protection system: * public hospitals set up by the regional health authorities; * private clinics contracted by the regional authorities (so called "convenzione"). Both public and private hospitals are financed on the basis of a price scale for benefits provided.	Hospitals are owned and run by the State through four regional health enterprises. They are financed through block grants (based on the health indicators (such as mortality), socioeconomic indicators and the cost level) and activity-based funding. Private hospitals exist; some have agreements with the regional health enterprises. Some private hospitals are financed partly through State block grants and activity-based funding, and others are partly financed through the agreements with the regional health enterprises.

	hospital"). This requires contract between the private hospitals and regional health authorities or can be a result of patient rights to treatment within a specified time.		staff involved in direct patient care on wards have been funded independently of the DRG based on hospitals' specific care staff costs. The services in psychiatric, psychosomatic, and psychotherapeutic facilities: paid via a performance-related flat-rate remuneration system based on per diem remuneration			

Choice of and access to hospital	Access to hospital treatment is upon referral of a general practitioner or specialist, except in case of emergency. There is free choice of public hospital. Patients can also choose a private hospital in Denmark or abroad if the waiting time after referral to treatment in a regional public hospital is more than one month. The private hospital must have entered an agreement with the regional health authorities. In addition to this, the patient has a right to receive a complete investigation within one month or, if this is not possible for medical (not capacity-related) reasons, to get a plan for investigation within that month (i.e. which examinations and tests the patient will undergo). If an investigation cannot be completed within one month because of capacity problems at the hospital, the patient can choose to receive an investigation at a private hospital in Denmark or abroad with agreement of	Free choice among public and private contracted hospitals. Access to the hospital upon medical prescription, except in case of emergency.	Free choice of licensed hospitals. Hospital treatment requires the admission by a medical doctor (except for emergencies).	In general, upon referral by the general practitioner, except in cases of emergency and for some specialties. The referral is addressed to the service provider who is geographically obliged to provide the care.	Free choice of a public or private hospital under contract. Access is based upon prescription of the general practitioner or of the specialist employed or contracted with the National Health Service (SSN), except in emergency cases.	Free choice of hospital (does not apply in cases of emergency). Regular primary doctor referral or referral from specialist (except in cases of emergency).

	the regional health authorities.					

Patient charges	Public hospitals and approved private establishments and private hospitals with agreement with the regional health authorities: No patient charge. Non-approved private establishments: Patients pay all costs.	20% of costs. Hospitalisation flat fee (forfait hospitalier): * €20 per day in a hospital or clinic, including the day of discharge; * €15 per day in the psychiatric unit of a health institution; * flat-rate co-payment of €24 for serious medical procedures (involving fees equal to or higher than €120). Emergency patient flat-rate (forfait patient urgences): * €19.61 for any consultation in an emergency service with no hospitalisation. * €8.49 for insured patients with a long-term illness and for recipients of benefits following an accident at work or occupational disease.	Free hospitalisation in a shared room with exception of participation of €10 per calendar day during a maximum of 28 days per year. The insured persons of the statutory sickness insurance (GKV) must contribute to the costs of certain services. The aforementioned co-payment regulation exists for inpatient treatment (inpatient preventive and rehabilitation services as well as hospital treatment including follow-up curative treatment).	Co-payments can be charged only in the following cases: * extra services (e.g. larger room, special meals), * accommodation, nursing, pharmaceuticals and meal costs for those suffering from designated ailments, confirmed by primary health care provider, * using sanitary provisions, * change of external sex organs with the exception of developmental abnormality. The amount of the co-payment is fixed by the service provider.	No co-payment unless special commodities are required: e.g. request of a single instead of a shared room.	No cost-sharing charges for patients admitted to hospital. For outpatients' departments at hospitals normal cost-sharing charges apply, see category - Patient charges (co-payment). For treatment in a private clinic with no arrangement with the public health system, the full cost falls on the patients themselves.

Exemption or reduction of patient charges	No patient charge when a public hospital refers a patient to an approved private establishment.	No participation from patients in the following cases: * from 31st day of hospitalisation and for certain severe surgery treatments; * beneficiaries of a disability pension covered 100% of the insurance ceiling; * beneficiaries of a work injury pension (rente accident du travail) at a rate of 66.66%, covered 100%, together with their family members; * beneficiaries of the solidarity supplementary health insurance (Complémentaire santé solidaire – CSS) or of the State medical assistance (aide médicale de l'État - AME); * persons suffering from certain diseases (only for those diseases); * persons hospitalised due to an accident at work; * pregnant women hospitalised during the last 4	No charge for insured persons under the age of 18 (exception: travel costs) and patients who already exceeded the expenses limit of 1% or 2% of the gross income.	No exemptions or reductions.	No exemptions or reductions.	Outpatients: * Children under sixteen are exempt from charges; * Special exemptions from cost-sharing charges apply to a limited number of diseases and groups of patients; * No charges in the case of occupational injury or disease.

		months of pregnancy, for childbirth, or during the 12 days following childbirth; * new-born, if he/she is hospitalised in the 30 days after birth; * victims of an act of terrorism. Hospital fee waiver for: * pregnant women hospitalised during the last 4 months of pregnancy, for childbirth, or during the 12 days following childbirth; * beneficiaries with supplementary health insurance program (complémentaire santé solidaire) or State medical support; * a child hospitalised in the 30 days following his/her birth; * persons hospitalised due to an accident at work or occupational illness; * persons cared for under home care; * a disabled child below the age of 20 residing in a special or professional education establishment; * beneficiaries of a military				

		pension; * victims of an act of terrorism. Emergency flat co-rate waiver for: * pregnant women covered by maternity insurance; * recipients of a disability pension; * benefit recipients following an accident at work or occupation disease; * insured persons with an incapacity rate of at least 66%; * insured minors who are victims of sexual violence; * new-born children under one month; * organ donors; * holders of an armed services invalidity pension; * victims of acts of terrorism; * recipients of State medical assistance (AME); * persons committed to prison.				

Source: Mutual Information System on Social Protection, MISSOC, updated at: 01 January 2023, https://www.missoc.org.

Annex 2 – Table with information on articles included in the review

LP	Authors	Title	Year	URL/DOI	Country
1	Anderson M, Molloy A, Maynou L, Kyriopoulos I, McGuire A, Mossialos E.	Evaluation of the NHS England evidence-based interventions programme: a difference-in-difference analysis	2023	10.1136/bmjqs-2021-014478	UK
2	Baker MC, Hahn EN, Dreyer TRF, Horvath KA.	Succeeding in Medicare's newest bundled payment program: Results from teaching hospitals	2022	10.1016/j.hjdsi.2022.100672	US
3	Zhang T, Lu B, Yan Z, Huang X, Lu W.	Impacts of a New Episode-Based Payment Scheme on Volume, Expenditures, and Efficiency in Public Hospitals: A Quasi-Experimental Interrupted Time-Series Study in Jinhua, China	2022	10.2147/RMHP.S376516	China
4	Su WC, Chen TT, Yang SS, Shih LN, Liu CK, Wang CC, Wu CH.	The effect of a pay-for-performance program on health-related quality of life for patients with hepatitis in Taiwan	2022	10.1186/s12955-022-02038-1	Taiwan
5	Gaspar K, Koolman X.	Provider responses to discontinuous tariffs: evidence from Dutch rehabilitation care	2022	10.1007/s10754-021-09322-5	Denmark

LP	Authors	Title	Year	URL/DOI	Country
6	Waters TM, Burns N, Kaplan CM, Graetz I, Benitez J, Cardarelli R, Daniels MJ.	Combined impact of Medicare's hospital pay for performance programs on quality and safety outcomes is mixed	2022	10.1186/s12913-022-08348-w	US
7	Goude F, Garellick G, Kittelsen S, Malchau H, Peltola M, Rehnberg C.	Effects of competition and bundled payment on the performance of hip replacement surgery in Stockholm, Sweden: results from a quasi-experimental study	2022	10.1136/bmjopen-2022-061077	Sweden
8	Tang D, Bian J, He M, Yang N, Zhang D.	Research on the Current Situation and Countermeasures of Inpatient Cost and Medical Insurance Payment Method for Rehabilitation Services in City S	2022	10.3389/fpubh.2022.880951	China
9	Pónusz R, Endrei D, Kovács D, Pónusz E, Kis Kelemen B, Elmer D, Németh N, Vereczkei A, Boncz I.	The development of one-day surgical care in Hungary between 2010 and 2019	2022	10.1186/s12913-022-08102-2	Hungary
10	Anthun KS.	Predicting diagnostic coding in hospitals: individual level effects of price incentives	2022	10.1007/s10754-021-09314-5	Norway

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11	Chalkley M, Hidayat B, Ramadani RV, Aragón MJ.	The sensitivity of hospital coding to prices: evidence from Indonesia	2022	10.1007/s10754-021-09312-7	Indonesia
12	Cromwell JW, Lund LW.	Hospital Coding of Postoperative Ileus: A Prospective Study	2022	10.7759/cureus.24946	US
13	Moloo H, Lamb T, Sundaresan S, Thavorn K, Walsh C, Musselman R, Forster A.	Leveraging financial incentives and behavioural economics to engage physicians in achieving quality-improvement process measures	2022	10.1503/cjs.017320	Canada
14	Cheng KC, Lai CC, Wang CY, Wang CM, Ho CH, Sung MI, Hsing SC, Liao KM, Ko SC.	The Impact of the Pay-for-Performance Program on the Outcome of COPD Patients in Taiwan After One Year	2022	10.2147/COPD.S349468	Taiwan
15	Gajadien CS, Dohmen PJG, Eijkenaar F, Schut FT, van Raaij EM, Heijink R.	Financial risk allocation and provider incentives in hospital-insurer contracts in The Netherlands	2022	10.1007/s10198-022-01459-5	Netherlands
16	Behzadi A, Bayati M, Bashzar S, Jaafaripooyan E.	The Effect of Prospective Payment Systems on Health Care Providers' Behaviour: A Case Study of Global Surgeries Payment System in Iran	2022	10.47176/mjiri.36.32	Iran

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17	Or Z, Rococco E, Touré M, Bonastre J.	Impact of Competition Versus Centralisation of Hospital Care on Process Quality: A Multilevel Analysis of Breast Cancer Surgery in France	2022	10.34172/ijhpm.2020.179	France
18	Banerjee S, Paasche-Orlow MK, McCormick D, Lin MY, Hanchate AD.	Readmissions performance and penalty experience of safety-net hospitals under Medicare's Hospital Readmissions Reduction Program	2022	10.1186/s12913-022-07741-9	US
19	Stone PW, Adamson A, Hurst JR, Roberts CM, Quint JK.	Does pay-for-performance improve patient outcomes in acute exacerbation of COPD admissions?	2022	10.1136/thoraxjnl-2021-216880	UK
20	Zogg CK, Metcalfe D, Judge A, Perry DC, Costa ML, Gabbe BJ, Schoenfeld AJ, Davis KA, Cooper Z, Lichtman JH.	Learning From England's Best Practice Tariff: Process Measure Pay-for-Performance Can Improve Hip Fracture Outcomes	2022	10.1097/SLA.0000000000004305	UK
21	Waitzberg R, Siegel M, Quentin W, Busse R, Greenberg D.	It probably worked: a Bayesian approach to evaluating the introduction of activity-based hospital payment in Israel	2022	10.1186/s13584-022-00515-y	Israel

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23	Wolfe JD, Epstein AM, Zheng J, Orav EJ, Joynt Maddox KE.	Predictors of Success in the Bundled Payments for Care Improvement Program	2022	10.1007/s11606-021-06820-7	US
24	Rahman M, White EM, McGarry BE, Santostefano C, Shewmaker P, Resnik L, Grabowski DC.	Association Between the Patient Driven Payment Model and Therapy Utilization and Patient Outcomes in US Skilled Nursing Facilities	2022	10.1001/jamahealthforum.2021.4366	US
25	Bäuml M, Dette T, Pollmann M.	Price and income effects of hospital reimbursements	2022	10.1016/j.jhealeco.2021.102576	Germany
26	Lai Y, Fu H, Li L, Yip W.	Hospital response to a case-based payment scheme under regional global budget: The case of Guangzhou in China	2022	10.1016/j.socscimed.2021.114601	China
27	Zhang L, Sun L.	Impacts of case-based payments reform on healthcare providers' behaviour on cataract surgery in a	2022	10.1002/hpm.3365	China

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		tertiary hospital in China: An eight-year retrospective study			
28	Milcent C, Zbiri S.	Supplementary private health insurance: The impact of physician financial incentives on medical practice	2022	10.1002/hec.4443	France
29	Norton EC, Li J, Das A, Ryan AM, Chen LM.	Medicare's Hospital Value-Based Purchasing Program Values Quality over QALYs	2022	10.1177/0272989X211017105	US
30	Schumacher C.	Effectiveness of hospital transfer payments under a prospective payment system: An analysis of a policy change in New Zealand	2022	10.1002/hec.4508	New Zealand
31	Wang Y, Hou W, Wang X, Zhang H, Wang J.	Bad to All? A Novel Way to Analyze the Effects of Fee-for-Service on Multiple Grades Hospitals Operation Outcomes	2021	10.3390/ijerph182312723	China

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32	Zhou W, Jian W, Wang Z, Pan J, Hu M, Yip W.	Impact of global budget combined with pay-for-performance on the quality of care in county hospitals: a difference-in-differences study design with a propaensity-score-matched control group using data from Guizhou province, China	2021	10.1186/s12913-021-07338-8	China
33	Mantz CA, Thaker NG, Pendyala P, Hubbard A, Eichler TJ, Shah C, Orio PF 3rd, Petereit DG.	Disproportionate Negative Impact of the Radiation Oncology Alternative Payment Model on Rural Providers: A Cost Identification Analysis of Medicare Claims	2021	10.1200/OP.21.00330	US
34	Lu CW, Wu YF, Chen TH, Chung CM, Lin CL, Lin YS, Chen MY, Yang YH, Lin MS.	A nationwide cohort investigation on pay-for-performance and major adverse limb events in patients with diabetes	2021	10.1016/j.ypmed.2021.106787	Taiwan
35	Brown R, Derzon J, Gilman B, Whicher D, Dale S.	Features of health care interventions associated with reduced services and spending	2021	10.37765/ajmc.2021.88781	US
36	Staples JA, Liu G, Brubacher JR,	Physician Financial Incentives to Reduce Unplanned Hospital	2021	10.1007/s11606-021-06803-8	Canada

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	Karimuddin A, Sutherland JM.	Readmissions: an Interrupted Time Series Analysis			
37	Cheng SL, Li YR, Huang N, Yu CJ, Wang HC, Lin MC, Chiu KC, Hsu WH, Chen CZ, Sheu CC, Perng DW, Lin SH, Yang TM, Lin CB, Kor CT, Lin CH.	Effectiveness of Nationwide COPD Pay-for-Performance Program on COPD Exacerbations in Taiwan	2021	10.2147/COPD.S329454	Taiwan
38	Alrawashdeh M, Rhee C, Hsu H, Wang R, Horan K, Lee GM.	Assessment of Federal Value-Based Incentive Programs and In-Hospital Clostridioides difficile Infection Rates	2021	10.1001/jamanetworkopen.2021.32114	US
39	Rajeev A, Ali M, Mcentee L, Devalia K.	Does the ASA grading influence the outcomes of best practice tariff in fracture neck of femurs	2021	10.22540/JFSF-06-147	UK
40	Kim KM, White JS, Max W, Chapman SA, Muench U.	Evaluation of Clinical and Economic Outcomes Following Implementation of a Medicare Pay-for-Performance Program for Surgical Procedures	2021	10.1001/jamanetworkopen.2021.21115	US

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41	Hou Y, Bushnell CD, Duncan PW, Kucharska-Newton AM, Halladay JR, Freburger JK, Trogdon JG.	Hospital to Home Transition for Patients With Stroke Under Bundled Payments	2021	10.1016/j.apmr.2021.03.010	US
42	Wilcock AD, Barnett ML, McWilliams JM, Grabowski DC, Mehrotra A.	Hospital Responses to Incentives in Episode-Based Payment for Joint Surgery: A Controlled Population-Based Study	2021	10.1001/jamainternmed.2021.1897	US
43	Zhang L, Sun L.	Impacts of Diagnosis-Related Groups Payment on the Healthcare Providers' Behaviour in China: A Cross-Sectional Study Among Physicians	2021	10.2147/RMHP.S308183	China
44	Boes S, Napierala C.	Assessment of the introduction of DRG-based reimbursement in Switzerland: Evidence on the short-term effects on length of stay compliance in university hospitals	2021	10.1016/j.healthpol.2021.01.010	Switzerland

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45	Huitfeldt I.	Hospital reimbursement and capacity constraints: Evidence from orthopedic surgeries	2021	10.1016/j.healthpol.2021.02.004	Norway
46	Griffin XL, Achten J, Parsons N, Costa ML	Does performance-based remuneration improve outcomes in the treatment of hip fracture?	2021	10.1302/0301-620X.103B5.BJJ-2020-1839.R1	UK
47	Barili E, Bertoli P, Grembi V.	Fee equalization and appropriate health care	2021	10.1016/j.ehb.2021.100981	Italy
48	Bäuml M.	How do hospitals respond to cross price incentives inherent in diagnosis-related groups systems? The importance of substitution in the market for sepsis conditions	2021	10.1002/hec.4215	Germany
49	Waitzberg R, Quentin W, Daniels E, Paldi Y, Busse R, Greenberg D.	Effects of Activity-Based Hospital Payments in Israel: A Qualitative Evaluation Focusing on the Perspectives of Hospital Managers and Physicians	2021	10.34172/ijhpm.2020.51	Israel
50	Fu R, Shen Y, Noguchi H.	The best of both worlds? The economic effects of a hybrid fee-for-service and prospective payment reimbursement system	2021	10.1002/hec.4205	Japan

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51	Milcent C.	From downcoding to upcoding: DRG based payment in hospitals	2021	10.1007/s10754-020-09287-x	France
52	Keller MS, Chen X, Godwin J, Needleman J, Pourat N.	Evaluating inpatient adverse outcomes under California's Delivery System Reform Incentive Payment Program	2021	10.1111/1475-6773.13550	US
53	Wu YF, Chen MY, Chen TH, Wang PC, Peng YS, Lin MS.	The effect of pay-for-performance program on infection events and mortality rate in diabetic patients: a nationwide population-based cohort study	2021	10.1186/s12913-021-06091-2	Taiwan
54	Huang PF, Kung PT, Chou WY, Tsai WC.	Characteristics and related factors of emergency department visits, readmission, and hospital transfers of inpatients under a DRG-based payment system: A nationwide cohort study	2020	10.1371/journal.pone.0243373	Taiwan
55	Qiao D, Zhang Y, Rehman AU, Khosravi MR.	Big Data-Enabled Analysis of DRGs-Based Payment on Stroke Patients in Jiaozuo, China	2020	10.1155/2020/6690019	China
56	Gluckman TJ, Spinelli KJ, Wang M, Yazdani A,	Trends in Diagnosis Related Groups for Inpatient Admissions and	2020	10.1001/jamanetworkopen.2020.28470	US

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	Grunkemeier G, Bradley SM, Wasfy JH, Goyal A, Oseran A, Joynt Maddox KE.	Associated Changes in Payment From 2012 to 2016			
57	Zabrodina V, Dusheiko M, Moschetti K.	A moneymaking scan: Dual reimbursement systems and supplier-induced demand for diagnostic imaging	2020	10.1002/hec.4152	Switzerland
58	Sarkar RR, Courtney PT, Bachand K, Sheridan PE, Riviere PJ, Guss ZD, Lopez CR, Brandel MG, Banegas MP, Murphy JD.	Quality of care at safety-net hospitals and the impact on pay-for-performance reimbursement	2020	10.1002/cncr.33137	US
59	Chou SY, Dearden JA, Deily ME, Lien HM.	Provider responses to a global budgeting system: The case of drug expenditures in Taiwan hospitals	2020	10.1002/hec.4137	Taiwan
60	Cook A, Averett S.	Do hospitals respond to changing incentive structures? Evidence from Medicare's 2007 DRG restructuring	2020	10.1016/j.jhealeco.2020.102319	US

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62	Hsu HE, Wang R, Broadwell C, Horan K, Jin R, Rhee C, Lee GM.	Association Between Federal Value-Based Incentive Programs and Health Care-Associated Infection Rates in Safety-Net and Non-Safety-Net Hospitals	2020	10.1001/jamanetworkopen.2020.9700	US
63	Hoffman GJ, Yakusheva O.	Association Between Financial Incentives in Medicare's Hospital Readmissions Reduction Program and Hospital Readmission Performance	2020	10.1001/jamanetworkopen.2020.2044	US
64	Connell SK, Rutman LE, Whitlock KB, Haviland MJ, Simmons S, Schloredt K, Ramos J, Brewer K, Augustine M, Lion KC.	Health Care Reform, Length of Stay, and Readmissions for Child Mental Health Hospitalizations	2020	10.1542/hpeds.2019-0197	US

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65	Lassen T, Revere L, Hailemariam D, Hogan PJ, Hernandez E.	Do Bundled Payment Programs in Joint Replacement Care Hold Promise for Improving Patient Outcomes?	2020	10.1097/JHQ.0000000000000238	US
66	Chien LC, Chou YJ, Huang YC, Shen YJ, Huang N.	Reducing low value services in surgical inpatients in Taiwan: Does diagnosis-related group payment work?	2020	10.1016/j.healthpol.2019.10.005	Taiwan
67	Brodke DJ, Guo C, Aouad M, Brown TT, Bozic KJ.	Impact of Reference Pricing on Cost and Quality in Total Joint Arthroplasty	2019	10.2106/JBJS.19.00475	US
68	Banerjee S, McCormick D, Paasche-Orlow MK, Lin MY, Hanchate AD.	Association between degree of exposure to the Hospital Value Based Purchasing Program and 30-day mortality: experience from the first four years of Medicare's pay-for-performance program	2019	10.1186/s12913-019-4562-7	US
69	Jian W, Lu M, Liu G, Chan KY, Poon AN.	Beijing's diagnosis-related group payment reform pilot: Impact on quality of acute myocardial infarction care	2019	10.1016/j.socscimed.2019.112590	China

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71	Gaughan J, Gutacker N, Grašič K, Kreif N, Siciliani L, Street A.	Paying for efficiency: Incentivising same-day discharges in the English NHS	2019	10.1016/j.jhealeco.2019.102226	UK
72	García Calderón V, Figueiras Huante IA, Carbajal Martínez M, Yacaman Handal RE, Palami Antunez D, Soto ME, Koretzky SG.	The impact of improving the quality of coding in the utilities of Diagnosis Related Groups system in a private healthcare institution. 14-year experience	2019	10.1016/j.ijmedinf.2019.06.019	Mexico
73	Kim KL, Li L, Kuang M, Horwitz LI, Desai SM.	Changes in Hospital Referral Patterns to Skilled Nursing Facilities Under the Hospital Readmissions Reduction Program	2019	10.1097/MLR.0000000000001169	US
74	Jeon MJ, Choo SP, Kwak YH, Kim DW, Kim EH.	The effect of diagnosis-related group payment system on the quality of medical care for pelvic	2019	10.1371/journal.pone.0220895	Korea

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75	Metcalfe D, Zogg CK, Judge A, Perry DC, Gabbe B, Willett K, Costa ML.	Pay for performance and hip fracture outcomes: an interrupted time series and difference-in-differences analysis in England and Scotland	2019	10.1302/0301-620X.101B8.BJJ-2019-0173.R1	UK
76	Zhu JM, Navathe A, Yuan Y, Dykstra S, Werner RM.	Medicare's bundled payment model did not change skilled nursing facility discharge patterns	2019	25(7):329-334. DOI: NA	US
77	Haas DA, Zhang X, Kaplan RS, Song Z.	Evaluation of Economic and Clinical Outcomes Under Centers for Medicare & Medicaid Services Mandatory Bundled Payments for Joint Replacements	2019	10.1001/jamainternmed.2019.0480	US
78	Rondon AJ, Phillips JLH, Fillingham YA, Gorica Z, Austin MS, Courtney PM.	Bundled Payments Are Effective in Reducing Costs Following Bilateral Total Joint Arthroplasty	2019	10.1016/j.arth.2019.03.041	US
79	Sheetz KH, Dimick JB, Regenbogen SE.	How Patient Complexity and Surgical Approach Influence	2019	10.1097/DCR.0000000000001372	US

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80	Waitzberg R, Quentin W, Daniels E, Perman V, Brammli-Greenberg S, Busse R, Greenberg D.	The 2010 expansion of activity-based hospital payment in Israel: an evaluation of effects at the ward level	2019	10.1186/s12913-019-4083-4	Israel
81	Borza T, Oerline MK, Skolarus TA, Norton EC, Dimick JB, Jacobs BL, Herrel LA, Ellimoottil C, Hollingsworth JM, Ryan AM, Miller DC, Shahinian VB, Hollenbeck BK.	Association Between Hospital Participation in Medicare Shared Savings Program Accountable Care Organizations and Readmission Following Major Surgery	2019	10.1097/SLA.0000000000002737	US
82	Damberg CL, Silverman M, Burgette L, Vaiana ME, Ridgely MS.	Are value-based incentives driving behaviour change to improve value?	2019	25(2):e26-e32. DOI: NA	US
83	Yan J, Lin HH, Zhao D, Hu Y, Shao R.	China's new policy for healthcare cost-control based on global	2019	10.1186/s12913-019-3921-8	China

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84	Murphy WS, Siddiqi A, Cheng T, Lin B, Terry D, Talmo CT, Murphy SB.	2018 John Charnley Award: Analysis of US Hip Replacement Bundled Payments: Physician-initiated Episodes Outperform Hospital-initiated Episodes	2019	10.1097/CORR.0000000000000532	US
85	Creep	Bundled Payment	2019	10.1016/j.arth.2018.10.025	US
86	Schmutte T, Van der Heide L, Szczygiel L, Phelan A, Davidson L, Plant R.	A Pay-for-Performance Initiative to Reduce Pediatric Psychiatric Inpatient Length of Stay	2019	10.1176/appi.ps.201800190	US
87	Ellegård LM, Glenngård AH.	Limited Consequences of a Transition From Activity-Based Financing to Budgeting: Four Reasons Why According to Swedish Hospital Managers	2019	10.1177/0046958019838367	Sweden
88	Gupta S, Zengul FD, Davlyatov GK, Weech-Maldonado R.	Reduction in Hospitals' Readmission Rates: Role of Hospital-Based Skilled Nursing Facilities	2019	10.1177/0046958018817994	US

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89	Delanois RE, Gwam CU, Cherian JJ, Etcheson JI, Mohamed NS, Schneider KA, Mont MA.	Global Budget Revenue on a Single Institution's Costs, Outcomes, and Patient Quality Metrics in Patients Undergoing Total Knee Arthroplasty	2019	10.1016/j.arth.2018.09.007	US
90	Galarraga JE, Frohna WJ, Pines JM.	The Impact of Maryland's Global Budget Payment Reform on Emergency Department Admission Rates in a Single Health System	2019	10.1111/acem.13507	US
91	He R, Ye T, Wang J, Zhang Y, Li Z, Niu Y, Zhang L.	Medical Service Quality, Efficiency and Cost Control Effectiveness of Upgraded Case Payment in Rural China: A Retrospective Study	2018	10.3390/ijerph15122839	China
92	Khera R, Krumholz HM.	Effects of the Hospital Readmissions Reduction Program	2018	10.1161/CIRCOUTCOMES.118.005083	US
93	Tsai YS, Kung PT, Ku MC, Wang YH, Tsai WC.	Effects of pay for performance on risk incidence of infection and of revision after total knee arthroplasty in type 2 diabetic patients: A nationwide matched cohort study	2018	10.1371/journal.pone.0206797	Taiwan

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94	Eliason PJ, Grieco P, McDevitt RC, Roberts JW.	Strategic Patient Discharge: the Case of Long-Term Care Hospitals	2018	108(11):3232-65. DOI: NA	US
95	Navathe AS, Liao JM, Dykstra SE, Wang E, Lyon ZM, Shah Y, Martinez J, Small DS, Werner RM, Dinh C, Ma X, Emanuel EJ.	Association of Hospital Participation in a Medicare Bundled Payment Program With Volume and Case Mix of Lower Extremity Joint Replacement Episodes	2018	10.1001/jama.2018.12345	US
96	Liu CJ, Kung PT, Chu CC, Chou WY, Wang YH, Tsai WC.	Propensity score-matching analyses on the effectiveness of integrated prospective payment program for patients with prolonged mechanical ventilation	2018	10.1016/j.healthpol.2018.07.009	Taiwan
97	Carroll C, Chernew M, Fendrick AM, Thompson J, Rose S.	Effects of episode-based payment on health care spending and utilization: Evidence from perinatal care in Arkansas	2018	10.1016/j.jhealeco.2018.06.010	US
98	Rude TL, Donin NM, Cohn MR, Meeks W, Gulig S, Patel SN,	Analysis of National Trends in Hospital Acquired Conditions Following Major Urologic Surgery Before and After Implementation	2018	10.1016/j.urology.2018.04.044	US

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	Wysock JS, Makarov DV, Bjurlin MA.	of the Hospital Acquired Condition Reduction Program			
99	Cunningham D, Karas V, DeOrio J, Nunley J, Easley M, Adams S.	Patient Risk Factors Do Not Impact 90-Day Readmission and Emergency Department Visitation After Total Ankle Arthroplasty: Implications for the Comprehensive Care for Joint Replacement (CJR) Bundled Payment Plan	2018	10.2106/JBJS.17.01149	US
100	Diaz A, Merath K, Bagante F, Chen Q, Akgul O, Beal E, Idrees J, Olsen G, Gani F, Pawlik TM.	Surgical Procedures in Health Professional Shortage Areas: Impact of a Surgical Incentive Payment Plan	2018	10.1016/j.surg.2018.03.017	US
101	Shi M, Wang J, Zhang L, Yan Y, Miao YD, Zhang X.	Effects of Integrated Case Payment on Medical Expenditure and Readmission of Inpatients with Chronic Obstructive Pulmonary Disease: A Nonrandomized,	2018	10.1007/s11596-018-1914-1	China

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		Comparative Study in Xi County, China			
102	Jung YW, Pak H, Lee I, Kim EH.	The Effect of Diagnosis-Related Group Payment System on Quality of Care in the Field of Obstetrics and Gynecology among Korean Tertiary Hospitals	2018	10.3349/ymj.2018.59.4.539	Korea
103	Herbst T, Foerster J, Emmert M.	The impact of pay-for-performance on the quality of care in ophthalmology: Empirical evidence from Germany	2018	10.1016/j.healthpol.2018.03.013	Germany
104	Demiralp B, He F, Koenig L.	Further Evidence on the System-Wide Effects of the Hospital Readmissions Reduction Program	2018	10.1111/1475-6773.12701	US
105	Vuagnat A, Yilmaz E, Roussot A, Rodwin V, Gadreau M, Bernard A, Creuzot-Garcher C, Quantin C.	Did case-based payment influence surgical readmission rates in France? A retrospective study	2018	10.1136/bmjopen-2017-018164	France

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106	Innes GD, Scheuermeyer FX, Marsden J, Sing CK, Kalla D, Stenstrom R, Law M, Grafstein E.	Impact of physician payment mechanism on emergency department operational performance	2018	10.1017/cem.2018.10	Canada
107	Napierala C, Boes S.	Is the timing of radiological intervention and treatment day associated with economic outcomes in DRG-financed health care systems: a case study	2017	10.1186/s12913-017-2055-0	Switzerland
108	Anthun KS, Bjørngaard JH, Magnussen J.	Economic incentives and diagnostic coding in a public health care system	2017	10.1007/s10754-016-9201-9	Norway
109	Ju Kim S, Han KT, Kim SJ, Park EC.	Pay-for-performance reduces healthcare spending and improves quality of care: Analysis of target and non-target obstetrics and gynecology surgeries	2017	10.1093/intqhc/mzw159	Korea
110	Bouwstra H, Wattel LM, de Groot AJ, Smalbrugge M, Hertogh CM.	The Influence of Activity-Based Funding on Treatment Intensity and Length of Stay of Geriatric Rehabilitation Patients	2017	10.1016/j.jamda.2017.02.003	Netherlands

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112	Lalloué B, Jiang S, Girault A, Ferrua M, Loirat P, Minvielle E.	Evaluation of the effects of the French pay-for-performance program-IFAQ pilot study	2017	10.1093/intqhc/mzx111	France
113	Nunley PD, Mundis GM Jr, Fessler RG, Park P, Zavatsky JM, Uribe JS, Eastlack RK, Chou D, Wang MY, Anand N, Frank KA, Stone MB, Kanter AS, Shaffrey CI, Mummaneni PV	Impact of case type, length of stay, institution type, and comorbidities on Medicare diagnosis-related group reimbursement for adult spinal deformity surgery	2017	10.3171/2017.7.FOCUS17278	US
114	Hellsten E, Liu G, Yue E, Gao G, Sutherland JM.	Improving hospital quality through payment reforms: A policy impact analysis in British Columbia	2016	10.1177/0840470415614054	Canada
115	Kim SJ, Park EC, Kim SJ, Han KT, Han E, Jang SI, Kim TH.	The effect of competition on the relationship between the introduction of the DRG system and quality of care in Korea	2016	10.1093/eurpub/ckv162	Korea

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116	Healy-Collier K, Jones WJ, Shmerling JE, Robertson KR, Ferry RJ.	Medicaid managed care reduces readmissions for youths with type 1 diabetes	2016	22(4):250-6. DOI: NA	US
117	Kristensen SR, Bech M, Lauridsen JT.	Who to pay for performance? The choice of organisational level for hospital performance incentives	2016	10.1007/s10198-015-0690-0	Denmark
118	Figueroa JF, Tsugawa Y, Zheng J, Orav EJ, Jha AK.	Association between the Value-Based Purchasing pay for performance program and patient mortality in US hospitals: observational study	2016	10.1136/bmj.i2214	US
119	Dai T, Hu HP, Na X, Li YZ, Wan YL, Xie LQ.	Effects of New Rural Cooperative Medical Scheme on Medical Service Utilization and Medical Expense Control of Inpatients: A 3-year Empirical Study of Hainan Province in China	2016	10.4103/0366-6999.182842	China
120	Rosenthal MB, Landrum MB, Robbins JA, Schneider EC.	Pay for Performance in Medicaid: Evidence from Three Natural Experiments	2016	10.1111/1475-6773.12426	US

LP	Authors	Title	Year	URL/DOI	Country
121	Kim KH, Lee SC, Lee SK, Choi BJ, Jeong W, Kim SJ.	Does Korea's current diagnosis-related group-based reimbursement system appropriately classify appendectomy patients?	2016	10.4174/astr.2016.91.2.66	Korea
122	Achelrod D, Welte T, Schreyögg J, Stargardt T.	Costs and outcomes of the German disease management programme (DMP) for chronic obstructive pulmonary disease (COPD)-A large population-based cohort study	2016	10.1016/j.healthpol.2016.08.002	Germany
123	Melberg HO, Beck Olsen C, Pedersen K.	Did hospitals respond to changes in weights of Diagnosis Related Groups in Norway between 2006 and 2013?	2016	10.1016/j.healthpol.2016.07.013	Norway
124	Tsai TC, Greaves F, Zheng J, Orav EJ, Zinner MJ, Jha AK.	Better Patient Care At High-Quality Hospitals May Save Medicare Money And Bolster Episode-Based Payment Models	2016	10.1377/hlthaff.2016.0361	US
125	Jang SI, Nam CM, Lee SG, Kim TH, Park S, Park EC.	Impact of payment system change from per-case to per-diem on high severity patient's length of stay	2016	10.1097/MD.0000000000004839	Korea

LP	Authors	Title	Year	URL/DOI	Country
126	Huang Y, Liu Y, Yang X, Li J, Fang P.	Global budget payment system helps to reduce outpatient medical expenditure of hypertension in China	2016	10.1186/s40064-016-3565-7	China
127	Lin TY, Chen CY, Huang YT, Ting MK, Huang JC, Hsu KH.	The effectiveness of a pay for performance program on diabetes care in Taiwan: A nationwide population-based longitudinal study	2016	10.1016/j.healthpol.2016.09.014	Taiwan
128	Sutherland JM, Liu G, Crump RT, Law M.	Paying for volume: British Columbia's experiment with funding hospitals based on activity	2016	10.1016/j.healthpol.2016.09.010	Canada
129	Courtney PM, Ashley BS, Hume EL, Kamath AF.	Are Bundled Payments a Viable Reimbursement Model for Revision Total Joint Arthroplasty?	2016	10.1007/s11999-016-4953-6	US
130	Tung YC, Chang GM, Cheng SH.	Long-term effect of fee-for-service-based reimbursement cuts on processes and outcomes of care for stroke: interrupted time-series study from Taiwan	2015	10.1161/CIRCOUTCOMES.114.001086	Taiwan

LP	Authors	Title	Year	URL/DOI	Country
131	Lee CY, Chi MJ, Yang SL, Lo HY, Cheng SH.	Using financial incentives to improve the care of tuberculosis patients	2015	21(1):e35-42. DOI: NA	Taiwan
132	Ryan AM, Burgess JF Jr, Pesko MF, Borden WB, Dimick JB.	The early effects of Medicare's mandatory hospital pay-for-performance program	2015	10.1111/1475-6773.12206	US
133	Michtalik HJ, Carolan HT, Haut ER, Lau BD, Streiff MB, Finkelstein J, Pronovost PJ, Durkin N, Brotman DJ.	Use of provider-level dashboards and pay-for-performance in venous thromboembolism prophylaxis	2015	10.1002/jhm.2303	US
134	Waters TM, Daniels MJ, Bazzoli GJ, Perencevich E, Dunton N, Staggs VS, Potter C, Fareed N, Liu M, Shorr RI.	Effect of Medicare's nonpayment for Hospital-Acquired Conditions: lessons for future policy	2015	10.1001/jamainternmed.2014.5486	US
135	Tsai TC, Joynt KE, Wild RC, Orav EJ, Jha AK.	Medicare's Bundled Payment initiative: most hospitals are focused on a few high-volume conditions	2015	10.1377/hlthaff.2014.0900	US
136	Robinson JC, Brown T, Whaley C.	Reference-based benefit design changes consumers' choices and	2015	10.1377/hlthaff.2014.1198	US

LP	Authors	Title	Year	URL/DOI	Country
		employers' payments for ambulatory surgery			
137	Sheaff R, Charles N, Mahon A, Chambers N, Morando V, Exworthy M, Byng R, Mannion R, Llewellyn S.	NHS commissioning practice and health system governance: a mixed-methods realistic evaluation	2015	10.3310/hsdr03100	UK
138	Meyer S.	Payment schemes and cost efficiency: evidence from Swiss public hospitals	2015	10.1007/s10754-014-9159-4	Switzerland
139	Zhang CY, Hashimoto H.	How do patients and providers react to different incentives in the Chinese multiple health security systems?	2015	10.4103/0366-6999.151661	China
140	Liang LL.	Do diagnosis-related group-based payments incentivise hospitals to adjust output mix?	2015	10.1002/hec.3033	Taiwan
141	Weeks WB, Jardin M, Paraponaris A.	Characteristics and patterns of elective admissions to for-profit and not-for-profit hospitals in France in 2009 and 2010	2015	10.1016/j.socscimed.2015.03.051	France

LP	Authors	Title	Year	URL/DOI	Country
142	McIlvennan CK, Eapen ZJ, Allen LA.	Hospital readmissions reduction program	2015	10.1161/CIRCULATIONAHA.114.010270	US
143	Gok MS, Altındağ E.	Analysis of the cost and efficiency relationship: experience in the Turkish pay for performance system	2015	10.1007/s10198-014-0584-6	Turkey
144	Kim Y, Kim J.	Impact of a financial incentive policy on Korean nurse staffing	2015	10.1111/inr.12143	Korea
145	Padula WV, Makic MB, Wald HL, Campbell JD, Nair KV, Mishra MK, Valuck RJ.	Hospital-Acquired Pressure Ulcers at Academic Medical Centers in the United States, 2008-2012: Tracking Changes Since the CMS Nonpayment Policy	2015	10.1016/s1553-7250(15)41035-9	US
146	Kim YS, Kleerup EC, Ganz PA, Ponce NA, Lorenz KA, Needleman J.	Medicare Payment Policy Creates Incentives For Long-Term Care Hospitals To Time Discharges For Maximum Reimbursement	2015	10.1377/hlthaff.2014.0778	US
147	Kawai AT, Calderwood MS, Jin R, Soumerai SB, Vaz LE, Goldmann D, Lee GM.	Impact of the Centers for Medicare and Medicaid Services Hospital-Acquired Conditions Policy on Billing Rates for 2 Targeted Healthcare-Associated Infections	2015	10.1017/ice.2015.86	US

LP	Authors	Title	Year	URL/DOI	Country
148	Bystrov V, Staszewska-Bystrova A, Rutkowski D, Hermanowski T.	Effects of DRG-based hospital payment in Poland on treatment of patients with stroke	2015	10.1016/j.healthpol.2015.04.017	Poland
149	Nguyen C, Milstein A, Hernandez-Boussard T, Curtin CM.	The Effect of Moving Carpal Tunnel Releases Out of Hospitals on Reducing United States Health Care Charges	2015	10.1016/j.jhsa.2015.04.023	US
150	Jones CD, Scott SJ, Anoff DL, Pierce RG, Glasheen JJ.	Changes in Payer Mix and Physician Reimbursement After the Affordable Care Act and Medicaid Expansion	2015	10.1177/0046958015602464	US
151	Jürges H, Köberlein J.	What explains DRG upcoding in neonatology? The roles of financial incentives and infant health	2015	10.1016/j.jhealeco.2015.06.001	Germany
152	Eiferman D, Bhakta A, Khan S.	Implementation of a shared-savings program for surgical supplies decreases inventory cost	2015	158(4):996-1000	US
153	Turner JS, Broom KD, Counte MA.	Is There a Relationship Between Value-Based Purchasing and Hospital Profitability? An	2015	10.1177/2333392815606096	US

LP	Authors	Title	Year	URL/DOI	Country
		Exploratory Study of Missouri Hospitals			
154	Chen B, Fan VY.	Strategic Provider Behaviour Under Global Budget Payment with Price Adjustment in Taiwan	2015	10.1002/hec.3095	Taiwan
155	Hu WY, Yeh CF, Shiao AS, Tu TY.	Effects of diagnosis-related group payment on health-care provider behaviours: A consecutive three-period study	2015	10.1016/j.jcma.2015.06.012	Taiwan
156	Kim JW, Shin DW, Chae JJ, Kim JY, Park SG.	Impact of the new payment system on laparoscopic appendectomy in Korea	2015	10.1016/j.jss.2015.04.070	Korea
157	Papanicolas I, McGuire A.	Do financial incentives trump clinical guidance? Hip Replacement in England and Scotland	2015	10.1016/j.jhealeco.2015.08.001	UK
158	Coelho AP, Sá HO, Diniz JA, Dussault G.	The integrated management for renal replacement therapy in Portugal	2014	10.1111/hdi.12064	Portugal
159	Benzer JK, Young GJ, Burgess JF Jr, Baker E, Mohr DC, Charns MP, Kaboli PJ.	Sustainability of quality improvement following removal of pay-for-performance incentives	2014	10.1007/s11606-013-2572-4	US

LP	Authors	Title	Year	URL/DOI	Country
160	Ryan A, Sutton M, Doran T.	Does winning a pay-for-performance bonus improve subsequent quality performance? Evidence from the Hospital Quality Incentive Demonstration	2014	10.1111/1475-6773.12097	US
161	Shih T, Nicholas LH, Thumma JR, Birkmeyer JD, Dimick JB.	Does pay-for-performance improve surgical outcomes? An evaluation of phase 2 of the Premier Hospital Quality Incentive Demonstration	2014	10.1097/SLA.0000000000000425	US
162	Endrei D, Zemplényi A, Molics B, Agoston I, Boncz I.	The effect of performance-volume limit on the DRG based acute care hospital financing in Hungary	2014	10.1016/j.healthpol.2013.12.005	Hungary
163	Warnke I, Rössler W, Nordt C, Herwig U.	Assessing a financial incentive for reducing length of stay of psychiatric inpatients: implications for financing psychiatric services	2014	10.4414/smw.2014.13991	Switzerland
164	Yu HC, Tsai WC, Kung PT.	Does the pay-for-performance programme reduce the emergency department visits for hypoglycaemia in type 2 diabetic patients?	2014	10.1093/heapol/czt056	Taiwan

LP	Authors	Title	Year	URL/DOI	Country
165	Spaulding A, Zhao M, Haley DR.	Value-based purchasing and hospital acquired conditions: are we seeing improvement?	2014	10.1016/j.healthpol.2014.10.003	US
166	Khan SK, Shirley MD, Glennie C, Fearon PV, Deehan DJ.	Achieving best practice tariff may not reflect improved survival after hip fracture treatment	2014	10.2147/CIA.S65736	UK
167	Lindrooth RC, Konetzka RT, Navathe AS, Zhu J, Chen W, Volpp K.	The impact of profitability of hospital admissions on mortality	2013	10.1111/1475-6773.12026	US
168	Yin J, Lurås H, Hagen TP, Dahl FA.	The effect of activity-based financing on hospital length of stay for elderly patients suffering from heart diseases in Norway	2013	10.1186/1472-6963-13-172	Norway
169	Rymer MM, Armstrong EP, Meredith NR, Pham SV, Thorpe K, Kruzikas DT.	Analysis of the costs and payments of a coordinated stroke center and regional stroke network	2013	10.1161/STROKEAHA.113.001370	US
170	Colais P, Pinnarelli L, Fusco D, Davoli M, Braga M, Perucci CA.	The impact of a pay-for-performance system on timing to hip fracture surgery: experience from the Lazio Region (Italy)	2013	10.1186/1472-6963-13-393	Italy

LP	Authors	Title	Year	URL/DOI	Country
171	Khan SK, Weusten A, Bonczek S, Tate A, Port A.	The Best Practice Tariff helps improve management of neck of femur fractures: a completed audit loop	2013	10.12968/hmed.2013.74.11.644	UK

Annex 3 – Search strategy

PubMed

Search	Query	Res
#8	Search: ("HosMesh] OR "Inpatients"[Mesh] OR "Beds"[Mesh] OR hospital*[Title/Abstract] OR inpatient*[Title/Abstract] OR beds[Title/Abstract] OR bed[Title/Abstract]) AND ("Medicare Payment Advisory Commission"[Mesh] OR "Health Expenditures"[Mesh] OR "Insurance, Health, Reimbursement"[Mesh] OR "Healthcare Financing"[Mesh] OR "Financing, Organized"[Mesh] OR "Financing, Government"[Mesh] OR "Financing,	19,891

	Construction"[Mesh] OR "Economics"[Mesh] OR "Reimbursement, Incentive"[Mesh] OR "Reimbursement Mechanisms"[Mesh] OR "Insurance, Health, Reimbursement"[Mesh] OR "Outliers, DRG"[Mesh] OR "Insurance Coverage"[Mesh] OR "Universal Health Insurance"[Mesh] OR "Deductibles and Coinsurance"[Mesh] OR "Costs and Cost Analysis"[Mesh] OR Payment*[Title/Abstract] OR financing*[Title/Abstract] OR Reimbursement*[Title/Abstract] OR basket*[Title/Abstract] OR coverage[Title/Abstract] OR co-payment*[Title/Abstract] OR copayment*[Title/Abstract] OR Deductibles[Title/Abstract] OR pricing[Title/Abstract] OR tariff*[Title/Abstract] OR minimal requirement*[Title/Abstract]) AND ("Motivation"[Mesh] OR "Reimbursement, Incentive"[Mesh] OR "Precipitating Factors"[Mesh] OR "Motivation"[Mesh]	

	OR "Quality Indicators, Health Care"[Mesh] OR "Health Status Indicators"[Mesh] OR incentive*[Title/Abstract] OR trigger*[Title/Abstract] OR accelerator*[Title/Abstract] OR activator*[Title/Abstract] OR motivation*[Title/Abstract] OR motivator*[Title/Abstract] OR stimulant*[Title/Abstract] OR deterrent*[Title/Abstract] OR disincentive*[Title/Abstract] OR indicator*[Title/Abstract] OR factor*[Title/Abstract] OR influence*[Title/Abstract] OR behaviour*[Title/Abstract] OR behaviour*[Title/Abstract]) Filters: in the last 10 years	
#7	Search: ("HosMesh] OR "Inpatients"[Mesh] OR "Beds"[Mesh] OR hospital*[Title/Abstract] OR inpatient*[Title/Abstract] OR beds[Title/Abstract] OR bed[Title/Abstract]) AND ("Medicare	41,188

	Payment Advisory Commission"[Mesh] OR "Health Expenditures"[Mesh] OR "Insurance, Health, Reimbursement"[Mesh] OR "Healthcare Financing"[Mesh] OR "Financing, Organized"[Mesh] OR "Financing, Government"[Mesh] OR "Financing, Construction"[Mesh] OR "Economics"[Mesh] OR "Reimbursement Mechanisms"[Mesh] OR "Outliers, DRG"[Mesh] OR "Insurance Coverage"[Mesh] OR "Universal Health Insurance"[Mesh] OR "Deductibles and Coinsurance"[Mesh] OR "Costs and Cost Analysis"[Mesh] OR Payment*[Title/Abstract] OR financing*[Title/Abstract] OR Reimbursement*[Title/Abstract] OR basket*[Title/Abstract] OR coverage[Title/Abstract] OR co-payment*[Title/Abstract] OR copayment*[Title/Abstract] OR Deductibles[Title/Abstract] OR pricing[Title/Abstract] OR	

	tariff*[Title/Abstract] OR minimal requirement*[Title/Abstract]) AND ("Motivation"[Mesh] OR "Reimbursement, Incentive"[Mesh] OR "Precipitating Factors"[Mesh] OR "Quality Indicators, Health Care"[Mesh] OR "Health Status Indicators"[Mesh] OR incentive*[Title/Abstract] OR trigger*[Title/Abstract] OR accelerator*[Title/Abstract] OR activator*[Title/Abstract] OR motivation*[Title/Abstract] OR motivator*[Title/Abstract] OR stimulant*[Title/Abstract] OR deterrent*[Title/Abstract] OR disincentive*[Title/Abstract] OR indicator*[Title/Abstract] OR factor*[Title/Abstract] OR influence*[Title/Abstract] OR behaviour*[Title/Abstract] OR behaviour*[Title/Abstract])	
#6	Search: incentle/Abstract] OR trigger*[Title/Abstract] OR accelerator*[Title/Abstract] OR	7,049,322

	activator*[Title/Abstract] OR motivation*[Title/Abstract] OR motivator*[Title/Abstract] OR stimulant*[Title/Abstract] OR deterrent*[Title/Abstract] OR disincentive*[Title/Abstract] OR indicator*[Title/Abstract] OR factor*[Title/Abstract] OR influence*[Title/Abstract] OR behaviour*[Title/Abstract] OR behaviour*[Title/Abstract]	
#5	Search: "MotiMesh] OR "Reimbursement, Incentive"[Mesh] OR "Precipitating Factors"[Mesh] OR "Quality Indicators, Health Care"[Mesh] OR "Health Status Indicators"[Mesh]	557,644
#4	Search: Paymee/Abstract] OR financing*[Title/Abstract] OR Reimbursement*[Title/Abstract] OR basket*[Title/Abstract] OR coverage[Title/Abstract] OR co-payment*[Title/Abstract] OR copayment*[Title/Abstract] OR Deductibles[Title/Abstract] OR	238,181

	pricing[Title/Abstract] OR tariff*[Title/Abstract] OR minimal requirement*[Title/Abstract]	
#3	Search: "Mediment Advisory Commission"[Mesh] OR "Health Expenditures"[Mesh] OR "Insurance, Health, Reimbursement"[Mesh] OR "Healthcare Financing"[Mesh] OR "Financing, Organized"[Mesh] OR "Financing, Government"[Mesh] OR "Financing, Construction"[Mesh] OR "Economics"[Mesh] OR "Reimbursement Mechanisms"[Mesh] OR "Outliers, DRG"[Mesh] OR "Insurance Coverage"[Mesh] OR "Universal Health Insurance"[Mesh] OR "Deductibles and Coinsurance"[Mesh] OR "Costs and Cost Analysis"[Mesh]	654,982
#2	Search: hospile/Abstract] OR inpatient*[Title/Abstract] OR beds[Title/Abstract] OR bed[Title/Abstract]	1,735,415
#1	Search: "Hospesh] OR "Inpatients"[Mesh] OR "Beds"[Mesh]	338,991

Cochrane

ID	Search	Hits
#1	MeSH descriptor: [Hospitals] explode all trees	4070
#2	MeSH descriptor: [Inpatients] explode all trees	1114
#3	MeSH descriptor: [Beds] explode all trees	314
#4	(hospital* OR inpatient* OR beds* OR bed*):ti,ab,kw	242488
#5	MeSH descriptor: [Prospective Payment System] explode all trees	67
#6	MeSH descriptor: [Health Expenditures] explode all trees	265
#7	MeSH descriptor: [Insurance, Health, Reimbursement] explode all trees	336
#8	MeSH descriptor: [Financing, Organized] explode all trees	2097
#9	MeSH descriptor: [Financing, Government] explode all trees	857
#10	MeSH descriptor: [Economics] explode all trees	13880
#11	MeSH descriptor: [Healthcare Financing] explode all trees	8
#12	MeSH descriptor: [Reimbursement Mechanisms] explode all trees	301
#13	MeSH descriptor: [Diagnosis-Related Groups] explode all trees	63
#14	MeSH descriptor: [Insurance Coverage] explode all trees	87
#15	MeSH descriptor: [Deductibles and Coinsurance] explode all trees	22
#16	MeSH descriptor: [Costs and Cost Analysis] explode all trees	11613

#17	(Payment* OR financing* OR Reimbursement* OR basket* OR coverage OR co-payment* OR copayment* OR Deductibles OR pricing OR tariff* OR minimal requirement*):ti,ab,kw	12962
#18	MeSH descriptor: [Motivation] explode all trees	9458
#19	MeSH descriptor: [Reimbursement, Incentive] explode all trees	143
#20	MeSH descriptor: [Precipitating Factors] explode all trees	10
#21	MeSH descriptor: [Quality Indicators, Health Care] explode all trees	666
#22	MeSH descriptor: [Health Status Indicators] explode all trees	23536
#23	(incentive* OR trigger* OR accelerator* OR activator* OR motivation* OR motivator* OR stimulant* OR deterrent* OR disincentive* OR indicator* OR factor* OR influence* OR behaviour* OR behaviour*):ti,ab,kw	501700
#24	(#1 OR #2 OR #3 OR #4)	242746
#25	(#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17)	25794
#26	(#18 OR #19 #20 OR #21 #22 OR #23)	503328
#27	#24 AND #25 AND #26 with Cochrane Library publication date Between Jan 2013 and Jan 2023	1795

Annex 4 – Table with information on number of publications from each country published between 2013 and 2023

Country/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Canada	0	0	0	2	0	1	0	0	1	1	0
China	0	0	1	2	0	2	2	1	3	5	0
Denmark	0	0	0	1	0	0	0	0	0	1	0
France	0	0	1	0	1	1	0	0	1	2	0
Germany	0	0	1	1	0	1	0	0	1	1	0
Hungary	0	1	0	0	0	0	0	0	0	1	0
Indonesia	0	0	0	0	0	0	0	0	0	1	0
Iran	0	0	0	0	0	0	0	0	0	1	0
Israel	0	0	0	0	0	0	1	0	1	1	0
Italy	1	0	0	0	1	0	0	0	1	0	0

Country/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Japan	0	0	0	0	0	0	0	0	1	0	0
Mexico	0	0	0	0	0	0	1	0	0	0	0
Netherlands	0	0	0	0	1	0	0	0	0	1	0
New Zealand	0	0	0	0	0	0	0	0	0	1	0
Norway	1	0	0	1	1	0	0	0	1	1	0
Poland	0	0	1	0	0	0	0	0	0	0	0
Portugal	0	1	0	0	0	0	0	0	0	0	0
South Korea	0	0	2	3	1	1	1	0	0	0	0
Sweden	0	0	0	0	0	0	1	1	0	1	0
Switzerland	0	1	1	0	1	0	0	1	1	0	0
Taiwan	0	1	5	1	0	2	0	3	3	2	0
Turkey	0	0	1	0	0	0	0	0	0	0	0
UK	1	1	2	0	0	0	2	0	2	2	1

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