

EXPENDITURE CONTROL MEASURES IN DRG-BASED HOSPITAL PAYMENT SYSTEMS

SUPPLEMENT



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Reported interests KCE members:

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Reported interests:

All experts and stakeholders consulted within this report were selected because of their involvement in the topic of this report. Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report.

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Publication date:

20 December 2024

Project number:

2023-01-HSR

Domain:

Health Services Research (HSR)

MeSH:

Health Care Reform; Prospective Payment System; Diagnosis-Related Groups; Reimbursement, Incentive

NLM Classification:

WX 157

Language:

English



Format:

Adobe® PDF™ (A4)

Legal depot:

D/2024/10.273/57

ISSN:

2466-6459

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How to refer to this document?

Van de Voorde C, Lefèvre M, Van den Heede. Expenditure control measures in DRG-based hospital payment systems. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2024. KCE Reports 392S D/2024/10.273/57.

This document is available on the website of the Belgian Health Care Knowledge Centre.

<https://doi.org/10.57598/R392S>



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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
ABP	Activity-Based Payment
AC	Aide à la contractualisation (France)
ACM	Associated Complications or co-Morbidities (France)
ACSS	Agenzia di Controllo del Sistema Sociosanitario / Social and Health System Control Agency (Italy)
AIFA	Agenzia Italiana del Farmaco / Italian drug authority (Italy)
aG-DRG	Adjusted German Diagnosis Related Group (Germany)
AME	Aide Médicale de l'Etat / State medical aid (France)
AREU	Agenzia Regionale Emergenza Urgenza / Emergency Regional Agency (Italy)
ARS	Agence Régionale de Santé / Regional Health Agency (France)
ASL	Azienda Sanitaria Locale / Local Health Authority (Italy)
ASST	Azienda Socio Sanitaria Territoriale / Health Territorial Authority (Italy)
ATIH	Agence technique de l'information sur l'hospitalisation / Technical agency for information on hospital care (France)
ATS	Agenzia di Tutela della Salute / Health Protection Agency (Italy)
ATU	Autorisation temporaire d'utilisation / Temporary access for treatment (France)
C2S	Complémentaire santé solidaire / Publicly subsidised complementary insurance scheme (France)
CC	Complications or comorbidities (Germany)
CCAM	Classification Commune des Actes Médicaux (France)
CEPS	Comité économique des produits de santé / Economic Committee for Healthcare Products (France)
CERGAS	Centre for Research on Health and Social Care Management (Italy)
CH	Centre Hospitalier (France)
CHI	Complementary health insurance
CHR	Centre Hospitalier Régional (France)
CHU	Centre Hospitalier Universitaire (France)
CKD	Chronic Kidney Disease



CLCC	Centre de Lutte Contre le Cancer (France)
CMI	Case Mix Index
CMS	Centers for Medicare & Medicaid Services
CNAM	Caisse nationale de l'Assurance Maladie / National health insurance fund (France)
COPD	Chronic obstructive pulmonary disease
COVID-19	Coronavirus disease 2019
CReG	Chronic Related Group (Italy)
CRO	Clinical Research Organisation (Hungary)
CSG	Contribution sociale généralisée / General social contribution (France)
CT	Computed tomography
CVVHD	Continuous venovenous hemodialysis
DGOS	Direction Générale de l'Offre de Soins / General Directorate of Healthcare Supply (France)
DGR	Decreto del Governo Regionale / Regional Government Resolution (Italy)
DKG	Deutsche Krankenhausgesellschaft / German Hospital Federation (Germany)
DREES	Direction de la recherche, des études, de l'évaluation et des statistiques / Directorate for research, studies, evaluations and statistics (France)
DRG	Diagnosis Related Group
DSA	Digital Subtraction Angiography
ECG	Electrocardiogram
ECMO	Extracorporeal membrane oxygenation
EDS	Episode de soins / Episode-based funding (France)
EEG	Electroencephalogram
EESZT	Elektronikus Egészségügyi Szolgáltatási Tér / National eHealth Infrastructure (Hungary)
EHIF	Estonian Health Insurance Fund (Estonia)
ENC	Etude Nationale de Coûts / National Cost Study (France)
ERAS	Enhanced Recovery After Surgery
ESPIC	Etablissements de Santé Privés d'Intérêt Collectif / Private non-profit hospital under contract with the SHI (France)



ESZFK	Egészséginformatikai Szolgáltató és Fejlesztési Központ / Health IT Service Provider and Development Centre (Hungary)
EU	European Union
FDA	Fixkostendegressionsabschlag / Fixed-cost depression deduction (Germany)
FFS	Fee-for-service
FP	For-profit
FSE	Fascicolo Sanitario Elettronico / Electronic Health Record (Italy)
G-BA	Gemeinsamer Bundesausschuss (Germany)
GDP	Gross Domestic Product
GHM	Groupes Homogènes de Malades / Homogeneous patient groups (France)
GHS	Groupes Homogènes de Séjours / Homogeneous groups of stays (France)
GHT	Groupement hospitalier de territoire / Local hospital group (France)
GIR	Groupe Iso-Resource / Iso-weighted resource groups (France)
GKV	Gesetzliche Krankenversicherung / Statutory Health Insurance (Germany)
GME	Groupe médico-économique (France)
GMP	GIR Moyen Pondéré / Iso-care group (France)
GP	General practitioner
GYÓGYINFOK	Gyógyító Ellátás Információs Központja / Information Centre for Healthcare (Hungary)
HAH	Hospital at Home
HAS	Haute Autorité de Santé / French National Health Authority (France)
HBC	Homogén Betegségcsoportok / Homogeneous Disease Group (Hungary)
HCFA	Health Care Financing Administration
H-DRG	Hungarian Diagnosis Related Groups (Hungary)
HIF	Health Insurance Fund (Hungary)
HIS	Hospital information system
HIV	Human Immunodeficiency Virus
HNDP	Hospital network development plan (Estonia)
HUF	Hungarian Forint



ICD	International Classification of Diseases
ICF	International Classification of Functioning, Disability and Health
ICHOM	International Consortium for Health Outcomes Measurement
ICPM	International Classification of Procedure in Medicine
IFAQ	Incitation financière pour l'amélioration de la qualité (France)
InEK	Institut für das Entgeltsystem im Krankenhaus / National Institute for the Reimbursement of Hospitals (Germany)
IRCCS	Istituto di Ricovero e Cura a Carattere Scientifico / Scientific Institute for Research, Hospitalization and Healthcare (Italy)
IT	Information Technology
KEF	Közbeszerzési és Ellátási Főigazgatóság / Public Procurement and Supply Directorate (Hungary)
KHVVG	Krankenhausversorgungsverbesserungsgesetz / Hospital Care Improvement Act (Germany)
KHEntgG	Krankenhausentgeltgesetz / Hospital Remuneration Act (Germany)
KHPfIEG	Krankenhauspflegeentlastungsgesetz / Hospital Nursing Relief Act (Germany)
LEA	Livelli Essenziali di Assistenza / Essential Assistance Levels (Italy)
LFSS	Loi de financement de la Sécurité sociale / Social Security Financing Act (France)
LG	Leistungsgruppen / Care delivery groups (Germany)
LOS	Length of Stay
LTC	Long Term Care
MDC	Major Diagnostic Category
MERRI	Missions d'enseignement, de référence et d'innovation (France)
MIG	Missions d'intérêt général / Activities of general interest (France)
MIGAC	Missions d'intérêt général et d'aides à la contractualisation (France)
MLA	Mehrleistungsabschlag / Additional-volume-deduction (Germany)
MSAP	Mise sous accord préalable (France)
NCSP	NOMESCO (Nordic Medico-Statistical Committee) Classification of Surgical Procedures (Estonia)
NEAK	Nemzeti Egészségbiztosítási Alapkezelő / National Health Insurance Fund Administration (Hungary)



NFP	Not-for-profit
NOC	Nucleo Operativo di Controllo / Operational Control Unit (Italy)
NUB	Neue Untersuchungs- und Behandlungsmethoden (Germany)
OECD	Organisation for Economic Co-operation and Development
ONDAM	Objectif national de dépenses d'assurance maladie / National Expenditure Targets (France)
OPS	Operationen- und Prozedurenschlüssel / Procedure Classification (Germany)
P4Q	Payments for Quality
PEPP	Pauschalierende Entgelte Psychiatrie und Psychosomatik / Flat-rate remuneration system for psychiatry and psychosomatics (Germany)
PHC	Primary Healthcare
PHI	Private Health Insurance
PKV	Privaten Krankenversicherung / Private Health Insurance (Germany)
PMSI	Programme de Médicalisation des Systèmes d'Information / Hospital discharge database (France)
PPBF	Preannounced performance base-fee (Hungary)
PPR	Pflegepersonalregelung / Nursing staff regulation (Germany)
PpSG	Pflegepersonal-Stärkungsgesetz / Nursing Staff Strengthening Act (Germany)
PpUGV	Pflegepersonaluntergrenzen-Verordnung / Ordinance on Nursing Staff Minimum Limits (Germany)
PROMIS	Patient-reported Outcomes Measurement Information System (Estonia)
PUMA	Protection universelle maladie / Universal medical coverage (France)
PVL	Performance volume limit (Hungary)
REP	Rehabilitációs Ellátási Programok / Rehabilitation Treatment Programme (Hungary)
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
SDO	Scheda di Dimissione Ospedaliera / Hospital Discharge Record (Italy)
SDO4	Flusso informativo delle endoprotesi / Endoprosthesis detection flow (Italy)
SGB	Sozialgesetzbuch / Social Code (Germany)
SHI	Statutory Health Insurance



SSFA	Social Security Financing Act (France)
SSN	Servizio Sanitario Nazionale / National Health System (Italy)
SSR	Servizio Sanitario Regionale / Regional Health System (Italy)
SSR	Soins de suite et de readaptation / Post-acute and rehabilitation service (France)
STEMI	ST-elevation myocardial infarction
T2A	Tarification à l'Activité / Activity-based payment (France)
TB	Tuberculosis
US	United States
USLD	Unité de soins de longue durée / Long-term care unit (France)
WHO	World Health Organization



1. INTRODUCTION

This Supplement to [KCE Report 392](#) contains the country reports for Estonia, France, Germany, Hungary and Italy (Lombardy). The country reports are organised in a consistent format and include the following sections:

- Brief overview of the healthcare system and hospital sector
- Main characteristics of the DRG system
- DRG exclusion mechanisms and their payments
- Expenditure control mechanisms
- Payment reforms.

The terminology in each chapter has been kept as selected by the country experts, even though this results in different terms for the same concept.

The authors are listed at the beginning of each country report.

2. ESTONIA

Authors: Kaija Kasekamp, Kristiina Kahur

2.1. Overview of the healthcare system and hospital sector

2.1.1. Introduction to the healthcare system

Estonia, a member of the European Union (EU) situated in Northeastern Europe, is home to approximately 1.3 million people. In 2022, the Estonian GDP reached € 31 billion, with a per capita income of € 23 641 in current prices.¹ Estonia implemented a mandatory health insurance system in the early 1990s. Over the years, the country has undergone rapid social and economic transformations, transitioning from a lower middle-income country to a high-income one. This transformative period has been characterised by robust reforms in the Estonian health system.

In the last two decades, Estonia achieved the highest increase in life expectancy at birth within the EU, experiencing a notable improvement of 7.5 years (from 71.1 to 78.9 years).² The healthcare system has received acclaim for delivering commendable outcomes at lower costs, achieving health results comparable to other high-income countries while spending significantly less than the EU average – 7.8% of GDP in Estonia compared to the EU's 9.2% average in 2020.³ However, despite longer life expectancy, the population in Estonia faces challenges as they live with poorer health, notably with cardiovascular issues being a leading cause of mortality. Substantial inequalities persist in health status, health behaviours, and perceptions of health. Additionally, there are significant social and regional disparities in access to healthcare services.²

The dominant source of health financing is public, constituting approximately three-quarters of total health expenditures. Out-of-pocket expenditures form around 23% of the total health expenditures.⁴ The health financing system is based on compulsory, solidarity-based insurance, with the majority of revenues coming from an earmarked payroll tax. Employers and the self-employed make contributions to the Estonian Health Insurance Fund (EHIF). The payroll tax (locally called social tax) is collected by the Estonian Tax and



Customs Board, and then transferred to the EHIF. The Estonian Tax and Customs Board is the country's tax authority, which also collects the revenue for the state budget. The social tax covers both health and pension contributions (equal to 13% and 20% of employees' and self-employed individuals' earnings, respectively). In recent years, there has been an increase in central government budget transfers on top of social tax contributions, as sole reliance on the tax has proved to be unsustainable. Private health insurers account for only a marginal but increasing share of health financing.

EHIF pools the majority of public funding for health and also acts as a single purchaser of care. The EHIF is an independent public body responsible for contracting service providers, reimbursing health services and prescription medicines, and covering sick leave.²

2.1.2. Hospital network

The Health Services Organization Act defines all healthcare providers as entities operating under private law, with the public interest being represented through membership of supervisory boards for publicly owned providers (state, municipalities). All hospitals have full managerial rights over assets and access to financial markets. The public hospitals are able to accumulate profit, but the legal form defines that the profits can only be used to achieve the statutory goals of the organisation. In 2021, there were more than 1 483 healthcare institutions in Estonia of which are mostly private primary and dental care providers. In 2023, there were 30 public hospitals and 20 private hospitals in Estonia.⁴ Inpatient acute care providers included 20 public hospitals that are part of the hospital network development plan (HNDP). The HNDP hospitals are publicly owned, however, there are more public hospitals in Estonia which are not part of the HNDP and there are also privately owned hospitals.⁴ The basis for the hospital network was laid in early 2000, when Estonia implemented a full-scale hospital network reform (see Box 1). As the HNDP hospitals have guarantee to being eligible for long-term contracts with the EHIF, the private providers need to compete for the contract according to a tender process. Furthermore, only the HNDP hospitals are eligible for the state infrastructure investment.

Box 1 – Hospital sector reform in Estonia

The hospital sector reform started in late 90s with the development of the Hospital Master Plan 2015 to make projections about future hospital capacity in the country. The criteria used for planning hospital capacity included sufficient population pools to support minimum service volumes for quality and efficiency, the development of medical technology, demographic and epidemiological projections, and the requirement that a hospital should be no further away than 60 minutes travel time by car (70 km). The plan suggested that the number of acute inpatient beds be reduced by two thirds and that acute inpatient care be concentrated in 15 larger hospitals, decreasing the total number of hospitals, through mergers and other types of restructuring, by three quarters (from 68 to 15). After a series of consultations and some compromise, the Hospital Master Plan 2015 was approved as government regulation in 2003. This version envisaged 19 hospitals (rather than 15 as suggested in the earlier version of the master plan) being eligible for long-term contracts with the health insurance fund and being eligible for state investment as they were defined as strategically important. The regulation was adopted for 15 years.

Source: PRAXIS Center for Policy Studies (2006)⁵

Acute hospital care is regulated by the Health Services Organisation Act, which divides since 2003 the HNDP hospitals into groups based on catchment area size:

1. Regional hospitals with catchment population 0.5-1 million;
2. Central hospitals with catchment population 100 000-200 000;
3. General hospitals with catchment population 50 000-100 000;
4. Local hospitals with catchment population up to 40 000 and within 70 km or one hour drive reach to a higher level hospital.

The Health Services Organisation Act does not specify the catchment area of these hospitals, but 94% of the population live within a 30-minute drive of a hospital. By 2023, the HNDP includes still three regional (one of those is



Tallinn Children's Hospital which covers the complex services in 30 specialties for children up to 18 years), four central, 11 general and one local hospitals, and since 2018 the list was complemented with one rehabilitation hospital.

This hierarchy of hospitals relates to the range of specialist medical care and specific services that each hospital is expected to provide. The regional hospitals provide a full range of healthcare services. Central hospitals deliver most services; although, some services, such as cardiac surgery, neurosurgery and certain oncological services, are excluded. General hospitals provide 24-hour emergency care as well as intensive care and some surgical and medical specialties. Local hospitals deliver 24-hour doctor-based emergency care but no surgeries.

There are various challenges that hospitals need to address. Since there have been no major changes in the HNBP since its introduction in 2003 despite of population changes, some smaller general and local hospitals serve less than 20 000 people and therefore face financial instability. Another challenge is that hospitals outside larger centres experience shortage in specialists and they need to rely on networking with regional hospitals. The strategic governmental document 'Estonian Health Care Development Directions until 2020' was approved in 2014 and it introduced approaches, such as building hospital networks for enhancing access to specialised care in smaller hospitals by sharing available resources (health professionals, technologies) in a coordinated way.⁶ By 2018, the two out of three regional hospitals had coordinated a network of six general hospitals. Although the network was expected to expand further, there have been no changes in expanding the networks since 2018. In addition, there are other collaboration agreements between central and general hospitals, for example for specific treatments such as cancer. In addition, some hospitals struggle with the historically inherited big and inefficient infrastructure.⁷ Since 2015, the Ministry of Social Affairs, together with other partners in the health sector, has been trying to revise the HNBP plan which was aimed to reach its term by 2018 as it was adopted for 15 years, but in 2018 no changes were made to the plan and the temporary HNBP was made permanent.

In 2020, the Ministry of Social Affairs initiated the 'Person-Centred Integrated Hospital Master Plan 2040' project with funding from the EU Technical Support Instrument. The aim was to analyse the organisation of Estonian specialist medical care and the hospital network and to propose a new hospital network plan for the year 2040.⁷ The report proposes to further strengthen the coordinating role of PHC providers in health maintenance, disease prevention and chronic disease management. It suggested that hospitals serving less than 20 000 people should be transformed into community hospitals, providing services to patients with sub-acute episodes of chronic disease. The analysis proposes that the community hospital system would become part of the PHC network. By mid-2024, no political decision had been made on the next steps in planning the hospital network. The work on a proposal is underway in the Ministry of Social Affairs.

2.2. Main characteristics of the DRG system

2.2.1. Characteristics of DRGs

2.2.1.1. The situation prior to the introduction of DRGs

Before the introduction of DRGs, fee-for-service (FFS) and per diem rates were the main payment methods for inpatient care. In addition, in 1998, so-called 'complex prices' were introduced in Estonia for several well-defined surgical diagnoses such as appendectomy, hip and knee replacements and normal childbirths. This was a country specific case-based system which did not base on any internationally used payment system. In the beginning of 2000s, there were about 50 complex prices, although the share of these in terms of the total inpatient budget was small compared to per diem payments and individual FFS payments.

Prior to the introduction of DRGs, the average cost per case increased rapidly due to the perverse incentives of per diem and FFS-based payments and the volume inflation growth was fast. For example, between January 2000 and September 2002, the increase was more than 30% while the official price increase was only 13%. In addition, there was extensive overcapacity in the hospital sector, the use of bed-days was inefficient, the average length of stay was high (9.9 days in 1999) and difficulties with



access to care and long waiting times existed.⁸ In 2001, the EHIF decided to introduce a DRG-based payment system.

DRGs were seen as a tool to gain efficiency, contain costs of inpatient care in terms of the fixed budget of EHIF, and decrease the volume inflation while controlling the oversupply of services per episode of care. An additional argument for the introduction of a DRG system was that it provides the opportunity to increase the transparency of hospital output. Due to the formerly used FFS and per diem payment methods and well-developed electronic data transmission systems, Estonia had already a relatively transparent overview of the output of hospitals as hospitals transferred detailed patient-level data to the EHIF and increased transparency was not considered as the main objective of the introduction of DRGs. Under the FFS hospitals were obliged to submit medical records including detailed patient level characteristics such as diagnostic information (ICD-10 coding). Therefore, the DRG system was mainly seen as a tool to increase productivity and efficiency, rather than to increase the transparency of hospitals output.⁸

2.2.1.2. Implementation-related issues

Before the DRG system implementation, several DRG systems were compared to find the best option for Estonia. The alternatives under consideration were Australian AR-DRG (Australian Refined Diagnosis Related Groups), Nordic NordDRG and Estonia's own case-based system. Due to the very tight timeframe, a rather pragmatic approach was used and there was no in-depth analysis. However, the pros and cons of different DRG systems were compared. Various criteria were used to evaluate the available systems in line with other clinical classifications in use including clinical practice, clinical cases, cost of implementation, and technical support. The final decision was in favour of NordDRG.⁸

The DRG implementation plan in Estonia was prepared in 2001 by the EHIF. It was initially planned for DRG-based reimbursement of hospitals to start in 2002. However, during the preparatory process it became clear that the plan was unrealistic, and more time was needed for technical preparation. It was therefore decided that in 2003 the DRG system would be used only as a grouping tool and in 2004 the DRG system would start to be used as a

payment tool. To make the implementation smooth in an administrative sense, DRG as a payment system was put into practice from 1 April 2004 as the contractual year between EHIF and providers began in April.

DRGs were implemented gradually to mitigate the risk of technical problems and financial impact for providers and EHIF. To allow providers sufficient time to respond to the change in the payment methods and manage the associated financial risks, the reimbursement rate of the DRG tariff gradually increased from 10% in 2004 and 50% in 2005 to 70% in 2009, but never to 100%. As such, the DRG payment has remained complemented by FFS and per diem payments for services performed during the hospital stay or day surgery treatment at a rate of 30% of the national tariffs. In practice, 70% is paid according to the DRG tariff and 30% based on FFS and per diem tariffs. This may lead to the situation where the actual payment per admission is higher than a 100% DRG tariff. But it also may lead to the situation when the actual payment per admission is lower than a 100% DRG tariff. A 30% FFS and per diem share has been maintained to ensure the provision of detailed activity information that is important for monitoring and costing purposes.⁸

Responsibility for developing and updating the DRG system in Estonia lies with the EHIF and it is done on a yearly basis in cooperation with other countries using the NordDRG system. The cooperation is coordinated and led by the Nordic Casemix Centre.

2.2.1.3. Combining the DRG system with other provider payment methods

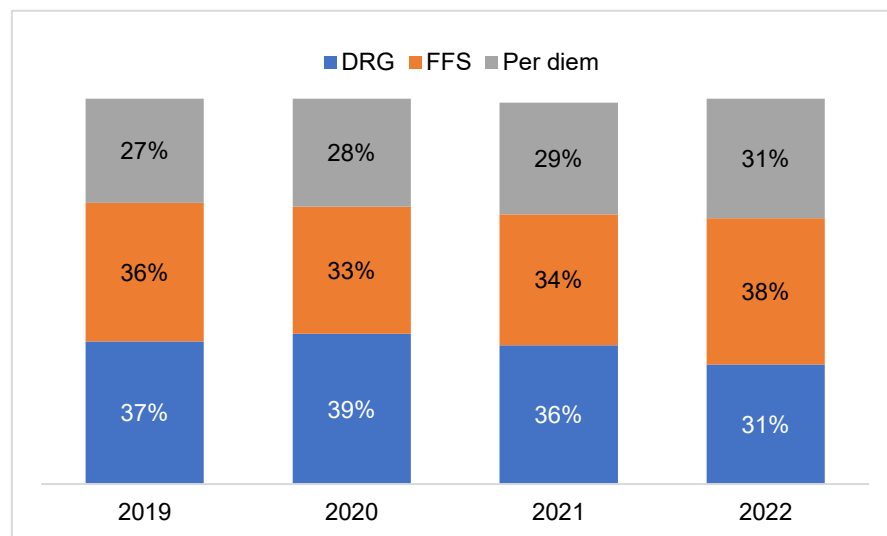
Since the implementation of DRGs as a payment method in 2004, the share of DRG payments has varied, ranging between 31% and 46%. One of the reasons why the share of DRGs is changing across the years is related to the changes in the scope of DRGs and amount of outliers. Another reason is related to the changes in EHIF's claims management process and use of digital technologies which enabled automated production of non-personalised invoices by providers starting from 2020.⁹

Figure 1 depicts the share of different payment systems deployed in inpatient care during 2019-2022. The share of the DRG-based payment ranges between 36-39%. In 2022, the DRG share dropped from 36% to 31%



while the share of FFS and per diem payments increased by 4% and 2% percentage points, respectively. This can be explained by an increasing number of DRG cost-outliers, i.e. the cases which fall outside the value of lower or higher trim points of the respective DRGs, and which are paid by FFS and per diem-based payment methods.

Figure 1 – Share of the payment methods in inpatient care (2019-2022)



Source: Data provided by the EHIF

2.2.1.4. The scope of DRGs

The scope of DRGs has largely remained the same since the implementation, i.e. DRGs in Estonia are used for reimbursement in acute inpatient cases and for those outpatient cases involving surgical procedures. DRGs concern only the providers that have a contract with the EHIF (see also section 2.4). Even though all cases within the scope of DRGs are assigned to DRGs, the DRG-based payment does not apply to all assigned cases. A system of DRG exclusions exists in Estonia covering the cases with certain characteristics such as types of care, patient groups, hospital departments, etc. (Table 1). In addition, DRG cost-outliers – the cases that are too low cost or too high cost – are determined to allow fair payments for the cases which differ from the average within a single DRG. Both exemptions and cost-outliers are assigned to DRGs but are reimbursed fully through FFS and per diem payments. A more detailed overview is provided in section 2.3. The salaries of medical specialists are included in the DRG tariff.

The number of DRGs has changed since the introduction of the DRG system in Estonia. In 2003, the initial number of DRGs was 496, covering only inpatient care. This number remained constant until 2010 when the EHIF updated their national NordDRG version by introducing DRGs for outpatient visits (DRGs are not used for reimbursement for outpatient visits and medical day care but only to classify cases).

Because of this update, in 2011, the number of DRGs increased significantly to 786.¹⁰ Subsequently, the number of DRGs experienced slight fluctuations, hovering around 800. These changes in the number of DRGs primarily resulted from the deletion, splitting, or merging of existing DRGs, as well as the creation of new ones. As of the 2024 Estonian DRG version, the system includes a total of 806 DRGs.¹¹



2.2.1.5. *The view of stakeholders*

The main interested party of DRG implementation was very clearly the EHIF. Other parties including the Ministry of Social Affairs, medical associations and providers were relatively inactive during the preparatory period and were not in strong favour of the idea. The Ministry of Social Affairs has a rather small role on everyday reimbursement policy and operational issues, which explains their passive role. At the same time, the Ministry has the role of supporting the strategic direction and agreeing at a macro level. Regarding the latter, there was quiet support for DRG implementation. On the operational side, the Ministry of Social Affairs was related to the introduction of procedure classification (NCSP) compatible with the NordDRG system as being the responsible body for maintaining primary classifications as NCSP but also ICD-10.

The Ministry's role increased during the final decision-making process (whether DRGs would be implemented or not) when the providers' opposition increased tremendously. The then minister (also as the head of the EHIF Supervisory Board) had the mediator's role between the EHIF and providers. Despite low interest of medical associations, single medical doctors were actively involved during the preparatory period. During the process, the EHIF involved various specialists to support the process. Their role was to translate DRG terminology (e.g. DRG names), to do the mapping between NCSP and existing surgical intervention codes, and to assess the feasibility of DRG logic in terms of clinical practice. The interest of the medical community was low with some exemptions. The main fear of doctors was that as a result of DRGs they would have to spend more time on coding and have less time for clinical work. At the same time, the message and reality was that actually the DRG system did not change the work and coding

burden of doctors, and the only changes were related to administrative procedures inside providers and between providers and the purchaser.

The interest among hospitals at the very beginning was low, but after introducing the preliminary price calculations their interest started to increase. The EHIF introduced preliminary DRG prices for the average costs of cases without trimming the outliers. Therefore, the DRG prices were very unfavourable for regional and central hospitals. Following this, regional hospitals became the biggest opponents to the DRG system, as they saw the potential threat of losing revenues. However, this has also had a positive impact in raising awareness about the DRG system among hospitals. The final negotiations were held with the Hospital Association, which also represents all hospitals in the contract negotiations. Therefore, at the same time, the Hospital Association in general, which has the majority of members from lower-level hospitals, was not clearly opposing the DRG system. Hence, the regional hospitals' voice did not influence the final decision.⁸

2.2.2. *Benefit package costing*

2.2.2.1. *Revising the benefit package*

The benefit package in Estonia consists of lists for health services covered by the EHIF. Regulations on the inclusion of goods and services in the statutory benefit package have been in effect since 2002. The benefits are defined as specific services and used for FFS, per diem payments and serve as an input for DRGs. There are three main regulatory documents describing the formation of the benefit package and costing.^a

The list of healthcare services and their price levels may be amended at least once a year, based on the needs and financial possibilities of the EHIF, taking into account the medical efficacy, cost-effectiveness and budgetary

^a Government Regulation No. 138 'Estonian Health Insurance Fund Health services list'. <https://www.riigiteataja.ee/akt/120122023023>

Government Regulation No. 301 'The criteria for amendment of the list of the health care services of the Estonian Health Insurance Fund and their evaluation procedures'. <https://www.riigiteataja.ee/akt/114072018010>

Minister of Social Affairs Regulation No.135 'Assumption of the payment obligation by the Estonian Health Insurance Fund from the insured person and the methodology for calculating the fee payable to the health care provider'. <https://www.riigiteataja.ee/akt/125112011004?leiaKehtiv>



impact, as well as societal needs and alignment with the health policy objectives. Since 2018, a committee for health service list and a hospital care committee have been advising the EHIF on updating the list. The committee's 13-members include representatives from the EHIF, Ministry of Social Affairs, professional and patient organisations and others. Providers, specialist associations or the EHIF can initiate the revision of service prices and payment methods. The procedure for revising service prices is regulated at the Government level.¹²

2.2.2.2. Costing methodology

EHIF prices for the services are calculated using the activity-based costing method and reflect approximate actual cost of services. The EHIF uses a bottom-up approach to establish unit costs by tracking the actual resource use and associated costs of care delivery. In principle, prices for health services should cover all costs associated with their provision. Since 2003, the capital costs have been calculated into the prices reimbursed by the EHIF to cover the investment in medical technology and depreciation of premises.¹³ The cost related to training new medical staff, e.g. resident salaries and compensation for teachers, is not included in the prices but compensated separately. The EHIF also finances separately different service innovations.¹⁴ All EHIF approved benefit package service prices are maximum prices, but if agreed so contracts between providers and the EHIF can include lower prices.

The services included in the benefit package list of healthcare services have a fixed service structure based on activity-based costing. The services consist of basic activities of a medical nature (including necessary materials) and support activities. The main activities are directly related to providing healthcare services to the patient, and for their implementation, basic healthcare resources are used (medical staff, medical premises, equipment and inventory). The content of support activities (IT support, management, laundry, etc.) is not described in detail and one support activity is generally described as one cost line in the activity-based costing model.¹³

2.2.2.3. Cost data collection

Mostly the costing is done for services through an annual process of applying for changes in the benefit package or cost level, defining the new service structure and related costs, making cost and budget impact estimates, and applying the updated prices depending on budget availability for the following year.

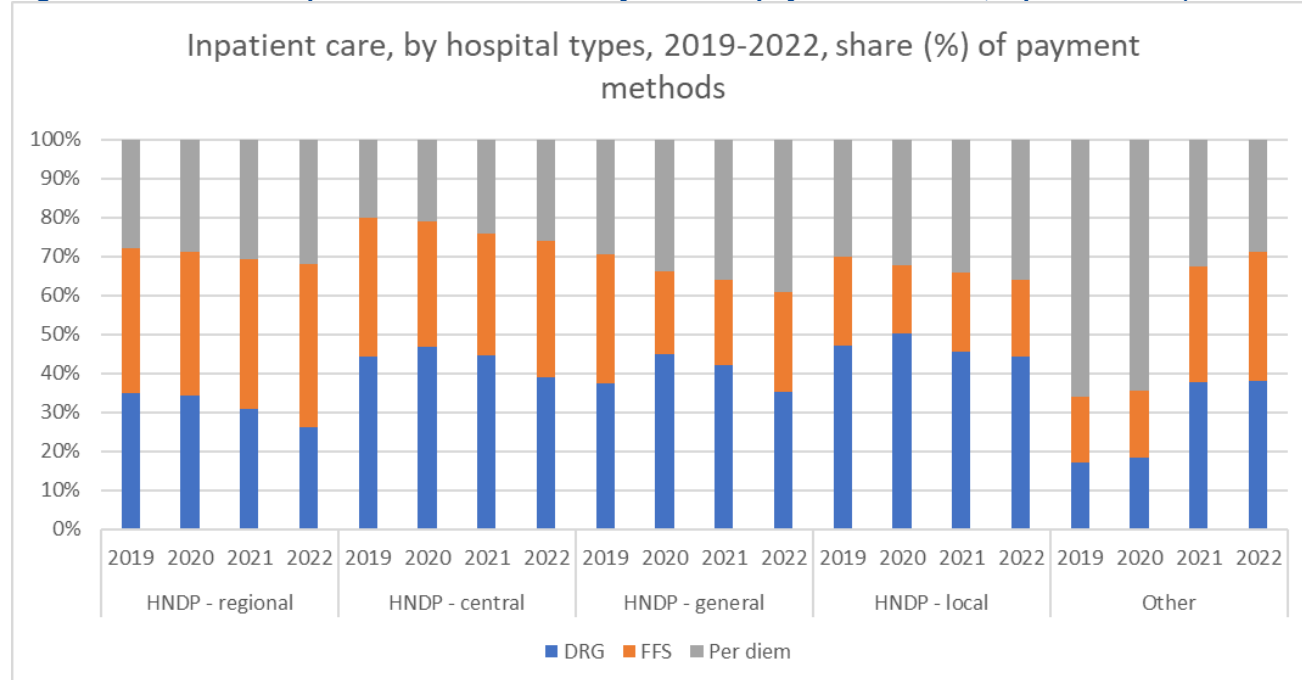
The costing of resources related to core activities is done by specialty in cooperation with professional associations. Medical expertise is always included in the process of defining the need for resources for services with medical nature. Each specialty is mapped in full including all resources used (e.g. equipment, inventory, materials) and their costs and optimal times of use. For validating the costing results, actual cost data of the healthcare providers are used. The data are collected for supportive costs generally from five reference hospitals. Costing of resources related to support activities is not specialty-specific and takes place in direct cooperation with the Estonian Hospital Association and the reference hospitals. When costing the resources for services with medical nature, the number of reference facilities may vary, because there may only be for instance two hospitals in the country providing neurosurgery. The EHIF uses mostly a retrospective approach of using cost data from the latest available year.

2.3. Overview of exclusion mechanisms and their payment method

The share of hospital revenues covered by DRG payments varies between the hospitals and depends on the range of services that are provided, if the services are within or outside the DRG scope and other factors. Figure 2 depicts the hospital revenues by different payment methods (inpatient care). To address the differences between the hospitals, they are categorised based on their affiliation with HDNP and the specific type of HDNP hospital (regional, central, general, and local).



Figure 2 – Share of hospital revenues covered by different payment methods, inpatient care (2019-2022)



Source: Data provided by the EHIF

The up-to-date information with the status of 2024 on DRG exclusions is provided in Table 1.

The main reasons for exclusion are as follows:

- Certain cases incur significantly higher costs than the average within a DRG
- Certain services do not fit well into the DRGs due to their unique nature
- Some procedures or cases are inherently more complex and resource-intensive than others within the same DRG.

Exclusions allow for adjustments to account for these cases, ensuring that the providers are adequately reimbursed for the resources required. All exclusions are paid based on FFS or per diem rates. The payment rates are the same for all hospitals.

**Table 1 – Exclusion mechanisms**

Exclusion mechanism	Description
Patient groups	Patients with principal diagnosis code (ICD-10) Z511 Chemotherapy session for neoplasm or Z512 Other chemotherapy. Patients being transferred from one type of hospital to another one (e.g. from local hospital to regional hospital or central hospital to local hospital, the higher-level hospital is reimbursed according to the DRG and the lower-level hospital based on FFS and per diem payment).
Products/ Services	High-cost drugs (as of Jan 2024, 131 different drugs), medical devices (13) and services (34), incl. organ transplantations. Outpatient visit DRGs (endoscopic services, minor surgery or doctor appointments without any intervention), and DRGs without price /cost weight (119).
Hospitals or hospital departments	Psychiatric care, rehabilitation, follow-up care, tuberculosis, occupational diseases.
Outliers	Starting from 2018, a new methodology is used to define and eliminate the outliers. The following approach is used: 1. An average of each DRG is calculated 2. A fixed percent of the cases from high and low cost are trimmed (5% from low and 10% from high cost) 3. An average of remaining cases of each DRG is calculated which is used as DRG tariff of the respective DRG. Outliers are paid based on FFS and per diem rates.

Source: EHIF (2024)¹⁵

2.4. Control mechanisms

The relationship between the healthcare providers and the EHIF is based on contracts, and both public and private providers can hold contracts with the EHIF. The EHIF is allowed to selectively contract providers, but has to contract all HNBP hospitals. Furthermore, the EHIF has to contract the

HNBP hospitals for at least 80% of their previous year's actual contract amount.²

2.4.1. Contracting process

The EHIF control mechanisms are based on its contract terms. The contract's framework covers medium-term conditions for five years for HNBP hospitals and at least five years for other selected providers. EHIF contracts with health service providers specify the precise terms for payment in each care setting (e.g. primary care, outpatient specialist care, etc.). These include: payment methods and procedures for processing payment, caps on volumes and costs of care by specialty, agreements on service quality and access (e.g. waiting times, hours of operation, requirement to participate in clinical audits, etc.), information reporting and claims submission requirements, and liabilities of the respective parties if the contract terms are violated. Every year during contract negotiations, the EHIF agrees with providers on budget, as well as case volume for specialist care (inpatient and outpatient) based on estimates of expected need by speciality at the county level.

The EHIF annual needs assessment aims to estimate the demand for each speciality for the persons living in each county in ten-year age groups. When estimating the need (number of cases) EHIF considers different characteristics, e.g. historic service utilisation data (based on EHIF invoice data), waiting times (currently only for outpatient visits), availability of medical doctors for specific specialties in the area, utilisation of primary healthcare etc. The selection of specialties is aligned with the Ministry of Social Affairs regulation on medical specialties. The EHIF firstly plans the need on the county level for each speciality and then allocates the need to the different HNBP hospitals based on historic utilisation data and changes according to needs assessment. If the HNBP hospitals are not able to cover the need that can be covered with the EHIF budget, the EHIF contracts private providers through the selective contracting process.¹⁶

The negotiated volume caps aim to limit the incentive to inflate the number of services and are applied to all contracted services including inpatient services reimbursed by DRGs. Nonetheless, as the EHIF relies on historic service utilisation data, providers are incentivised to increase the cost per



case by adding up more services to each case, and also increase the overall amount of cases. The costs per case consider the historic data on DRGs and DRG tariffs are defined based on average costs of the previous year. A study conducted in 2020 indicated that the DRG system in Estonia has not served its purpose of cost containment.⁷ It concludes that the share of DRG price exemptions has increased and DRGs have become less homogeneous as hospitals are doing each year more different services under the same DRG. Although the bed days and treatment cases in

inpatient care have significantly declined, this is not reflected in EHIF inpatient care expenditure. Table 2 describes the annual change in the planned budget and volume per hospital type according to HNBP. It also shows the change in the average cost per case. From the year 2019 onwards the budgets for inpatient care have been increased although there has been a decline in the number of contracted inpatient cases leading to a more expensive average cost per contracted case.

Table 2 – Annual change in planned budget and volume for inpatient care according to hospital type from 2019 to 2022

		Change from 2019 to 2020	Change from 2020 to 2021	Change from 2021 to 2022
Total contracted amount	HNBP - Regional	15%	6%	6%
	HNBP - Central	23%	12%	1%
	HNBP - General	31%	9%	4%
	HNBP – Local	29%	3%	26%
	Others	9%	-29%	8%
	Total	19%	7%	4%
Volume of contracted cases	HNBP - Regional	-4%	-2%	-2%
	HNBP - Central	-2%	4%	-2%
	HNBP - General	-1%	-3%	-4%
	HNBP – Local	1%	0%	14%
	Others	-10%	-32%	-11%
	Total	-3%	-1%	-2%
Average cost per contracted case	HNBP - Regional	20%	8%	8%
	HNBP - Central	26%	8%	4%
	HNBP - General	31%	12%	8%
	HNBP – Local	28%	4%	11%
	Others	21%	4%	21%
	Average	23%	8%	7%

Source: Data provided by the EHIF



One of the cost drivers in inpatient care has been the increasing use of diagnostic tests and technology. Table 3 indicates that increasingly more diagnostics is done in an inpatient setting rather than in day care or in an outpatient setting. The World Bank Group has also estimated that taking into account the patient's age or systemic comorbid condition, in 2014-2015 on average 26% of cases in all HNBP hospitals at least one pre-surgery unjustified examination was performed.¹⁷ Failing to control the increasing costs per case has led to a decrease of treatment cases in the country which indicates mounting problems in access to healthcare services.⁷

Table 3 – Change in distribution of provided lab tests between different types of care in 2011- 2019 (selected years)

Year	2011	2015	2018	2019
Outpatient and day care	65%	65%	50%	51%
Inpatient care	35%	35%	50%	49%

Source: AARC (2020)⁷

In recent years, the EHIF has made plans to move away from using average cost per case for contract planning as they try to move towards a new approach monitoring rather the overall contract amount and the number of served people. The main aim is to motivate providers to serve as many patients as possible within the contract amount and limit the incentive to inflate the cost per case. Furthermore, the EHIF has increased focus on allocating more contracts to providers who are able to serve more new patients to decrease the waiting times. Nonetheless, there is no plan to define standards or guidelines to define the optimal cost of care for the patient and thus this approach may still not sufficiently support treatment quality, efficacy and person-centredness. The EHIF has announced the plans to change its contracting focusing on the number of served patients rather than average cost per case and volume of cases.

2.4.2. Contracting reforms

Until 2006, the EHIF was not obliged to reimburse services provided that exceed the agreed contract volume, but since an amendment of the Health Insurance Act, the EHIF had to cover 30% of 'overprovided' services under certain conditions. The reform was mainly triggered from the need to continue to serve patients even when contract volumes were exceeded and that hospitals would not turn people down. After 2006, providers rights were extended to reallocate up to 5% of the specialist care contract sum and cases to different specialties.

A reform was initiated by the EHIF also in 2014 to improve its contracting. As the EHIF needed to cover the cost of 'overprovided' services, it also planned annually a reserve for this purpose. Providers were aware of the availability of these funds and therefore made requests to revise their contracts. The EHIF used to review the contracts every quarter based on providers applications. This was very time-consuming and providing little incentive for providers to stick to their agreed contracts. The EHIF wanted to give hospitals more responsibility in planning and filling their budgets and decided to lose such extensive reserve and budgeted all funds for hospital contracts.

Providers flexibility in deciding upon the use of the budget was widened as the reimbursement rules for outpatient and inpatient care were differentiated. These rules include for instance that a provider can use its contracted amount for inpatient care to exceed the contract of outpatient care (visits), but the other way around is not allowed. Each speciality contract amount can be exceeded by 7% in inpatient care as long as the contracted amount has not been reached across specialties. Inpatient care contracts across all specialties cannot be exceeded for more than 2%. The contracts for all providers are capped separately for a six-month period and only twice per year (in May and November) the providers applications are reviewed to make changes in the contract volumes (see further below).

In 2014, along with the increased flexibility in reallocation, tariff reductions were introduced for outpatient and inpatient care in cases when the agreed contract volumes were exceeded. For example, the EHIF covered up to 30% of the invoice for inpatient care (FFS or DRG) and up to 70% for outpatient



and day-care treatment when the contract volume was exceeded (within the limits of 2% for inpatient and 7% for outpatient). This change was justified by the marginal costing principle. In these cases, the EHIF did not guarantee hospitals partial or full reimbursement of the fixed cost component of care.

The main justification for the changes in contracting has been to increase the efficiency of resource use and in parallel creating incentives not to run over the agreed contract volume and planned budget. The increase of provider freedom to reallocate funding aimed to give hospitals more responsibility in estimating the service needs, but also to limit inefficiencies due to strict budgeting rules. Therefore, the providers' opposition for tariff reduction was overcome by providing them increased flexibility.

Most of the reforms implemented in 2014 are still in effect up to 2024. The EHIF uses its claims data for monitoring provider budget execution. The EHIF digitalised claims data allow continuous monitoring of contract data which simplifies the application of e.g. tariff reductions when applicable. Starting from 2020, the claims can be submitted for reimbursement on an ongoing basis and the EHIF uses automated controls for monitoring provider budget execution and alignment of the submitted claims with the contracting rules. For instance, providers cannot submit invoices to the EHIF if the submitted claims exceed the planned contract or are not aligned with the contracting rules.⁹

These data provide the EHIF with a detailed and continuous overview of budget execution, meeting the agreed caseload defined in the contract. Although the EHIF revises contracts twice a year, having continuous data available helps to plan in advance for the negotiations. Providers can submit their request for changes in the contract on a continuous basis, but the EHIF manages these applications twice a year (in May and November). This process includes negotiations with all providers depending on meeting their contract volume and cost agreements and the EHIF needs assessment. The EHIF compares the request for contract changes with the defined need, served people and for outpatient care also waiting times. If the contract volume is not filled for the first half year, the providers are allowed to use it during the second half of the year. If any changes are agreed upon during the negotiations, these are reflected in the financial annexes of individual contracts.

Since 2020, the EHIF started again to plan reserves in the budget to cover the cost of 'overprovided' services. Nonetheless, the tariff reductions seem to be a sufficient incentive not to exceed the contract for inpatient care, as in the past four years the majority of hospitals have not exceeded their contract and the budget of overprovided services has remained negligible compared to the overall inpatient care budget (Table 4).

Table 4 – Share of 'overprovided' services in the total inpatient care budget by HNBP hospital type, 2019 to 2022

	2019	2020	2021	2022
HNBP – Regional	0.41%	0.02%	0.12%	0.10%
HNBP – Central	0.98%	0.02%	0.02%	0.00%
HNBP – General	1.21%	0.25%	0.25%	0.32%
HNBP – Local	0.17%	0.00%	0.00%	0.35%
Outside HNBP	0.92%	0.29%	0.20%	0.08%
Total	0.67%	0.06%	0.11%	0.10%

Source: Data provided by the EHIF

Table 5 describes the viewpoints of stakeholders when changes to the contracting terms are negotiated, including the EHIF, Hospital Association and Ministry of Social Affairs. Historically, the Ministry of Social Affairs is not engaged in contract term negotiations with the hospitals as the Health Insurance Law gives the responsibility to the EHIF and there is little political intervention.


Table 5 – Stakeholder viewpoints on changes in contracting terms

Criteria	Hospital Association	EHIF	Ministry of Social Affairs
Increasing hospitals responsibility in budget planning by increasing flexibility in contracts	Favourable as it allows a more flexible use of the budget and to take account of uncertainty in hospital planning (mainly coming from providing emergency care)	Favourable of increasing providers responsibility of planning	Did not participate in negotiations
Introducing tariff reductions for 'overprovided' services	Proposed a more flexible system so that the coefficients would depend on how much additional funding was available at EHIF	Considered a marginal cost effect when defining the coefficients for tariff reductions. EHIF supported lower coefficients for inpatient settings and higher for outpatient settings to incentivise service delivery at the outpatient level	Did not participate in negotiations

Source: Based on three stakeholder interviews (Ministry of Health, Health Insurance Fund and Estonian Hospitals Association financing expert)

The main partner for the negotiations on the control mechanisms is in Estonia the national Hospital Association, while the Ministry of Social Affairs does not participate in contract negotiations. No specific assessments on the impact of introducing the tariff reductions including impact on waiting times, quality of care, risk selection of patients, readmissions, upcoding, adoption of innovation, attractiveness of certain specialisms to work in for physicians and financial viability hospitals are available. In addition, no specific implementation issues were reported by the EHIF. Nonetheless, there is still pressure from hospitals to abolish the tariff reductions.

2.4.3. Effectiveness of the control mechanisms

When planning the contract negotiations, the EHIF also needs to consider the budget availability, as the EHIF is not able to cover the full cost of the estimated need due to the defined budget ceiling. For instance, the annual estimated need for healthcare services exceeded the actual available budget by 6-9% depending on specialty in 2017-2019.¹⁶ Despite of a significant uncovered need, the existing financing methods have helped the EHIF to keep the inpatient care budget under control. The budget implementation rate was 95-101% in 2019-2022 (Table 6). And the execution of contracted volumes is ranging from 88% to 103% depending on the year and hospital type. The general and local hospitals have had challenges in filling the contract volumes indicating that the volume-based financing model may not be sustainable for such small hospitals. Therefore, since 2014, the EHIF has provided general and local hospitals the opportunity to change the payment method with 50% of payments in the form of a budget and the rest according to the existing system. Despite of the EHIF being successful in managing its budget, as indicated above, the system failed to control the increasing costs per case which reduces access to healthcare services as less and less cases are contracted. Currently, there is no waiting time monitoring in place for the inpatient level to assess the potential long-term impact of the policies in place. Nonetheless, the interviewees indicated that there is currently no incentive for providers to cut costs or increase efficiency. Contracts are met to the optimum, and there is no incentive to implement changes for increased efficiency.



Table 6 – Budget execution and volume execution according to hospital type, from 2019 to 2022

		2019	2020	2021	2022
Execution of contracted volume	HNDP – Regional	97%	94%	94%	98%
	HNDP – Central	98%	93%	92%	94%
	HNDP – General	97%	92%	89%	93%
	HNDP – Local	102%	88%	92%	90%
	Other	98%	88%	103%	100%
	Total	98%	93%	93%	96%
Execution of contracted budget	HNDP – Regional	100%	101%	97%	99%
	HNDP – Central	99%	101%	96%	99%
	HNDP – General	99%	100%	95%	98%
	HNDP – Local	100%	96%	96%	98%
	Other	98%	95%	98%	100%
	Total	100%	101%	97%	100%

2.5. Payment reforms

2.5.1. Recommendations on payment system reform

There is no clear reform plan regarding the DRG-based payments. Multiple in-country and external assessments of the current reimbursement policy (incl. DRGs) have been conducted,¹⁸⁻²⁰ potential deficiencies have been detected and recommendations for improvement have been provided. The World Bank report indicated that the current DRG system combined with FFS payments for acute inpatient care may discourage for greater efficiency achieved by reductions in the average lengths of stay and unnecessary care. The World Bank recommended the EHIF to increase DRG reimbursement rates toward 100% while concurrently decreasing FFS reimbursement rates. As this may enhance the incentives for the under-provision of clinically necessary care, early discharges, and 'up-coding' of patient cases and

reduce the incentive to code procedures accurately, the EHIF should also strengthen its monitoring activities of care quality by introducing financial penalties for delivering low quality care. Furthermore, in the long term, the EHIF should align the DRG payments with clinical guidelines. Current DRG tariffs are defined based on average costs from a sample of hospitals, which may not align with the costs of providing care in line with clinical guidelines. This may cause hospitals to receive payments which are too high or too low relative to the costs of providing care in line with well-established standards of practice.²⁰ Following these recommendations, the EHIF also conducted internal analytics on the DRG system.^{18, 19} However, until now (2024) no changes have been made.

The World Bank recommended in 2017 to revise the system of covering 30% of the tariffs for all cases that exceed the negotiated annual contract volumes for acute inpatient care as this may encourage unnecessary admissions, including unwarranted admissions for low mortality conditions (e.g. asthma



exacerbation) or diseases that may be treated in day-care settings. It recommended the EHIF to assess to what extent hospitals surpass the volume cap to determine whether the cap sufficiently reduces the incentives for delivering unnecessary acute inpatient care. If it is not a sufficient deterrent for unnecessary care delivery, the EHIF should consider introducing a threshold above which providers would not be reimbursed at all. On the other hand, it recommended to guarantee hospitals partial or full reimbursement of the fixed cost component of care episodes below the volume caps to limit the incentive to reach this threshold in the first place. In the long-term, the EHIF was recommended to gradually reduce volume caps for inpatient care episodes, particularly for services with demonstrated high shares of unnecessary admissions. The potential for such reductions should increase over time with improvements in the quality, scope, access, and coordination role of primary care services. In addition, the EHIF should consider reducing volume caps for surgeries and other procedures in acute inpatient care that could be shifted into day care settings.²⁰ Based on these recommendations, the EHIF has implemented some policy changes in the contracting process, in terms of paying for services exceeding negotiated contract volumes (described in section 2.4) and it has also started to pilot several new payment methods for hospitals. Though, the EHIF has not been as radical in its reforms as recommended by the World Bank.

2.5.2. Global budget for Hiiumaa hospital

As indicated in section 2.1, some of the general hospitals have been challenged to cover their fixed cost due to the small population that they cover but also excessive and outdated hospital infrastructure. One of the HNDP general hospitals – Hiiumaa hospital – has been particularly challenged because of its unique condition; it is located in a small island with a population of less than 10 000. In terms of expenditures, Hiiumaa hospital also differs from other general hospitals. Despite the higher costs of inputs due to its remote location, labour expenses represented a smaller share of expenditures than in other general hospitals. Hiiumaa hospital has been facing significant financial difficulties. The profit margin of the hospital has been decreasing steadily since 2012 reaching a low of -11% in 2016, making it evident that Hiiumaa hospital could not sustain its operations based on revenues from the EHIF.²¹ In 2018, the EHIF introduced as a pilot a global

budget as the main payment mechanism to fund Hiiumaa hospital and to move away from financing based on the level of activity which in such conditions has proved to be unsustainable.

A general hospital, like Hiiumaa hospital, needs to offer 24/7 emergency care, intensive care, internal medicine, general surgery, anesthesiology, radiology and laboratory. Therefore the EHIF's main objective was to ensure access and availability of services 24/7. The scope of the global budget encompasses funding for inpatient and outpatient activities. The contract requirements for EHIF state that the global budget covers availability of an emergency care doctor, an internal medicine doctor, a general surgeon, a midwife, a gynaecologist, and an anesthesiologist. An emergency care doctor and a midwife must be on call 24/7, while the other providers can be on standby duty at home. In addition, specialised outpatient consultations, such as cardiology and endocrinology, must be available at least one day per month.²² Three services are still paid using FFS: blood products, haemodialysis, and patient transportation. The budget was calculated using a primarily input-based approach and the EHIF increased the salary levels for medical professionals in comparison to other hospitals. The hospital's activity in 2017 was taken as the basis to estimate service volume and overhead expenditures. These were multiplied by the national average resource prices to derive the global budget.²¹ The revised contract also stipulated a set of indicators to monitor performance, but there is no clear accountability mechanism. The performance indicators measure utilisation of inpatient and outpatient hospital services, efficiency (length of stay), outcome (emergency readmission), and might include responsiveness (patient perceived access – not yet available). As stipulated in the contract, Hiiumaa hospital is expected to maintain the same level of service provision or decrease after discounting for unnecessary care. However, targets or methodology to assess change are lacking.²² Since the implementation of the global budget for Hiiumaa hospital, there have been no public assessments on the potential impact of the reform. The financial reports indicate that the hospital is no longer in deficit.²³



2.5.3. Piloting bundled payments for care pathways

In 2021, the EHIF initiated a pilot project on a new payment method for ischemic stroke care. The aim was to introduce a comprehensive treatment pathway across different care settings starting from ambulance and ending up with rehab, reimbursed through a new method (bundled payment). The pilot was supported by a World Bank analysis done in 2020 which included recommendations for piloting bundled payments.²⁴ Due to the high burden of disease, fragmented care between different providers, lack of coordination and integration of care, and lack of tracking and evaluation of patient outcomes, the EHIF selected ischemic stroke as the first patient pathway pilot project. DRGs are one of the underlying elements of the bundled payments of the stroke patient pathway.

Specifically, the payment bundle includes the cost of:

- Hospital and physician services associated with an initial admission where the principal diagnosis, using the ICD-10, is I63 'Cerebral infarction'.
- Subsequent non-emergency hospital care and outpatient visits (including day treatment) with a primary diagnosis of stroke, more specifically cerebrovascular diseases (I60-69) or Hemiplegia and hemiparesis (G81).
- Subsequent emergency visits and outpatient visits (including day care) with a primary diagnosis of stroke (I60-69 or G81) within one year of the initial admission.
- Outpatient or inpatient rehabilitation with primary diagnosis codes of stroke (I60-69 or G81) that occur within 12 months of the initial hospital admission. (The costing of the bundle took into account a maximum of 6 months of rehabilitation over the course of a year)
- Nursing care within 12 months of the initial admission billed on invoices with a primary diagnosis of stroke (I60-69 or G81).
- Treatment of complications within 30 days of the initial or subsequent hospital admissions.

The payment bundle ends 365 days after the initial emergency admission, with the death of the patient, or another emergency admission for acute stroke.²⁴

Two regional and four central hospitals that provide acute stroke treatment in Estonia applied to participate in the pilot. The bundled payment is calculated for the entire patient pathway for the hospitals, with the aim of covering the entire course of treatment. Initially, PHC services and social services were not included in the bundle, but the EHIF started since 2023 a pilot inclusion of these services to the bundled payment. Providers may keep the savings generated by the difference between the defined bundled payment amount and the actual expenses, which is monitored separately for each case. Otherwise, the service provider bears the risk of higher costs. An exception is made for cases priced higher than € 100 000.²

For the first time in Estonia the project implemented systematic measurement of health outcomes, including the patient's quality of life and coping as one objective of the pilot was to test new outcome indicators and an IT solution to collect the required information. It was agreed with stakeholders that the indicators will be based on the International Consortium for Health Outcomes Measurement (ICHOM) 'stroke standard set'. The ICHOM stroke standard set includes measures that are based on administrative and clinical data. The EHIF also relies on the Patient-reported Outcomes Measurement Information System (PROMIS-10) platform to collect patient-reported outcomes. All participating hospitals will be required to report on process and outcomes indicators.²⁴

The bundled payment system was introduced as a pilot to last until 2022. The EHIF has published outcome reports on the pilot concluding that mortality of stroke patients was slightly lower for the period of using the bundled payments. Specifically, the periods stroke cases between 01.07.2020 and 30.06.2021 (total 2 035 patients) were compared with stroke cases in 2019 (total 1 938 patients) in the same hospitals. The EHIF looked at mortality of patients, occurrence of repeated stroke, admission to hospital within six months and reaching outpatient rehabilitation. It turned out that in terms of these four performance indicators the results did not differ statistically significantly. However, there was slightly lower mortality among patients included in the pilot (1-year mortality: 28% in patients of the lead



project vs. 30% in patients of the previous period). Considering that the pilot fell into the period of the COVID-19 pandemic, it has been considered positive that mortality of patients in the pilot project still declined. The analysis brought out that the piloting hospitals were on an agreement to continue with the payment model, thus the hospitals require more help to train their staff and implement the service. This may include funding for a project coordinator in the hospital or increased funding for a specialised nurse. The pilot also indicated the need to better define standards for the service delivery model to ensure clear division of roles and responsibilities and high quality. Also, data collection mechanisms were to be improved and considered in the payment system.²⁵ The EHIF has taken stock of these outcomes and revised the funding model covering the cost of a care coordinator.²⁶ Starting from the second half of 2024, the EHIF plans system wide implementation of the stroke care bundled payments.

Starting from 2021, the EHIF also has initiated piloting of bundled payments for joint replacement cases and implemented it in 2024.

3. FRANCE

Authors: Zeynep Or, Rym Ghouma

3.1. Overview of the hospital sector

3.1.1. Brief overview of the healthcare financing system

Healthcare funding in France relies on a non-competitive statutory health insurance (SHI) that is compulsory and universal for all individuals who work or reside regularly in France. It is provided under various insurance schemes, with mandatory enrolment determined by employment status (wage earners, self-employed, farmers and agricultural employees, students, etc.) or by previous employment status for the retired. Individuals cannot choose their scheme or insurer, nor can opt out. Since 2000, the universal medical coverage (*Protection universelle maladie*, PUMA) scheme provides public health insurance to the 2% of individuals who were not covered under any scheme given their employment status (for example, those who have never worked). Undocumented residents are also covered since 2000 by a dedicated state medical fund (*Aide Médicale de l'Etat*, AME) that is managed by the State.²⁷

The SHI provides a homogeneous and comprehensive basket of care but requires cost sharing for all services, including doctor visits and hospitalisations. About 96% of the French population holds a complementary private insurance (CHI), mainly to cover these co-payments.²⁸ Two types of CHI coexist in France: compulsory CHI, for private sector employees through collective contracts negotiated and partly funded by the employer, and voluntary individual CHI, for public sector employees, self-employed and unemployed individuals. Moreover, to reduce the burden of co-payments for the lowest income groups (individuals living 20% under the poverty limit), a state-funded complementary health insurance scheme (*Complémentaire santé solidaire*, C2S) was introduced in 2000. Private complementary insurance finances around 14% of health expenditures (about 4.6% of hospital care spending) while the public SHI and the State (government) cover about 77% of total health expenditures. Therefore, the French have one of the lowest average out-of-pocket



expenditures (around 9%) amongst the Organization for Economic Cooperation and Development (OECD) countries. The national government mainly funds State medical aid (AME), supports the complementary health insurance scheme for individuals with low income (C2S) and contributes to funding prevention (a third of the government expenditure on health).²⁷

Historically, the SHI system was almost entirely funded from wage-based contributions from employers (two thirds of the contributions) and employees (one third). Sources of health funding have been broadened beyond payroll contributions in the past two decades considering the high rate of unemployment in France and the rapid ageing of the population.²⁷ The most important change was the introduction of a revenue-based tax contribution, the general social contribution (*Contribution sociale généralisée*, CSG), in the 1990s.²⁹ The CSG introduced a basket of taxes applied to a broader range of income than just wages (for example, income from financial assets and investments, pensions, unemployment and disability benefits, gambling, etc.). It is calculated on the income of each person by applying, from the first euro, a rate that depends on the nature of this income. Gradually, the share of employee payroll contributions to health funding was reduced while CSG rates increased. In 2018, employee contributions were totally suppressed, and since 2019 employers' payroll contributions have been significantly reduced, compensated by tax revenues. Over the years several earmarked taxes, such as alcohol and tobacco taxes, and taxes on sales of pharmaceutical companies, and on complementary health insurance providers have also contributed to health financing needs. In 2022, only a third of revenues for the SHI came from payroll contributions, less than a third came from CSG and the rest from other taxes.²⁷

In this landscape, the financial governance of the health system is shared between the government and the SHI funds. The fiscal parameters within which the SHI funds are asked to maintain spending are set by the French parliament, which is unusual for a social insurance-based system.^{27, 30} A specific Social Security Financing Act (*Loi de financement de la sécurité sociale*, SSFA), which subjects the expenditure and financing sources of French social security (including health, pensions and family benefits) to annual ratification, has been in place since the late 1990s. This process has been enshrined in the Constitution since 1996 reasserting the government's

control of healthcare spending through expenditure targets, known as the National Objective for Health Insurance Spending (*Objectif National de Dépenses de l'Assurance Maladie*, ONDAM). Initially set only as objectives, these targets became binding overtime and have been the key strategy to contain health spending. Since 2010, SHI funds have the responsibility to develop targeted policies for respecting spending targets. Nevertheless, they have limited power to control the total health spending since the management of healthcare providers is shared with the Ministry of Health. Historically, SHI funds play the main role in regulating the benefit basket, the levels of co-payment, and prices of procedures and services. This mainly concerns the ambulatory sector where most health professionals are paid by fee-for-service (FFS) and tariffs are set through collective negotiations with professionals' unions, while the Ministry of Health regulates the salaries, prices and quality of care in hospital and long-term care facilities.²⁷

This fragmented dual governance of healthcare has been reinforced over time by the strict budgetary process induced by ONDAM since spending targets are set separately for ambulatory care providers, hospitals, and long-term care facilities. This design of funding ignores the fact that the expenditure in one sector have consequences on the others, reinforces the division of healthcare supply at the local level, and reduces the capacity to improve the coordination and integration of service delivery.³¹

The introduction of ONDAM appears to have some success in containing healthcare spending between 2010 and 2019 (until the COVID-19 pandemic) since health spending has increased in real terms by less than 1% per year on average; against over 2% between 2000 and 2009.³² Between 2015 and 2019, while the average per capita health spending increased by 2.7% per year in the OECD countries, it only grew by 0.7% in France.³³ However, the COVID-19 pandemic had a visible impact on health spending in France. Total health expenditure increased by 3.7% in 2020 and by a further 9.8% in 2021.²⁸



3.1.2. Brief overview of hospital care provision

No matter the level of their private insurance, patients have a large choice of public and private healthcare providers. Both public and private hospitals are regulated by regional Health Agencies (ARS) and are paid by tariffs set at the national level which are different for the two sectors (see section 3.2.3.3). There is no compulsory gatekeeping or need for a referral to access inpatient hospital care, although, in practice, patients consult general practitioners or outpatient specialists first or go through hospital emergency departments. Patients can also choose freely amongst their public or private providers and doctors practising in hospitals.

France has a large hospital sector, which is characterised by a mix of providers with public, private non-profit (called *Etablissements de Santé Privés d'Intérêt Collectif*, ESPIC), and private for-profit facilities. At the end of 2020, there were 2 989 hospitals of which 45% were public, 33% were private for-profit and 22% private non-profit (Table 7). Amongst these, 1 816 (61%) provided post-acute and rehabilitation services (*Soins de suite et de réadaptation*, SSR) which are short-term rehabilitation and medical support services, mainly after a hospitalisation, and about 611 (20%) provided psychiatric or mental health services. Within public hospitals, 13% were regional hospitals (*Centres hospitaliers régionaux*) in charge of providing the most specialised care for the population of a region.^b More than 90% of the regional hospitals contracted with universities as teaching hospitals (*Centres hospitaliers universitaires*). Around 70% of the other public hospitals were general hospitals (*Centres hospitaliers*) providing mostly acute care. A minority of public hospitals were psychiatric hospitals (*Centres hospitaliers spécialisés en psychiatrie*) (7%) or specialised in other areas (10%), mainly in long-term care.³⁴

Public hospitals have specific public service obligations, including equal access to care for all, around-the-clock care, and very limited extra-billing. Private non-profit facilities contract with the statutory health insurance (SHI) and are funded similarly to public hospitals (see section 3.3 for the hospital payment system) if they adhere to these key principles of public services. Most of these facilities are specialised in a few selected medical areas, such as cancer care, with 20 centres specialised in cancer treatment (*Centres de lutte contre le cancer*, CLCC) (one in each region).³⁴ The private for-profit hospitals on the other hand play an essential role in providing surgery. About 55% of all surgery and 25% of obstetric care is provided by private for-profit hospitals. Territorial coordination of hospital care has been reinforced by the introduction of local hospital groups (*Groupe hospitalier de territoire*, GHT) created by the 2016 Health Reform Law.³⁵ This reform required public health facilities to define a shared local strategy around a common medical project and to jointly manage some cross-functions (e.g., information systems, purchasing, training plans, etc.). By 2019, there were 136 GHTs in France of varying sizes and level of integration (including between two and 20 hospitals and serving between 100 000 and 2.5 million inhabitants).²⁷

^b The size of regions, which are the largest geographic entity in France, varies from more than 12 million inhabitants in larger Parisian region (Ile-de-France),

to about 2.5 million in the Centre and only 350 000 inhabitants in Corse. While most regions have one regional hospital, some can have two or three and Paris region has about 10 hospitals.



Table 7 – Number of hospitals and number of hospital beds by sector and hospital category

	Number of hospitals	Number of inpatient beds	Number of ambulatory beds or places
Public	1347 (45.1%)	237 941 (61.5%)	43 109 (54%)
Regional & University hospital (CHU & CHR)	180	69 660	11 053
General hospital (CH)	936	138 267	18 061
Psychiatric Hospitals	92	21 362	13 524
Other	139	8 652	471
Private FP	972 (32.5%)	93 357 (24.1%)	21 991 (27.6%)
Acute care hospitals	468	49 472	14 743
Post-acute and rehabilitation hospitals	342	29 402	5 012
Mental health centres	152	13 975	2 161
Other hospitals	10	508	75
Private NFP	670 (22.4%)	55 605 (14.4%)	14 659 (18.4%)
Centres of cancer care (CLCC)	20	2 702	504
Acute care hospitals	133	18 300	2 922
Post-acute and rehabilitation hospitals	361	25 095	5 285
Other hospitals	156	9 508	5 948
TOTAL	2989 (100%)	386 903 (100%)	79 759 (100%)

Source: compiled by authors, from DREES (2023).³⁴ Notes : CHU stands for Centres Hospitaliers Universitaires, CHR for Centres Hospitaliers Régionaux, CH for Centre Hospitaliers, Private FP is private for-profit, Private NFP is private not-for-profit, and CLCC is Centres de Lutte Contre le Cancer.

**Table 8 – Number of inpatient beds, per 1 000 inhabitants, 2000–2019, selected years**

	2000	2005	2010	2016	2019
Total number of hospital beds	8.2	7.4	6.6	6.1	5.9
Acute care beds	4.2	3.8	3.5	3.2	3.0
Psychiatric hospital beds	1.1	1.0	0.9	0.9	0.8
Long-term care beds	1.4	1.2	0.6	0.5	0.5
Post-acute and rehabilitation hospital beds	1.5	1.5	1.6	1.6	1.6

Source: DREES (2022); DREES (2023)^{28, 34}

In terms of bed capacity, the number of acute care beds has been decreasing over the past decade, from 4.2 beds per 1 000 inhabitants in 2000 to 3 per 1 000 in 2019 (Table 8).³⁴ Hence, the density of hospital beds in 2020 was lower than the EU average (387 per 100 000 inhabitants). This decrease is explained by several parallel trends in the hospital sector. First, owing to technological and medical advances, but also to financial incentives provided under the activity-based payment system, there has been a significant increase in day cases (without overnight stay), which have contributed to a sharp decline in the length of stay in hospitals. The number of ambulatory beds has almost doubled since 2004, from 49 000 to 80 000 in 2020.³⁴ Furthermore, Hospital at Home (HAH) places, providing mainly perinatal and palliative care, have increased over time, from 2% of all hospitalisations in 2006 to 7% in 2020.³⁶ The number of post-acute and rehabilitation beds have also increased in the last decades (about +10% between 2003 and 2020), in response to the growing needs of an ageing population.³⁴ The number of long-term care beds in hospitals also decreased significantly since early 2000s with the transfer of older patients to beds in medical residential nursing homes.²⁷

**Table 9 – Inpatient versus Ambulatory hospital beds and hospitalisations by sector**

Activity type	Number of beds		Number of hospitalisations (in thousands)	
	Inpatient beds	Ambulatory (*) beds (or places)	Inpatient (i.e. > 1 day)	Ambulatory (*) (i.e. <1 day)
TOTAL				
Total acute care	198 205 (100%)	34 346 (100%)	8 893 (100%)	7 228 (100%)
Total non-acute	188 698	45 404	1 392	6 187
Total activities	386 903	79 759	10 285	13 415
Public				
Total acute care	137 573 (69.4 %)	17 436 (50.8%)	6 155 (69.2%)	2 967 (41%)
Total non-acute	100 368	25 673	693	2 560
Total activities	237 941	43 109	6 848	5 527
Private FP				
Total acute care	43 508 (22%)	13 576 (39.5%)	1 979 (22.3%)	3 574 (49.4%)
Total non-acute	54 382	79 781	417	1 933
Total activities	97 890	93 357	2 396	5 507
Private NFP				
Total acute care	17 124 (8.6%)	3 334 (9.7%)	759 (8.5%)	687 (9.5%)
Total non-acute	38 481	11 325	246	1 695
Total activities	55 605	14 659	1041	2 382

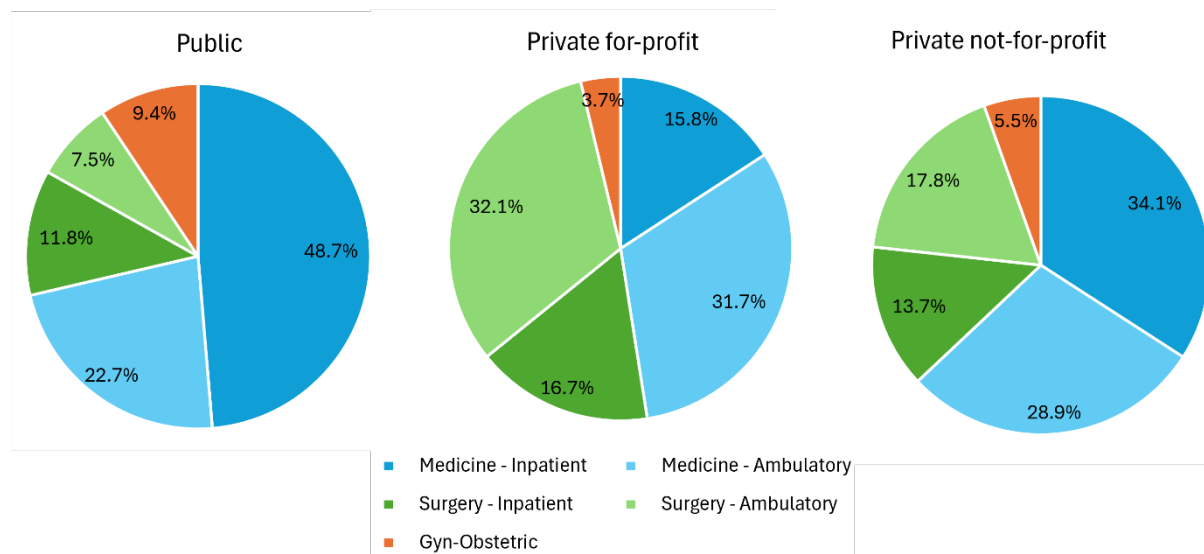
Source: compiled by authors, from DREES (2023)³⁴ with PMSI data. Notes: non-acute care includes psychiatry, post-acute and rehabilitation (SSR), and long-term care units (USLD). (*) without overnight stay. FP = for-profit; NFP = non-profit

In terms of acute care activity, the distribution of different types of care across hospital sectors is quite distinctive (Figure 3 and Table 9). About 70% of inpatient care in France is provided by public hospitals where medical inpatient admissions represent about 50% of their activity, and inpatient surgery represents 12% of admissions. On the opposite, 64% of admissions

in private-for-profit hospitals are ambulatory of which half for elective surgery. Ambulatory surgery represents only 8% of public sector activity against 32% in private for-profit sector. Private non-profit sectors activity is also mainly medical (63%) although ambulatory surgery is also important (18%). Obstetric care is mainly provided by public hospitals.



Figure 3 – Configuration of acute care activity by sector



Source: compiled and adapted by authors, from DREES (2023)³⁴ with PMSI data.

3.2. Main characteristics of the DRG system

3.2.1. Hospital payment system in place before the introduction of DRGs

Up to 2005, public and private hospitals were paid by different models in France. On the one hand, public and private not-for-profit hospitals were paid by global budgets mostly relying on historical costs. On the other hand, private for-profit hospitals were paid by an itemised billing system including daily rates covering the cost of accommodation, nursing and routine care, separate payments based on the diagnostic and therapeutic procedures carried out, with separate bills for costly drugs and medical devices. In addition, doctors working in private hospitals are paid on a fee-for service basis while those working in public hospitals are salaried.³⁷

The differences in funding across the public and private sectors have long been a subject of debate in France. The private hospitals have claimed that global budgets reward inefficiency and have prevented a real benchmarking process which would demonstrate that private hospitals are more efficient. Public hospitals conversely saw the global budgets as unfair, an instrument of rationing which strangled the most dynamic of hospitals and did not give them any room to respond to changes in demand for care. Moreover, fee-for-service payments in the private sector, were considered inflationary, incentivising overuse.³⁸



3.2.2. Objectives and principles of the DRG system

Initially introduced for reporting hospital activity in France, the DRG classification system has been used gradually for adjusting resource allocation and finally for financing purposes. The first French patient classification system, *Groupes Homogènes de Malade* (GHM), was introduced in 1986 for a sample of voluntary public hospitals in order to better describe hospital activity. Since 1998, reporting data on hospital activity using this classification became mandatory for all public and private hospitals. These data were first used to compare hospital productivity and for making adjustments to global budgets in the public sector and then for funding hospitals directly on their activity.

The Activity-Based Payment (ABP), in which the revenue of each hospital is directly linked to the number and case mix of patients treated, was introduced in 2004/2005 to pay for acute care services (including home hospitalisation) to address the problems of the previous hospital payment models. The major objectives of the DRG payment reform in France (*Tarification à l'Activité*, T2A) were improving efficiency in the hospital sector; creating a 'level playing field' or establishing a more equitable payment system for public and private hospitals; improving the transparency and accountability of hospital activity and management; and improving quality of care.³⁹

The implementation of ABP has been progressive. In public hospitals, the share of all activities paid by the ABP has increased gradually each year: from 10% in 2004 to 25% in 2005 and reaching 100% in 2008. Private for-profit hospitals have been paid entirely by the ABP since February 2005. Both for public and private hospitals a transition period was in place until 2012, where 'national prices' were adjusted for each provider, considering its own historical costs/prices.⁴⁰

3.2.3. Description of the DRG payment system and its evolution

3.2.3.1. Scope of DRGs: which providers?

DRG-based payment in France is a national system that covers all acute care facilities providing inpatient and ambulatory care, including home hospitalisations (Hospital at Home, HAH). All public, private non-profit, and for-profit hospitals are paid by DRGs which also includes treatments such as dialysis, chemotherapy, and radiotherapy. Neither post-acute rehabilitation and long-term care nor psychiatry are included in the DRG system. An experimentation was in place for introducing DRG payment in post-acute care facilities since 2010, but after several postponements the idea of funding these facilities entirely by DRGs is abandoned in line with the reform proposals to reduce the share of DRG payment in the acute care sector. Instead, a mixed payment model linking activity-based payment (50%) to fixed budget payments has been introduced since July 2023 (see section 3.3.2.2).

3.2.3.2. The DRG classification system and its evolution

The classification used for DRGs in France, called *Groupes Homogènes de Malades* (GHM) employs a combination of medical and administrative data to categorise patients into groups with similar diagnoses and resource use. It takes into account primary diagnosis, secondary diagnoses, medical procedures performed, patient age, and length of stay to group patients into specific GHMs.

The French hospital discharge database (*Programme de Médicalisation des Systèmes d'Information*, PMSI) has been used to develop the DRG classification system. The technical agency for information on hospital care (*l'Agence Technique de l'Information sur l'Hospitalisation*, ATIH) is the French institution in charge of monitoring and modifying the DRG classification system. ATIH was established in 2002 as an independent public agency co-funded by the government and public health insurance funds.²⁷



The initial GHM classification was inspired by the US Health Care Financing Group classification (HCFA-DRG) but adapted to the French system. Since then, the GHM classification has undergone continuous changes to fine-tune the system and account for the evolution of medical practices and technologies and healthcare needs, with eleven GHM classification versions to date.⁴⁰

Before the introduction of DRG payment in 2004-2005, several versions were implemented and lists of exceptions were widely used to address the specific cases. Following the introduction of DRG payment, the ninth version of GHM was implemented with a separate list of codes for episodes with significant complications, increasing the previous 600 GHMs to 773. The 10th version, used between 2006 and 2008, took into account the feedback from hospitals on their experience with the DRG payment system and notably the requests from public hospital federations. This version included new non-surgical ambulatory codes and added some new surgical, mostly ambulatory groups accounting for the use of some medical devices. These changes resulted in a total of 784 GHMs.

The current (11th) version of the classification, which was introduced in 2009, represented a major change in classification with the introduction of four levels of case severity applied to most GHMs. Another important change was a clearer distinction between ambulatory (< 1 day) and very short (< 2 days) stays than before.⁴¹ These refinements meant that the number of GHMs was further increased to 2 192 GHMs.

This version of the classification has been revised periodically to incorporate updates of the International Classification of Diseases (ICD-10) and the changes in medical technologies and healthcare needs. The latest updates (in 2019) of the 11th version incorporated notably new codes reflecting surgeries that benefited from Enhanced Recovery After Surgery (ERAS) protocols, to make payment independent of the length of stay (see next section). Another change was the addition of GHMs related to COVID-19 and to reproductive procedures after the enactment of the bioethics act in 2021.⁴² Only a handful of GHMs were removed following recommendations of the French National Authority for Health (*Haute Autorité de la Santé*, HAS). After more than a decade of updates, the 11th version of the classification reached about 2 600 GHMs in 2023.⁴¹

Current DRG classification system: use of medical and administrative data

Every discharge is associated with only one GHM. A GHM is a nested set of codes reflecting the medical and administrative information of the patient. In the most recent version (11th), GHMs have six codes.⁴¹ They are described as follows:

- The first two codes give the main diagnosis, which represents the motive of hospitalisation, as defined by the ICD-10 from 01 to 28.
- The third code indicates the type of care (i.e. medical, surgical, or exploratory) according to the French classification of procedures (*Classification Commune des Actes Médicaux*, CCAM).
- The fourth and fifth codes define the combination of diagnosis or procedure performed during the stay. These subfields often differ with patient age, complications, and length of stay (LoS). Only one procedure is coded according to a hierarchical order (defined by complexity and cost). These five first codes of a GHM are called the 'root' of a GHM. In the most updated GHM classification (in 2023), there are about 670 GHM roots (and 2 600 GHMs in total).
- The majority of root GHMs are refined further based on the level of case severity or complication from one to four, one being the lowest (or no) severity and four being the highest. The level of severity is determined by a mix of administrative and medical variables. In order of importance, these variables are: (i) patient's 'secondary diagnoses' which inform the level of associated complications or co-morbidities (ACM), (ii) patient age, and (iii) length of stay (LoS). There is a list of 'secondary diagnoses' to define ACM level (from 2 to 4) or specify which 'secondary diagnoses' are not considered as ACM. Note that in the classification adverse quality events (hospital infections, etc.) are considered the same as co-morbidities. The conditions to satisfy severity levels are the following:
 - Severity level = 1 when no ACM or when LoS is < 3 days
 - Severity level = 2 when ACM level = 2 + LoS ≥ 3 days



- Severity level = 3 when ACM level = 3 + LoS $\geq$ 4 days
- Severity level = 4 when ACM level = 4 + LoS $\geq$ 5 days
- In case of death, the GHM level of severity, defined only by the LoS in this case, might increase by one level, so that the GHM coding reflects the extra cost related to death that hospitals have to bear.

For a minority of cases where GHM roots are not refined by the level of severity, the sixth code is a letter that designates whether the admission is for an ambulatory (<1 day) or short (between 1 and 3 days) stay, an exploratory stay (i.e. chemotherapy or dialysis sessions) or indicates death.⁴¹

This refined classification system, resulting in a large number of GHMs, not only makes the French DRG system highly complex for the users but also raises questions about the statistical validity of costs of GHMs calculated on the basis of a few cases (see next section). For instance, a recent report showed that, between 2019-2022, 33% of total admissions in private hospitals and 16.5% of admissions in public hospitals were coded using just 10 GHM. This means that most GHMs are rarely used in both sectors.⁴³

3.2.3.3. DRG cost data and price setting

Data used for calculating DRG costs: French National Cost Study

The data used to compute DRG prices in France rely on an annual national cost study (*Etude Nationale de Coûts*, ENC), which collects detailed cost information for each hospital stay from a sample of hospitals participating on a voluntary basis. The ENC is carried out separately for public and private not-for-profit hospitals, on the one hand, and for private for-profit hospitals, on the other hand, using a common methodology.⁴⁴ The ATIH has the responsibility of monitoring and reviewing the GHM classification system and collecting cost data via ENC studies for calculating reference (or average) costs for GHMs.^{41, 43}

Until 2007, the ENC sample included only public and private non-profit hospitals and included 40 hospitals (3% of these hospitals).³² Sample size and representativity have been improved marginally since then. In 2008, the

ENC sample was extended to 99 hospitals, including 44 private for-profit hospitals and accounting for 13% of total admissions.⁴⁵ In 2018, the sample size rose to 135 hospitals including 52 private for-profit hospitals⁴⁶ and in 2023, the ENC sample reached a total of 151 hospitals with 67 public (and private non-profit) and 83 private for-profit hospitals⁴⁷, representing about 16% of total hospital admissions in France.⁴³

Reliability of cost data

The reliability of the ENC studies has been questioned regularly by various instances.^{39, 43, 48} The major issues raised were the small sample size and (lack of) representativity of the hospitals providing cost data. It is noted that private non-profit and research hospitals are overrepresented, while general public hospitals are under-represented (25% of hospitals in the ENC compared to 46% of all hospitals in France). Likewise, some surgical activities, especially those carried out mostly in private sector, are underrepresented; while medical activity (public sector) is highly over-represented.⁴³ The Court of Auditors noted that the overall process of participating to the ENC studies is costly and unattractive and the benefits of participating are not evident for hospitals.⁴³

DRG price setting

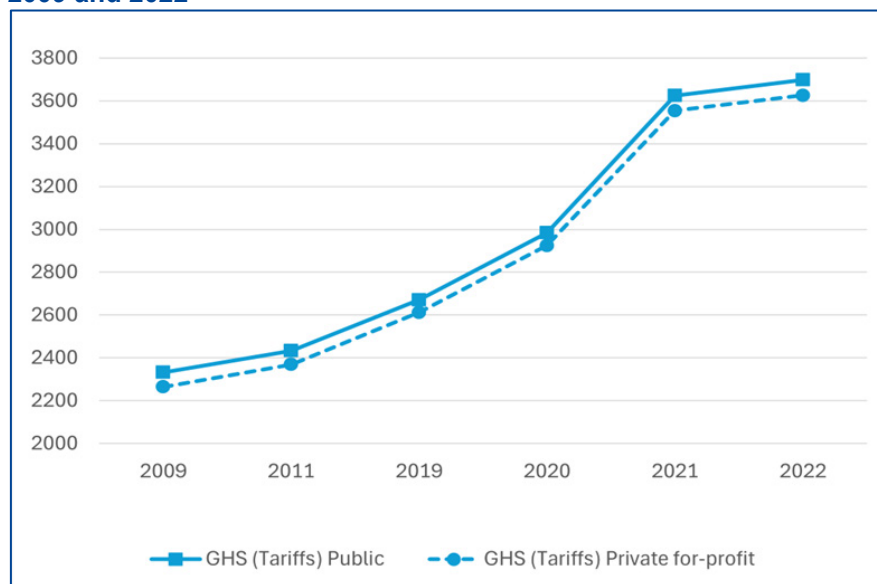
The DRG prices (*Groupes Homogènes de Séjours*, GHS) are set at the national level, with two distinct sets of tariffs: one for the public and private non-profit hospitals and one for private for-profit hospitals. The initial objective of achieving price convergence between the two sectors in 2012 was abandoned by 2018 considering the difficulties in costing and political resistance from public hospitals. The two sets of tariffs are based on reference costs by GHM calculated by the ATIH using ENC. However, cost categories included in calculating reference costs are different in each sector. The public sector tariffs include all the costs linked to a stay (including medical personnel, all the tests and procedures provided, etc.), while those for private sector hospitals do not cover medical fees paid to doctors (paid by fee-for-service) and the cost of biological and imaging tests (scanner, etc.) which are billed separately. The overhead costs (financial and building



costs) are included in GHM prices in both sectors. Hence, hospitals are expected to fund capital investments from operating revenues since 2008.⁴⁰

While the number of GHMs increased by 15% between 2009 and 2022, the number of GHS tariffs in each sector increased by 60% approximately in the same period (see Figure 4). This is mainly due to requests from stakeholders (hospital federations) with negotiations partly informed by technical elements, but also often responding to political demands. Therefore, the French DRG system became increasingly closer to a fee-for-service model and extremely complex to manage for all stakeholders.⁴³ At the end of 2022, there were more than 7 300 DRG tariffs in total (3 698 for public hospitals, 3 626 for private for-profit hospitals).

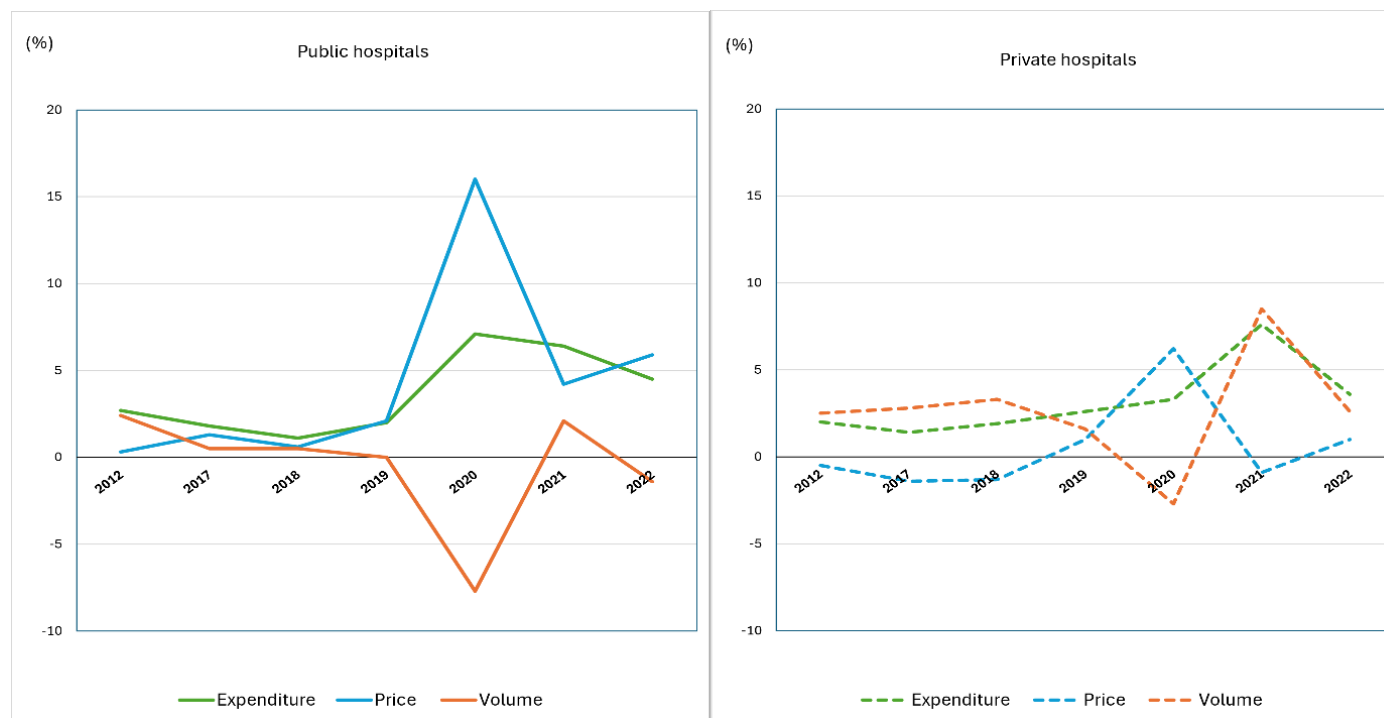
Figure 4 – Number of DRG tariffs (GHS) used for payment between 2009 and 2022



Source: Authors using ATIH data.

A recent report showed that nearly a third of GHS are rarely or never used (more than 1 000 GHS represent each less than 100 hospital stays at the national level) which raises questions on the reliability of reference costs (based on a few observations) and the incentives for efficiency.⁴³

Moreover, final prices are not equal to reference costs (raw tariffs). The Ministry of Health sets the final prices considering the overall budget (expenditure targets) for the acute hospital sector and national health priorities (see section 3.4). The National Expenditure Targets (ONDAM) for acute care are set by the Parliament separately for the public and private sectors. If the actual growth in the total hospital volume exceeds the target in a given year, the prices are then reduced to remain within the target budget. The change in hospital volumes is not monitored at individual hospital level but at an aggregate level (public sector, private sector). Therefore, reference costs are modified in a complex and opaque way to compute final DRG prices each year, (increasingly) independent of costs and their evolution at the hospital level. Using DRG prices to support specific public health priorities (such as cancer and stroke care), through higher tariffs for procedures concerning these, added another layer of complexity and blurred further the price signals.³²

**Figure 5 – Trends in total hospital expenditure: price versus volume effect - public and private hospitals, 2012-2022**

Source : Adapted from DREES (2023)³⁴, comptes de la santé.

Since 2008, certain DRG tariffs have been adjusted downwards several times given that the increase in activity volume was higher than the targets, but other tariffs increased (without a clear method) considering the public health priorities set by the government (such as cancer care). Overall, this macro-level price regulation created an opaque environment where it became very difficult for hospitals to predict their budget situation for the next year as prices change every year as function of overall hospital activity. The initial increase in activity volumes has slowed down since 2012 in public

hospitals, where wages, especially of nursing staff, remained very low while working conditions deteriorated. In private hospitals the growth rate of volumes remained high until the COVID-19 pandemic in 2020 with an unclear trend of prices and volume growth since then (Figure 5).



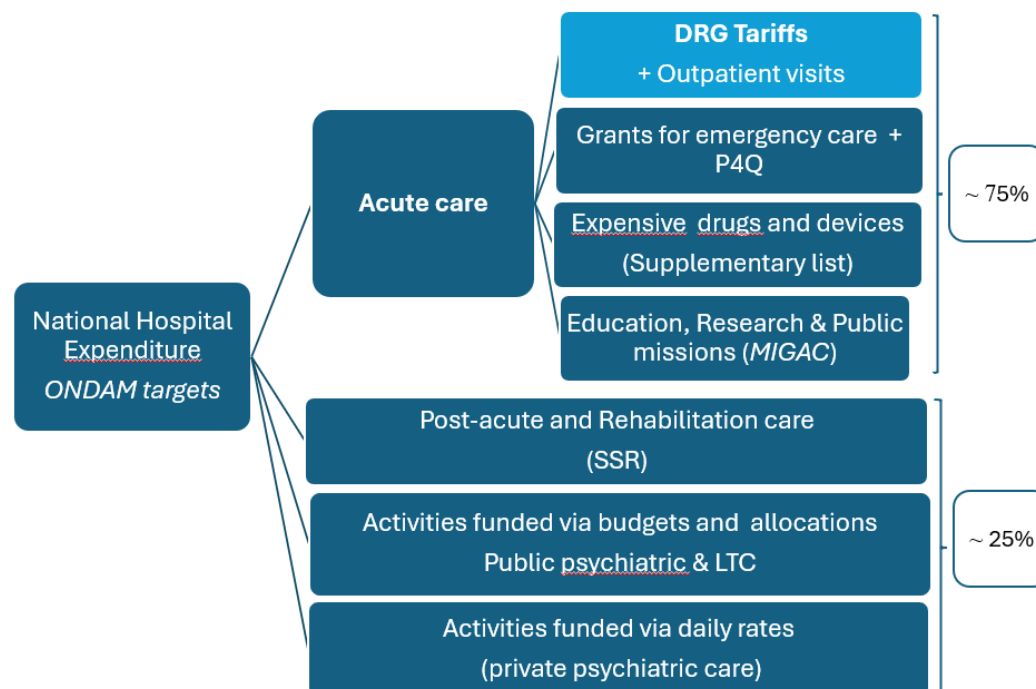
3.3. DRG exclusion mechanisms and hospital payments

3.3.1. Hospital revenues covered by DRG payments

The growth of hospital expenditure, accounting for € 99.4 billion or 41.4% of the overall expenditure of the public health insurance fund in 2021, is regulated by the national expenditure targets (see next section). Between 2019 and 2021 hospital spending increased by 20% due to, following COVID-19, a significant rise in salaries for all health professionals working in hospital.⁴³

In 2019, about 76 % of total hospital expenditure was spent in acute care hospitals.²⁸ These hospitals, mostly paid by DRGs, receive also other payments mainly to cover the cost of research and education, expensive innovative drugs and devices and specific public missions. The cost of admissions to the emergency room are paid separately with fixed annual grants modulated by overall activity volume (Figure 6). Psychiatric care, post-acute rehabilitation and long-term care are paid from a different budget envelope 'outside the DRG scope' (Figure 6). These activities represented about a quarter of total hospital expenditure in 2019.³⁶

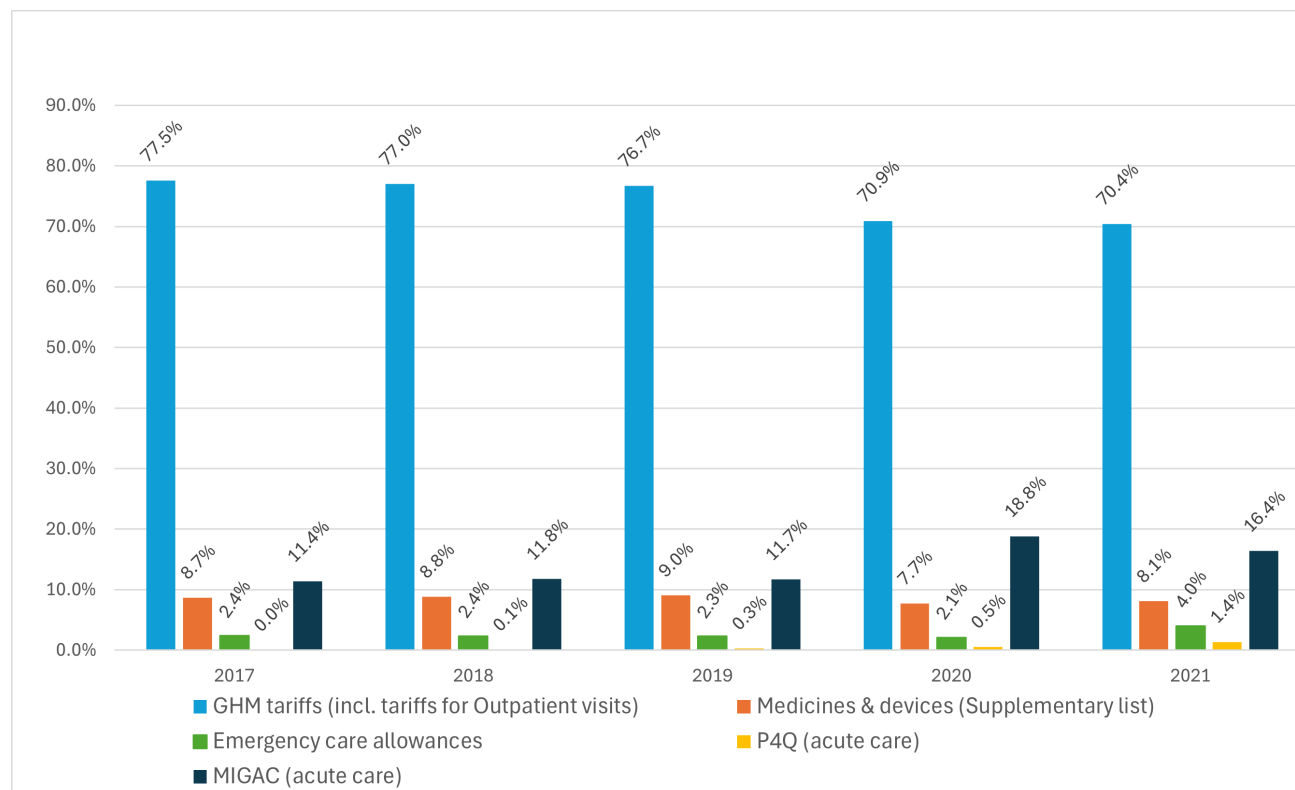
Payments linked to activity represented, at the national level, 78% of total hospital spending in 2017 against 71% in 2021 (Figure 7). However, payments linked to DRGs in the strict sense (i.e. excluding outpatient visits) represented 56% in 2017 against 49 % in 2021.⁴³

**Figure 6 – Breakdown of the Hospital National Expenditure**

Source : Adapted from DREES (2023) and Cour des comptes (2023).^{34, 43}



Figure 7 – Share of activity-based payment in acute care hospital spending



Source : Adapted from Cour des comptes (2023)⁴³ with data from DGOS (Direction Générale de l'Offre de Soins).

The share of revenues generated by DRG payments varied by type of hospitals. In 2019, DRG payments represented about 81% of the revenues in private-for-profit facilities against 59% of revenues in Research and University hospitals where MIGAC allowances (see next sub-section 3.3.2.1) represent about 20% of their income (Table 10).

**Table 10 – Share of hospital payments by hospital sector, 2019 (in %)**

	Private for-profit hospitals	Public and non-profit hospitals			Total
		Regional/teaching hospitals	General hospitals	Private non-Profit	
GHM tariffs	81.4	59.2	67.5	69.2	64.2
Outpatient visits	1.8	8.2	10.7	8.4	9.3
Expensive drugs& devices	14.2	11.0	7.0	12.2	9.3
Emergency care grants	1.4	2.2	3.9	1.4	2.8
MIGAC	1.2	19.6	8.9	8.0	13.4
Budgets for Community hospitals	0.0	0.0	2.1	0.8	1.0

Source : Adapted from *Cour des comptes (2023)*⁴³ with data from the Regional Health Agencies (ARS)

3.3.2. DRG exclusion mechanisms and other hospital payments

As a rule, all acute care hospitals or activities are paid by DRGs. However, certain services or clearly identified activities or products that cannot be financed on an activity basis, either because of the absence of a suitable classification or because they cannot be linked to a given patient, are not included in the DRG payment mechanism. These concern notably education, research, and innovation, emergency care, and hospital outpatient visits. Moreover, certain types of hospitals are excluded from DRG payments: community hospitals, those dedicated to prisoners' care, rehabilitation facilities, psychiatric hospitals, and long-term care facilities.³⁴

3.3.2.1. Services excluded from DRG payments

Education, research, innovation, and other activities of public interest: MIGAC^c

The missions of public interest (MIG) which cover specific tasks that cannot be financed on an activity basis are paid through specific budget allocations. These activities fall into two broad categories.

First, development of innovative technologies and cost of teaching and research-related activities are paid by a specific budgetary allowance within the global envelope of MERRI (*Missions d'enseignement, de référence et d'innovation*). These payments are to cover the general cost of innovation-related activities as well as specific use of innovative technologies on an experimental basis (such as artificial hearts, new-generation ear implants, etc.). In practice, these budget envelopes consist of three distinct parts: one fixed and the other two variable. The fixed part (about 40% of the total funding) is calculated considering the higher costs of medical personnel and other fixed charges in teaching hospitals. One part of the variable funding (about 50% of total envelope) is determined by a set of outcome indicators (publication score, number of medical students, number of industrial patents received). The other part (around 10%) is allocated on a contractual basis with individual hospitals to support the use of innovative technologies. These could either be labelled (rare diseases, artificial organs, etc.) or subject to a call for tender. There are also specific payments to assure quick access to innovative drugs which have not yet been authorised to be marketed, called temporary access for treatment (ATU), which could be asked for one patient or group of patients.⁴⁰

Second, public hospitals and private hospitals performing so-called 'public missions' receive lump-sum payments for costs related to some activities of public interest, such as investments in preventive care and care for the disadvantaged (these are called AC). In practice they can cover some of the investments, the cost of developing a new activity, or improving the range of

^c Missions d'Intérêt Général et d'Aide à la Contractualisation.



services to support care for vulnerable populations, but are also used for covering the cost of maintaining loss-making activities considered as essential.⁴⁹

The definition of activities of general interest (MIG), thus their budget allocation, has been improved over time and today the MoH defines these activities annually by law.^{43, 48} Nevertheless, the budget for public missions (MIGAC) which is not easy to attribute to specific costs remains an important source of revenue, especially in public hospitals (Table 10).⁴³ Despite increasing transparency of MIGAC budget allowances over time, some critics point out to unexplained large variations in these payments across hospitals and sectors.^{38, 40, 43} Moreover, between 2019 and 2021 the share of DRG payments in total hospital spending has fallen by about 6 percentage points while the share of MIGAC budgets increased by almost 5 percentage points (Figure 7).

Emergency care

The costs of maintaining emergency care and related activities are paid by fixed annual grants to cover the running costs of services for a minimum of 12 500 visits per year, with a fixed increase in payment for each additional 5 000 visits. If an emergency visit is not followed by a hospital admission, it is paid like a hospital outpatient visit, by a fixed fee, supplemented by payments for consultations and procedures carried out, such as radiology and biological tests.²⁷

Since 2022, the payment model of emergency departments has been changed to consider the intensity and to enhance the coordination between hospitals and ambulatory emergency care services.⁵⁰ The new payment model consists of a population based global allocation which is calculated considering the patient outflow, mortality and morbidity rates in the local area (53%), an activity-based payment with fees adjusted by the intensity of care (depending mainly on patients age and the level of care provided^d), (45%),

with a small P4Q (2%), which will be based on new emergency quality indicators.⁵¹

Costly medicines and medical devices

A specific list of costly medicines and medical devices that are defined at the national level are paid for retrospectively according to the actual number of prescriptions issued.⁵²

The high costs of these expensive and innovative medicines in relation to the DRG tariffs justified some specific measures to ensure rapid access to innovation. These medicines are mainly used to treat cancer and autoimmune diseases and are on a list (*liste des médicaments facturables en sus des prestations d'hospitalisation*) that meets strict criteria: high therapeutic added value of the medicine, a cost higher than 30% of the DRG tariff, and an indication for less than 80% of the patients included in the DRG.^{36, 53}

A specific target budget for this list of medicines is set in the ONDAM (Figure 6) and the prices of these medicines are regulated through negotiations between each pharmaceutical company and the State representative that is the Economic Committee for Healthcare Products (*Comité économique des produits de santé*, CEPS). This system was created as a strategy to temporarily fund innovation with the idea of integrating the cost of these medicines in DRG tariffs as soon as they become part of regular care. In practice though, this list stayed stable over time with only a small number of medication shifted from the list to be included in DRG tariffs.⁵³

The expenditures for these expensive medicines and medical devices have been increasing continuously. Between 2011 and 2019, spending rose by around 60% accounting for a total of € 6.5 billion in 2019. Most of this concerns cancer treatments and autoimmune diseases.³⁴

^d Considering if a patient arrived by ambulance, or using CCMU (*Classification Clinique des Malades aux Urgences*), plus flat-rate payments for biology or imaging tests and/or specialist consultation.



3.3.2.2. Hospital facilities excluded from DRG payments

Psychiatric hospitals

The DRG-based payment system has not been extended to the care of patients in acute psychiatric hospitals in France. This can be attributed to several factors, including the challenges in establishing a reliable diagnosis for mental health problems, diversity of psychiatric care provided, and historical territorial organisation of mental healthcare in France.

Until 2022, public and private for-profit hospitals were paid differently. Psychiatric care in public and private non-profit hospitals was paid by annual prospective global budgets, which are based on historical costs adjusted by the expected annual growth rate of hospital spending (fixed in ONDAM, next section). Providers claimed that these global budgets were poorly adjusted by the differences in local mental healthcare needs which created strong geographical inequities.

Payments to private for-profit hospitals were based on pre-determined rates per hospital day that vary depending on the type of care provided (e.g. full-time or part-time hospitalisation). These rates were adjusted annually at the regional level by the ARS in accordance with the national expenditure targets for hospital care set in the ONDAM.⁵⁴

Since 2022, the payment model for psychiatric care hospitals has been under reform to reduce geographical and sector-wise inequalities. The reform introduces a 'combined' funding model including 1) a population-based allocation to each hospital, based on local indicators of care needs (such as poverty and social isolation rates, density of self-employed psychiatrists and social care providers, share of the population aged under 18); 2) a retrospective budget based on the number of hospitalisation days and ambulatory procedures performed per patient per year; 3) allocations for targeted cross-regional activities (for instance, dedicated units for patients with complex needs); and 4) a quality-based payment using a list of care quality indicators (under development).^{27, 34, 55}

Post-acute and rehabilitation facilities

Until 2017, inpatient rehabilitation (*Soins de Suite et de Réadaptation*, SSR) was financed using a model similar to that for acute psychiatric hospitals: an annual prospective global budget for public and private not-for-profit hospitals, and fixed daily rates for private for-profit hospitals.

Since 2017, the global budgets are adjusted according to the volume and case-mix of patients treated⁵⁶ using a DRG-like patient classification system in place since 2010. The classification system used for adjusting budgets include about 750 groups (*Groupes médico-économiques*, GME) for post-acute and rehabilitation services. Like DRGs, the GMEs are determined according to several variables, including the main and secondary diagnoses coded at admission, patient age and level of dependency, type of admission (post-surgical or not) and medical procedures provided. Likewise, reference costs for different groups are estimated and updated annually and the process for calculating these costs is the same as that for GHSs in acute care. In 2020, the GME cost database included a sample of 70 voluntary hospitals including 30 private for-profit hospitals.⁵⁷

The initial idea of paying these hospitals entirely by DRGs (GMEs) has been gradually abandoned considering the challenges and political resistance. In 2020, only 10% of the total payment came directly from activity-based payments using GME tariffs. Since 2017, a reform proposing a mixed payment model has been on the agenda, similar to psychiatric hospitals, to reduce the inequalities in funding across hospitals and regions, but the implementation has been very slow. After several postponements it came into effect in July 2023. The reform, officially launched in July 2023, proposed a mixed funding mainly made up of a 'flat-rate' allocation taking into account the characteristics of local populations to guarantee hospitals a minimum resource base and an 'activity' part, corresponding to per-stay (GME) financing.^{44, 58} These hospitals are also eligible for additional budget allocations, as acute care hospitals, notable to participate in public health missions (MIG) and can obtain quality based payments.³⁴ In 2023, only 10% of the hospital budgets were linked to the new mixed payment model. A transition period where allocations are adjusted considering each hospital's historical budget is foreseen until the end of 2027.



Long-term care

Long-term care departments in hospitals (*Unité de soins de longue durée*, USLD) function like nursing homes in a hospital setting and are excluded from the DRG-based payment system. The number of USLD beds went down significantly in the past 15 years since the LTC policy aimed to shift elderly patients needing medical attention to residential nursing homes. LTC in hospital (as in residential care home) is paid by a three-part tariff: a medical care package, social care (or dependency) bundle and an accommodation fee.⁵⁹ The medical care package is calculated for each facility using a synthetic indicator, called weighted iso-care group (GMP), which corresponds to the average care needs and dependency level of people in the unit. Care needs are measured by the coordinating doctor using a classification called 'pathos', which identifies 50 clinical conditions with 12 profiles of care required by these conditions constituting 238 couples of 'condition-profiles'.⁶⁰ The dependency bundle finances the cost of the caregivers in helping with activities of daily living (personal and social care). It is calculated according to the GMP (average *Groupe Iso-Resource* or GIR score) of the patients.

Community hospitals

Small local hospitals were initially included in the DRG-based payment system. However, these hospitals were quickly in deficit under DRG payment because of their remoteness and low activity volumes. Initially supported by extra budget allocations from MIGAC, these hospitals have been excluded from the DRG system since 2019 (see section 3.5).

3.4. Control mechanisms

The specification of an overall expenditure target for healthcare, known as the National Objective for Health Insurance Spending (*Objectif National de Dépenses d'Assurance Maladie*, ONDAM), has been a key aspect of the French strategy to control hospital volumes and spending. This involves setting an a priori global budget for healthcare, and specifically for the hospital sector, each year.^{27, 61}

3.4.1. Detailed description of the system

3.4.1.1. Scope of application

The ONDAM is specified in monetary terms as the total amount of health spending for the forthcoming calendar year and gives all stakeholders a precise objective in terms of spending. The ONDAM's overall target is split into three sub-targets for the main health service providers: ambulatory care, hospitals, and long-term care facilities. The budgets for hospital and long-term care facilities are further divided into two envelopes, one for public and private non-profit hospitals and one for private for-profit ones. Note that the fee-for-service payments for doctors in private hospitals are not covered by DRGs, nor are they part of the national hospital expenditure targets (ONDAM) for acute care. Instead, they are included in the national expenditure for the ambulatory care sector. In contrast, doctors in public hospitals are paid with salaries that are covered by DRG payment and hence included in the ONDAM acute care expenditure for public hospitals.²⁹

Initially set as objectives, ONDAM targets became binding in 2010 with a dedicated committee (*Comité d'alerte sur l'évolution des dépenses d'assurance maladie*) following the evolution of health expenditure. In parallel, more responsibility and power were given to the health insurance funds for containing costs. The committee assigned to monitor SHI spending is responsible for alerting the Parliament, the Government and national health insurance funds if the ONDAM target is at risk of being exceeded. The monetary ONDAM target is used to signal the percentage of health spending growth that the government is willing to accept in any given year. For example, the 2019 objective was € 200 billion, or a 0.5% growth compared to 2018.⁶²

In the case of hospitals and long-term care facilities, the growth rate used by the MoH corresponds to the increase in their observable costs (notably payroll, purchases of goods and services, etc.) all else being equal (unchanged efficiency and healthcare policy). This rate is estimated by the General Directorate for Healthcare Provision using methods that are insufficiently documented and that vary over time.⁶³



When setting the ONDAM, the government also draws a precise list of savings necessary to meet budget targets. In the hospital sector, under the DRG-based payment, national-level expenditure targets for acute care are used as a price regulation mechanism. If the actual growth in total hospital volume exceeds the target in a given year, prices go down the following year to stay in the targeted budget. The growth of activity volumes is not regulated at the individual hospital level but at an aggregate (national) level, separately for the public and private sector. Prices have been adjusted downwards regularly since 2008, as the increase in activity was higher than the targets set.⁶⁴

3.4.1.2. Data and methods used to implement the system

Each year, the LFSS (*Loi de financement de la Sécurité sociale*) presents an estimate of the spending trend, which corresponds to the 'spontaneous evolution' of expenditure, to which new expenditure is added. For health and long-term care facilities, there is no distinction between trend and new expenditure, unlike for the primary care sector.

The methods used to estimate the spending trend do not take into account the determinants of healthcare expenditure (demographics, morbidity, technical progress, etc.). These are considered as part of the historical trend used for the projection. In fact, it is difficult to infer forecasts for the following year, when cyclical effects may predominate (such as the release of an expensive product). The explanatory model used (which is less robust than a forecasting model) mainly extrapolates recent trends, using time-series statistical methods.

The spending trend for year N+1 in the acute hospital sector (separately for public and private sectors) is calculated in summer N as follows:

- Estimate of the base expenditure (amount per sub-sector for year N);
- Estimate of spontaneous growth in expenditure excluding new expenditure. This growth is applied to the base expenditure; the overall growth rate is then obtained by aggregating the sub-targets. Note that the trend is calculated excluding the price effect: price reductions appear as savings, and increases in prices and wages are considered

to be new expenditure (these are then added to the trend for healthcare facilities);

- The trend is then supplemented by forecasts of the carryover effect from the previous year and of new expenditure.

Numerous regulatory choices made prior to this work determine the margins for manoeuvres, for example the general pay policy for healthcare workers in public hospitals (who are civil servants), contractual policy and, in the longer term, training policy for healthcare workers. This apparently simple reasoning is much less so in practice.³¹ The notion of spontaneous growth in expenditure excluding new measures is a highly theoretical concept in healthcare compared to other areas of social protection (pensions, social benefits) where it corresponds to changes in expenditure based on unchanged legislation. In the healthcare sector changes in patient behaviour, epidemic-type factors, modifications in medical practice and productivity can influence both volume and expenditure. Growth in the volume of care can only be curbed by structural reforms, the effects of which generally only become apparent in the medium term.

Moreover, from a public finance point of view, compliance with the ONDAM is insufficient because this may be accompanied by hospital deficits and debts that contribute to the public deficit and debt. Although the regulation of payments to healthcare facilities during the year allowed to comply with ONDAM (until the COVID-19 pandemic), in reality expenditure by these facilities turned out to be higher than the amount predicted by ONDAM. This means that the majority of the public hospitals (58%) were in deficit in 2018-2019. Their deficit amounted to € 569 million (per year), or 0.7% of revenue, in 2019 as in 2018.⁶⁵ In fact, the deficits of public hospitals correspond to one major limit of the regulation by ONDAM since they are not included in health insurance expenditure, but consolidated in the public deficit.³¹



3.4.1.3. How frequently are the mechanisms in effect?

The ONDAM targets are set annually. The annual process requires the Ministry of Economy and the Ministry of Health (MoH) to work together to control health expenditure. Every year, the Ministry of Economy produces a draft of a SSFA (Social Security Financing Act), in collaboration with the MoH, the Ministry of Labour, and other social security entities. This draft is prepared between June and October by the Social Security Direction (*Direction de la sécurité sociale*), an administrative body under the joint supervision of the Ministry of Budget and the MoH. Following the publication of the SSFA draft, the document is debated in the parliament in accordance with a legislative calendar. Since 2010, the Alert Committee has gained additional powers and can undertake an ex-ante evaluation of the ONDAM, before the draft of the SSFA is submitted to parliament. The data for these evaluations come mainly from the National Health Data System, a nation-wide claims data base allowing to monitor healthcare utilisation (and reimbursements) across all care settings. If the ONDAM targets for the hospital sector are expected to be overrun, hospital tariffs can be decreased during the year (before waiting the end of the year) to respect the target.

3.4.2. Evaluation

The construction of the ONDAM and its infra-annual management are criticised by several institutions because they are based on a short-term approach that does not take into account the needs of the population and the structural reforms that could improve the efficiency of the healthcare system.³¹ Trend planning is based too heavily on past expenditure, which is itself constrained by savings that are not always sufficiently justified.

In the hospital sector, the macro-level volume-price regulation created a very opaque environment for healthcare facilities but also meant that DRG prices are increasingly disconnected from actual costs and quality of care in hospitals. French hospitals are facing a prisoner's dilemma due to this regulatory model to contain hospital spending growth.³⁰ Since DRG-prices are uniformly reduced if sectoral spending targets are exceeded, individual hospitals have an incentive to increase volume to prevent losing revenue when prices are going down. In the absence of clear price signals and lack of cost and quality data for benchmarking hospitals, providers have been

concerned with balancing their accounts, by increasing their activity, rather than increasing efficiency by quality improvements. Moreover, there has been a gradual underinvestment in public hospital infrastructure since the hospital prices were to cover partly the cost of investment.⁶⁶ This also meant that working conditions in public hospitals deteriorated in the past ten years with a strong resentment against DRG-based payment.

3.5. Payment reforms

Since its implementation in 2002/2005, several reforms have been introduced to address the shortcomings of the DRG system in France. Initial reforms aimed to finetune the DRG model to address concerns for incentivising the quality and efficiency of care, while more recent reforms aim to reduce the share of DRG payment in hospital funding by combining it with new payment models given the increasing dissatisfaction of care providers with the DRG payment. Overall, major reforms introduced since its implementation can be grouped as the following: (i) introduction of payments for quality (P4Q), (ii) adjustment of tariffs for incentivising ambulatory surgery, (i) exclusion of local hospitals from the DRG payment system and (iv) experimentation of alternative bundled payment models including episode-based payment.

3.5.1. Introducing Payments for Quality (P4Q)

DRG-based hospital payment systems may present an inherent risk to quality of care because they directly incentivise hospitals to reduce the cost per stay, irrespective of outcomes. Hospitals are expected to reduce costs by cutting down unnecessary services and by improving efficiency through organisational changes, but they may also 'skimp' on quality as a way of cost-saving.⁶⁷ In France, despite an early awareness of the need for better monitoring and incentivising care quality under DRG payment, developing and monitoring appropriate quality indicators was slow.

After ten years of testing indicators to monitor hospital quality, and a pilot period in 2014/2015, a quality-based payment scheme (P4Q) was introduced in 2016 for hospitals (*Incitation financière pour l'amélioration de la qualité*, IFAQ) in addition to DRG payment.⁶⁸ Within this scheme, all acute



hospitals collected a limited number of indicators, mostly process indicators concerning safety of care (e.g. control of nosocomial infections) and a modest proportion of providers' income (about 0.3%) was linked to the achievement or progress towards the agreed goals (national rules). The P4Q scheme covered all acute care hospitals in 2016, including hospital at home (HAH), and generalised to all hospitals including rehabilitation and psychiatric care in 2019.^{34, 69}

The P4Q models have become increasingly popular since 2018 with the recommendations of the Taskforce for Funding Reforms set up by the Ministry of Health.⁷⁰ Since then, consecutive governments have pushed for increasing the share of payments linked to quality while finetuning the model by enlarging the variety of quality indicators used. As a result, overall IFAQ funding has gradually increased, from € 50 billion in 2018 to € 450 billion in 2021, and € 700 billion in 2022 representing almost 1.5% of acute hospital payments.^{34, 43, 69}

Nevertheless, a key issue surrounding the hospital P4Q scheme in France remains the indicators used to calculate this payment. It was initially based on a limited number of structure (e.g. presence of a nurse dedicated to safety, disinfection material bought, number of meetings, etc.) and process (e.g. maintaining patient records or quality of discharge document) indicators which had little medical sense for hospital workers.^{71, 72} This led the French National Health Authority (HAS) to question the relevance of some of these indicators as well as IFAQ payment rules.⁷³ More recently, some progress has been made by integrating hospital certification results and introducing a few new indicators produced by the HAS (including two patient satisfaction indicators) and better monitoring of IFAQ payments.⁶⁹

3.5.2. Shifting from inpatient to ambulatory care

The introduction of DRG payment aimed to encourage the development of ambulatory surgery as it improves the quality and efficiency of care. However, initially, DRG tariffs for inpatient stays (based on average costs) were higher than for ambulatory stays and provided little incentive for developing ambulatory surgery in public hospitals. Therefore, since 2009, a single identical tariff (*tarification unique*) was introduced for surgical procedures that could be performed in day care.⁷⁴ This means that ambulatory surgery admissions and inpatient surgery stays with the lowest level of severity (level 1) are paid identically. Initially limited to 18 homogeneous patient groups (GHM) in 2009, this measure was extended to 39 GHMs in 2012 and then to 47 in 2013, and finally to all 111 surgical procedures that are defined as 'can be performed as ambulatory surgery'. The number of surgeries included in this list reached to 147 GHMs in 2020.^{74, 75}

Moreover, the Health Insurance Fund (CNAM) has introduced restrictive measures with the '*Mise sous accord préalable* (MSAP)' for hospitals with a low proportion of ambulatory surgeries compared to the national average. Hospitals covered by a MSAP must provide justification to the CNAM to be reimbursed explaining why these procedures are carried out on a conventional inpatient basis rather than ambulatory surgery. Additionally, low length of stay thresholds^e were removed in 2014 for all surgery GHMs with low severity (level 1).

These changes in payment to incentivise day care led to an increase in ambulatory surgery hospitalisations. They accounted for 23.5% of all stays in public and private acute care hospitals in 2014 against 28% in 2021.⁴³ In 2021, a relatively high proportion of some surgical procedures, such as eye surgeries (95%), orthopaedic surgeries (53%) and digestive procedures (43%) were performed as day cases (ambulatory) rather than inpatient

^e Where the payment was reduced by 50% if a patient was discharged too quickly, as set initially to overcome under-provision issues.



procedures.³⁴ Nevertheless, ambulatory surgery rates in France are still lower than some other OECD countries such as England or Denmark.³³

Finally, despite the upward trend towards more ambulatory surgery, there are significant variations across regions and hospitals.²⁷ Moreover, the increase in ambulatory surgeries appears to be driven mainly by the private for-profit sector. Between 2018 and 2019 only, day hospitalisations in private-for-profit hospitals increased by 5% compared to 0.1% only in the public ones.³⁴ This is probably due to the selection effect in the private sector which concentrates elective/programmed surgery while incentives for ambulatory surgery for older patients concentrated in the public sector are smaller.⁴³

3.5.3. *Exclusion of local hospitals from the DRG payment system*

Small general hospitals located in low density areas are considered to play a key role in assuring access to care in some rural areas, but they often have difficulties in balancing their accounts with DRG payments alone given their low volumes of activity. Therefore, since 2015, hospitals designated as 'community hospitals' (*hôpitaux de proximité*) by the Regional Health Agencies have received extra funding to be able to function. Community hospitals are defined based on remoteness criteria including a minimum distance of 45 minutes to the nearest acute care facility, a maximum population density of 80 inhabitants per km² in the catchment area, hospital status as the main provider in a region, and a low case-mix index.⁷⁶ These hospitals received extra payments, through MIGAC budgets as an annual fixed add-on payment to DRG payment. The amount of the extra budget typically equalled the amount required to achieve financial equilibrium. In certain instances, it has been supplemented by a variable component that depends on the fulfilment of contractual obligations (such as care coordination) set out by the Regional Health Agencies (ARS).⁷⁷

In 2019, the law on the organisation and transformation of the healthcare system⁷⁸ significantly modified the roles and funding model of local hospitals to ensure their financial stability, independent of the number of cases treated. The missions of local hospitals, both public and private, constitute today the first level in the gradation of hospital care. These hospitals must support primary care professionals in their area for assuring care continuity

with better community care and prevention. Local hospitals can carry out any activity or service (including emergency and rehabilitation care) as long as it meets a local need, except surgery and obstetric care. Moreover, they have to assure some compulsory activities such as providing medical and specialist consultations and granting access to technical platforms.⁷⁹

Since mid-2021 and following the adoption of LFSS for 2020, hospitals labelled as community hospitals are funded entirely by global budgets, with a three-year financial guarantee.⁸⁰ The funding comprises two distinct elements: (i) a lump-sum grant that covers a part of the hospital's fixed costs for care, and (ii) a territorial responsibility allowance, with the objective of guaranteeing outpatient care for patients in these hospitals. This allowance is intended to support the provision of specialist consultations and access to imaging, biology and telehealth facilities, as well as to finance care coordination and collaboration activities carried out with self-employed healthcare professionals in the community.³⁴

The amount of the lump-sum grant is set by the Regional Health Agencies for the three-year-period and corresponds in every year to a fraction of the average revenue received by the hospital over the previous two years. The amount of the territorial allowance comprises a fixed portion that is determined by ministerial decree and is identical for all local hospitals and a variable portion that is determined by the Regional Health Agencies considering the hospital's performance of mandatory tasks and activities. At the end of the three-year period, the territorial allowance can be complemented by an additional payment for quality depending on the hospital performance defined by medical practice, realisation of mandatory missions, and care coordination activities.⁸¹

3.5.4. *Introduction of bundled payments*

Bundled payments such as episode-based payments, aim to integrate hospital inpatient services with services from other care settings by providing a single, all-inclusive payment to healthcare providers delivering services along a patient's care pathway.⁸²

Since 2019, France has been experimenting with different payment models integrating care across settings. An episode-based payment programme



was introduced in 2019 in a sample of voluntary hospitals (*paiement à l'épisode de soins*, EDS), to bundle payments for three conditions, namely, total hip replacement, total knee replacement and cancer colectomy.⁸³ The objective is to integrate pre- and post-acute care into the DRG payment for improving care coordination and efficiency via a novel care organisation. The choice of the cases was motivated by the experiences of other countries (such as the US and Norway), high volumes in both private and public hospitals and the importance of post-acute rehabilitation and care coordination for these interventions.⁸³ The price of the episode covers the cost of all services provided (consultations, rehabilitation at home or in an institution, visits of allied health professionals, home nursing, etc.) 45 days before the surgery and 3 months after the surgery for hip replacement and colectomy and six months after surgery for knee replacement.

Tariffs are adjusted by 9 to 12 parameters, including age, co-morbidities, and socio-economic parameters. Payments must be distributed among various providers involved, whereas losses are typically borne by the principal provider, which is a hospital. EDS payments are also adjusted by quality of care, using a few process and outcome indicators. Providers can receive a penalty of up to 3% and a bonus of up to 10% of the payment.⁸³ In 2023, there were 46 voluntary hospitals with various sizes and from different sectors (with only three experimenting all three conditions). The evaluation of these experimentations is ongoing with no results available to date.⁸³

In addition, since 2019, a bundled payment in the form of capitation has been experimented for end-stage Chronic Kidney Disease (CKD) patients. The bundle is an annual monetary amount per patient, and covers the consultations by nephrologists, visits and interventions from allied health professionals for therapeutic education and disease management organised by the facilities which are free to define the care pathway. The objective is to delay CKD progression, avoid emergency dialysis and improve the transition to kidney replacement therapy.

3.5.5. Plans to progressively move away from DRG-financing

In 2018, it was decided to partially move away from activity-based financing.⁷⁰ At the time, it was estimated that 63% of hospital revenue (all types of hospitals: acute, post-acute and rehabilitation, hospital at home and psychiatric hospitals) was derived from DRG payments. The objective was to reduce this share to 50% by 2022, the remaining part being financed by a mix of payments for quality, bundled payments, global budget and a population-based payment for psychiatry.

Recently, the French Court of Audit, stated that, despite its complexities, T2A should remain an important component of hospital financing, as it drives improvements in healthcare delivery and financial management.⁴³ After all, it was acknowledged that activity-based financing had induced cost transparency, some objectivity in the allocation of resources and an incentive for efficiency. It was however recommended to improve the system. In particular, it was advised to harmonise and reinforce analytical accounting rules, to unify coding practices across hospitals, to enhance transparency by publicising the methods for cost collection and tariff setting, and to eliminate unjustified tariff discrepancies between DRGs.

The Social Security Financing Act (LFSS) for 2024 established the principles of a new financing system applicable from 1 January 2025.⁸⁴ The share of activity-based financing will be reduced, although it will remain one of the core components of the system. Inpatient standardised hospital activities will continue to be funded based on activity levels. In addition, global budgets, negotiated at the regional level, will be allocated to hospitals for activities related to public health objectives, including care for the elderly, women and children, addiction treatment and chronic pain management, as well as prevention, quality, and care coordination missions. Specific activities will be financed by a mix of activity-based payments and global budgets. These concern teaching, research, innovation, referral and expertise services on the one hand and emergency departments, intensive care, care in isolated areas and chronic disease management on the other hand. This system enables the financing of activities whose costs are largely unaffected by the volume of services provided, ensuring access to care is maintained universally.⁸⁵



3.6. Conclusion

DRG-based payment was introduced in France from 2005 onwards for improving transparency, efficiency and fairness of hospital payment. Initially supported by all stakeholders, it has been increasingly contested and seen as the main source of all problems in hospital quality and solvency due to flaws in its implementation. The macro-level management of hospital expenditures with national-level expenditure targets created an opaque environment for hospitals since prices are set as a function of macro-level objectives, independent of costs and quality at the hospital level. In the absence of clear price signals and lack of cost and quality data for benchmarking, this budgetary management meant that providers have been concerned with balancing their accounts, by increasing their volume rather than increasing efficiency by quality improvements.

Therefore, while the overall productivity in the hospital sector has improved under the DRG payment, with shorter lengths of stays and higher ambulatory surgery rates, problems concerning quality and appropriateness of care became more apparent. Avoidable hospital admissions, readmissions and emergency visits have increased visibly over this period.^{86, 87} Despite several national audits, alerts and high-level recommendations as early as 2012, little has been done to improve the situation and the debate remains highly political. Meanwhile, the payment system became increasingly complex with a multiplication of DRGs used for payment and frequent changes in tariffs. The lack of transparency in system management and price setting has progressively undermined the trust of healthcare providers. Moreover, there has been a gradual underinvestment in public hospital infrastructure since hospital prices have failed to cover fully the cost of investment. Underinvestment in public hospital infrastructure and human resources contributed to the degradation of working conditions in public hospitals.⁸⁸ The Covid-19 crisis aggravated existing problems and highlighted the issues with public hospital funding.

Currently, there is a political consensus for reducing the share of DRG-based payment in hospital funding to shift towards a blended payment approach mixing different type of payments. Several recent policies aimed also to test alternative funding models including population and episode-based payments for improving the quality and coordination of care. The performance of any payment system is ultimately assessed by its ability to provide appropriate incentives to healthcare providers which are in line with social objectives. In France, DRG-based payment failed to deliver on its promises because of the problems in its governance and implementation which lacked coherence.



4. GERMANY

Authors: Benedikt Langenberger, Elke Berger, Reinhard Busse

4.1. Overview of the hospital sector

4.1.1. Brief overview of the healthcare financing system

The German healthcare system is primarily based on Statutory Health Insurance (SHI), ensuring nearly universal coverage for residents. Individuals are enrolled in either the SHI or the substitutive Private Health Insurance (PHI). The SHI system comprises 95 distinct sickness funds and covers 89% of the population.⁸⁹ Specific professional groups, e.g. self-employed persons or civil servants and employees with incomes above € 69 300 (2024) are eligible for PHI, which currently covers 10% of the population.⁹⁰⁻⁹²

Health system governance in Germany is complex and decentralised, involving federal and state levels, and self-governing bodies. The federal level sets the legal framework, while state governments handle hospital planning and public health services. Most decision-making power within the SHI system is delegated to self-governing bodies, such as associations of sickness funds and providers, which meet in the Federal Joint Committee to detail regulations. Care sectors such as public health, ambulatory and inpatient care, and long-term care have separate legislation. This leads to fragmented service provision and concerns about coordination, quality assurance, and integrated health information. Planning and regulation of inpatient treatment facilities are managed by state-level ministries of health, and for university hospitals, by ministries of science, but based on the federal Hospital Financing Act. This applies to both highly specialised tertiary care and regular secondary inpatient care. Hospital requirement plans and capacity criteria still differ significantly across states, focusing on the principles of need and performance. Planning units include institutions, departments, and in some states, beds.⁹⁰ Currently, a major hospital reform is underway which will standardise planning methods (see section 4.5).

There is no gatekeeping mechanism in primary care, resulting in limited integration and cross-sectoral coordination. Providers of outpatient care receive payment on a fee-for-service basis, guided by two distinct standardised fee schedules for SHI and PHI patients.

The SHI offers an explicit package of benefits that extend beyond basic health services, covering all legal prescription medications except those requiring a benefits evaluation. PHI typically offers benefits that are equal to or better than those provided by SHI. The benefits covered by SHI are outlined in broad terms by federal law. However, the specifics and decisions regarding the inclusion of new technologies, pharmaceuticals, or medical devices in the benefits package are determined by the Federal Joint Committee. This committee uses structured Health Technology Assessments to guide its decisions, which are mandatory for all sickness funds, providers, and patients. Refugees, asylum seekers, and undocumented migrants have limited access to medical treatment.⁹⁰

The SHI system is funded through income-related contributions from both employees and employers. The general fixed SHI contribution rate is 14.6% of gross income and in addition sickness funds can charge a supplementary contribution which ranged between 0.7% and 2.8% in 2024.⁸⁹ Both contributions are equally shared between employer and employee. Funds are pooled in the Central Reallocation Health Fund and distributed to the sickness funds based on the needs of the insured persons, utilising a morbidity-based risk adjustment technique. PHI is financed through individual premiums determined by a person's health risk, age, and desired benefits.⁹⁰

The financing of hospitals included in the hospital plan (includes 99% of all German hospital beds) operates under a dual system. Operating costs are reimbursed through a German variant of the Australian Diagnosis-Related Group (German: G-DRG) model, while infrastructure investments are to be borne by the federal states. However, over the past 20 years, hospitals in many states have seen a decline in capital investment.⁹³ By 2017, only about half of the estimated needs for investments in the inpatient sector, such as medical equipment and renovations, were met. To bridge this investment gap, hospitals have been relying on high activity levels and reimbursement from sickness funds, or they have been postponing necessary renovations,



including major IT infrastructure upgrades.⁹⁴ In Germany, states are responsible for hospital planning (e.g. regular defining needs, defining quality criteria, etc.). Since 2015, hospitals may receive reduced remuneration or even be excluded from hospital planning if previously agreed upon quality indicators are poor.⁹⁰

The G-DRG framework categorises treatment cases into clinically defined groups (DRGs) that share similar treatment costs, utilising a grouping algorithm based on hospital discharge data. These data incorporate factors such as primary and secondary diagnoses, medical interventions, patient demographics (including gender, age, and weight of newborns), mode of admission, discharge outcomes (e.g., death), and duration of stay. The system has seen diversification, with the total number of DRGs rising to 1 296 in 2024.⁹⁵ Additional fees are implemented to address the costs associated with certain innovative technologies, high-cost services, and pharmaceuticals. Both SHI and PHI patient reimbursements are determined by the G-DRG catalogue. Optional services, such as single-bed room accommodations and specialised medical treatment by the head physician, must be paid out-of-pocket or may be covered by the PHI tariff.⁹⁰

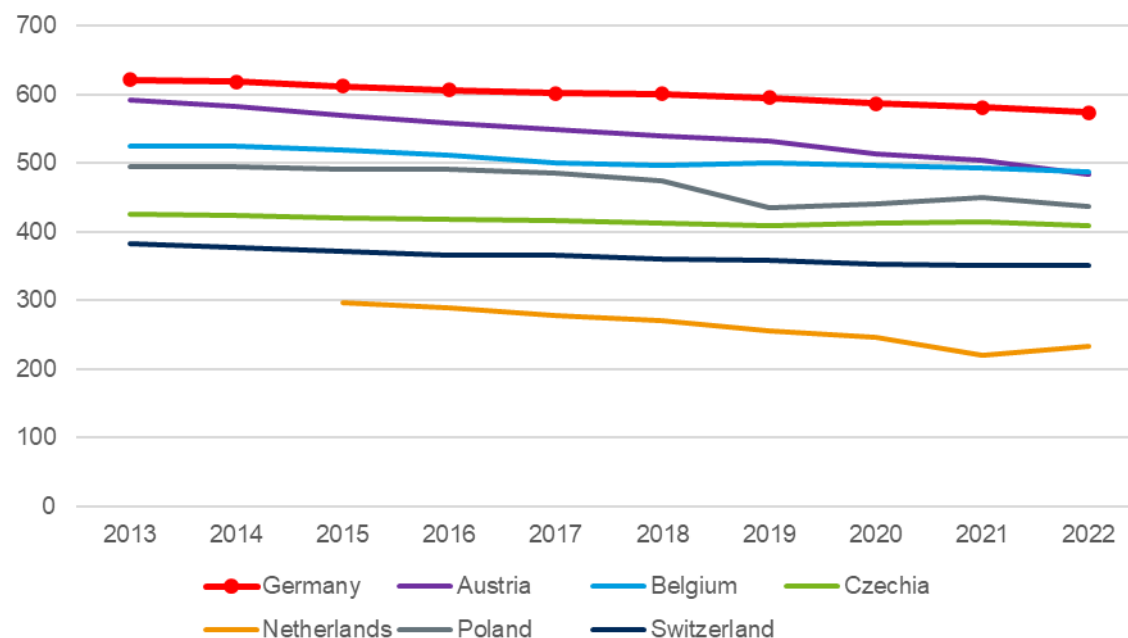
Recent changes to the G-DRG reimbursement system arose due to nursing staff reductions in hospitals after its implementation. The Nursing Staff Empowerment Act (2019) mandated that expenditures for nursing personnel be exempt from DRG case fees. As a result, individual nursing costs in acute

care hospitals are now fully funded by sickness funds, while the newly calculated aG-DRGs cover other operating expenses.⁹⁰

In 2022, Germany's healthcare expenditure was € 5 329 per capita (adjusted for purchasing power), representing 12.6% of GDP. Funding through compulsory health insurance schemes accounted for 86.5% of total health spending, while voluntary health insurance made up 2.6% and out-of-pocket payments made up 10.7%. In 2021, spending on inpatient hospital care was 24.8%, significantly higher than the 20.1% spent on outpatient care. Expenditures on outpatient dental curative care constituted 5.6%.⁹⁶

4.1.2. Hospital care provision

By international standards, the German inpatient care sector is extensive and varied. In 2022, there existed a total of 1 893 hospitals, 539 (28%) of which were in public ownership, 598 (32%) in private not-for-profit ownership and 756 (40%) in private for-profit ownership, with bed shares of 40%, 28% and 32% respectively.^{97, 98} Germany had 573 acute care beds per 100 000 inhabitants, the second highest in the European Union after Bulgaria. Despite the reduction in acute hospital capacities, the number of acute hospital beds remains considerably higher than in neighbouring countries (Figure 8).⁹⁷

**Figure 8 – Acute care beds per 100 000 inhabitants in Germany and neighbouring countries, 2013-2022**

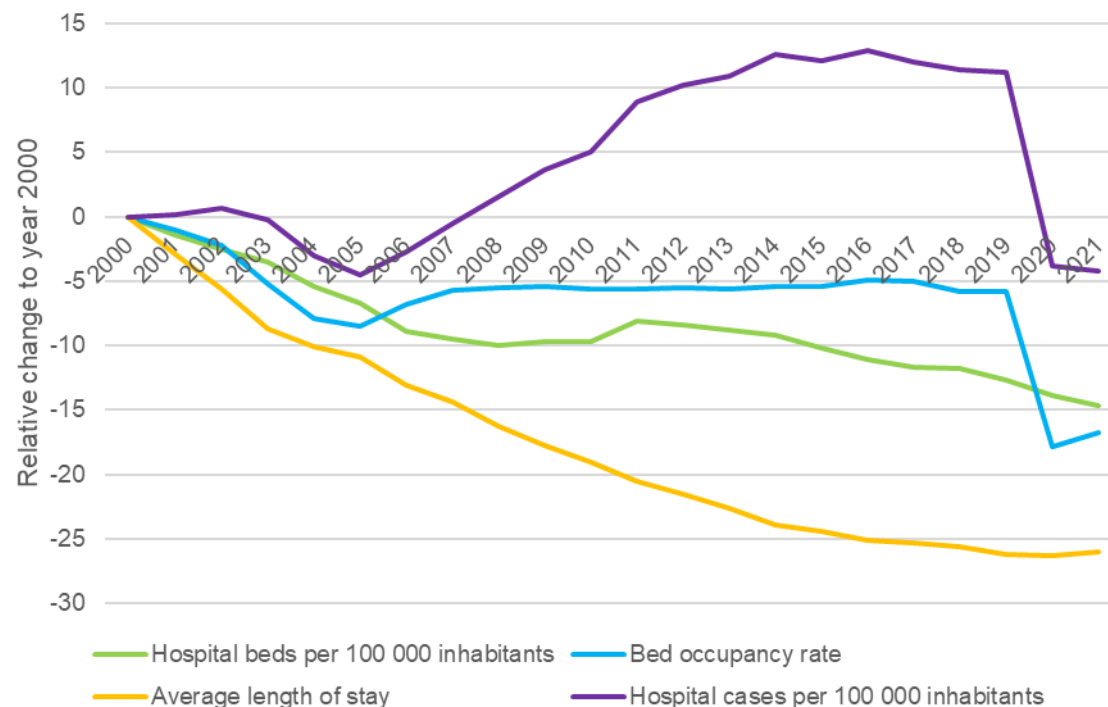
Source: Eurostat (2024)⁹⁷

Figure 9 illustrates the progression of inpatient care, encompassing both structural and utilisation data, for hospitals in Germany between the years 2000 and 2021. Until 2016, the per capita number of general and psychiatric hospital cases experienced a notable increase of 13%, reaching a level of 23.7 cases (admissions) per 100 population before reaching a plateau and then dropping during the COVID-19 pandemic. In the same period, the total number of hospital beds saw a significant decline of almost 15% by 2021. Despite the rise in the number of hospital admissions before the COVID-19 pandemic and the reduction in the number of available beds, the occupancy rates showed a downward trend, falling from 81.9% in 2000 to 77.2% in

2019. This decline in occupancy rates can be attributed to a considerable reduction in the average length of hospital stays, which dropped from 9.7 days to 7.2 days over the same period.⁹⁸

The trend of increasing hospital admissions was particularly pronounced between 2005 and 2014. On the other hand, the trend of decreasing average length of stay (LOS) is a long-standing phenomenon that predates the introduction of DRGs for hospital payment. This suggests that the reduction in LOS is not as strongly linked to the implementation of DRGs as is commonly believed.^{90, 98}

Figure 9 – Changes in the structure and utilisation of inpatient care, 2000-2021

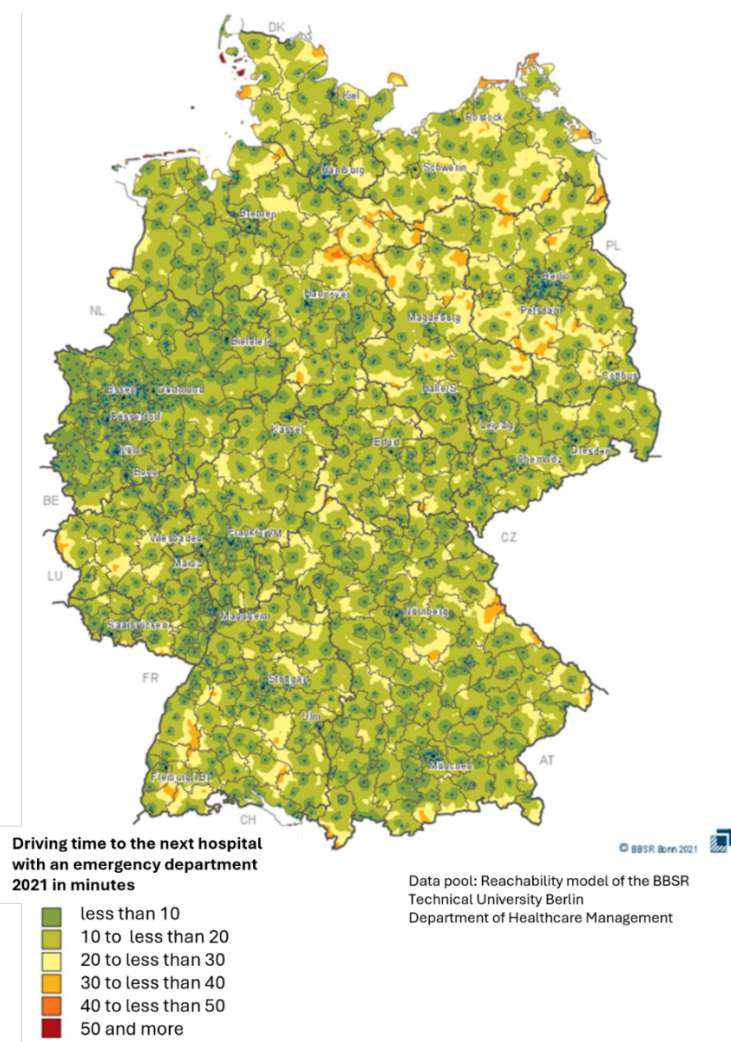


Source: Statistisches Bundesamt (2023)⁹⁹

The high density of hospitals in Germany generally ensures good availability and access to hospital care for the population, although there are significant regional variations. For example, in 2016, more than 90% of people living in urban areas in Germany could reach the nearest acute care hospital within 15 minutes. However, in rural areas, only 67% of the population could reach an acute care hospital within the same time frame.¹⁰⁰ Figure 10 shows that the density of emergency rooms is particularly high in large conurbations such as Berlin, Rhine-Ruhr or Rhine-Main and the journey time is usually less than ten minutes. In rural communities, especially in North-East

Germany such as in Brandenburg, Saxony-Anhalt, Mecklenburg-Western Pomerania and Lower Saxony, on the other hand, journey times can be up to 40 minutes and, more rarely, up to 50 minutes.

While the availability and accessibility of hospitals are generally high, this does not always translate into high-quality care. Many small hospitals across Germany offer inpatient services but lack the necessary human resources, expertise and technical equipment required to provide high-quality care.⁹⁰

**Figure 10 – Reachability of the closest emergency department, 2021**

Source: Technische Universität Berlin¹⁰¹

4.2. Main characteristics of the DRG system

The national G-DRG system (within negotiated case-mix budgets) was introduced in 2003 and replaced the old reimbursement system based on per diem payment related budgets. Based on diagnoses, patients are grouped into a single DRG, resulting in a fixed prospectively calculated payment that does cover average, but not actual costs of the given treatment. The system was implemented to enhance transparency and efficiency in hospital financing by categorising hospital cases into groups with similar clinical characteristics and resource usage.¹⁰²

Compared to other countries, the G-DRG system has a broad scope: it serves as the sole pricing system for hospitals. Additionally, it is utilised to establish a hospital's budget and for direct billing purposes. A notable development since 2020 was the introduction of the 'Nursing Staff Strengthening Act' (*Pflegepersonal-Stärkungsgesetz*) from 2019. This act removed nursing costs from the DRG calculations and established a separate nursing budget for each hospital, aiming to improve nursing care quality and staffing levels (see 4.3.3 for more information). Before, G-DRGs represented approximately 80% of all financial resources of hospitals, making it one of the highest proportions of DRG-based hospital payments globally.¹⁰³ This is why DRGs serve as the primary financial metric for hospitals in Germany. Therefore, German hospitals are primarily oriented towards inpatient care, with only a few legal exceptions permitting outpatient services, which are also financially less appealing.¹⁰⁴ Same-day cases are, however, included in the DRG system.

Initially, the system included around 664 DRGs. As of 2024, the system has evolved to 1 296 groups.¹⁰⁵ The trajectory of an increase in the number of DRGs over the years reflects annual adjustments of the G-DRG system. These adjustments can lead, for example, to an increase of the number of DRGs. Specifically, medical associations, hospital and sickness fund associations develop recommendations for further development of the system, for example because the patients within a given DRG are too heterogeneous regarding costs. Following these recommendations, adjustments (e.g., developing more precise DRGs) are made by the InEK (*Institut für das Entgeltsystem im Krankenhaus*) such that the precision of the DRG system is improved. Afterwards, the self-governing bodies



(National Association of Statutory Health Insurance Funds (*GKV-Spitzenverband*), Association of Private Health Insurance (*PKV-Verband*), German Hospital Federation (DKG)) overlook the adjustments made by InEK and may accept them, resulting in an adjusted DRG-catalogue.¹⁰⁶

Services and costs covered by DRG-based payments include almost all acute inpatient cases. The revenue generated by DRGs is supposed to cover all operating costs excluding investments (e.g. new buildings)^f and nursing (where there was a separate budget introduced in 2020; for more information see 4.3.3). The DRG-payment reflects a fixed price mainly based on diagnoses, thereby not reimbursing the actual costs of a hospital but the expected costs based on calculations. Thus, depending on factors such as efficiency of a hospital, the DRG payment can exceed, cover or not cover the costs of a given treatment. The final DRG reimbursement for a patient is based on the following, simplified formula:

DRG remuneration = DRG-specific cost weight x state base rate + additional fees (Zusatzentgelte, see section 4.3.2) ± possible surcharges or deductions (see section 4.4)

The individual state's hospital and health insurer associations⁹ negotiate the state base rate annually. Finally, investing and maintaining infrastructure, as well as research & education, is financed separately by the states (*Länder*).^{90, 107}

The database for the DRG system is updated on an annual basis. In 2022, 276 voluntary hospitals provided cost data, which are used to calculate the DRG cost weights. The number of hospitals providing data has been steadily increased to make the sample more representative. The main responsible organisation for the DRG system is the InEK. The time lag between data collection and the tariff updates remains two years.

^f Long-term infrastructure investment costs are generally funded separately by federal states through taxation. These funds can be provided as lump sums or applied as case surcharges. However, actual public investment in hospitals has been steadily declining and now accounts for less than 5% of total

The DRG system applies to all hospitals, irrespective of ownership status, that have permission to treat patients insured by the SHI following German law (§108 SGB (*Sozialgesetzbuch*) V).

4.3. DRG exclusion mechanisms and hospital payments

4.3.1. Exclusion of patient groups

Certain DRGs (= patient groups) are excluded from weight assignment in Germany due to their unique care needs and high resource utilisation. These groups include patients undergoing complex procedures such as bone marrow and stem cell transplants, organ transplants, severe burn treatments, and early rehabilitation for specific severe conditions like nervous system disorders, cardiovascular diseases, and polytrauma cases. As of 2024, there are 42 patient groups (DRGs) that do not have a cost weight,¹⁰⁸ resulting in a slight reduction compared to 2017, where there were 45 of such DRGs.¹⁰⁹ For these DRGs, hospital-individual reimbursements are negotiated as described in *Paragraf 6 Absatz 1 Satz 1 Krankenhausentgeltgesetz* with sickness funds.¹⁰⁸ In case the negotiations fail, a state arbitration board is determining the reimbursements for these DRGs.

hospital funding. To achieve the relative funding levels of 1991, federal states would need to nearly triple their allocations.¹⁰⁴

⁹ All health insurers that have a share of more than 5 per cent of the individual hospital's total occupancy days are involved in the negotiations, which are led by the health insurer with the highest share.



In 2023 (the last year with available data), unweighted DRGs with more than 1 000 cases were:

- DRG B43Z: Early Rehabilitation for Diseases and Disorders of the Nervous System, more than 27 days (17 973 cases)
- DRG B49Z: Multimodal Complex Treatment for Parkinson's Disease (15 477 cases)
- DRG B76A: Seizures, more than one occupancy day, with complex diagnostics and therapy (12 013 cases)
- DRG B61B: Certain Acute Diseases and Injuries of the Spinal Cord without Complex Intervention or more than 13 occupancy days or not transferred (10 871 cases)
- DRG U01Z: Genital Organ Transforming Operation (5 319 cases)
- DRG U41Z: Social and Neuropediatric and Paediatric Psychosomatic Therapy for Mental Diseases and Disorders (5 174 cases)
- DRG E76A: Tuberculosis, more than 14 occupancy days (2 755 cases)
- DRG E41Z: Early Rehabilitation for Diseases and Disorders of the Respiratory Organs (1 163 cases)
- DRG I40Z: Early Rehabilitation for Diseases and Disorders of the Musculoskeletal System and Connective Tissue (1 092 cases).

The exclusion of the 42 DRGs is made by InEK, which evaluates each DRG using cost data to determine if the following criteria are satisfied:

- Adequate homogeneity across all cases
- Adequate homogeneity within all inlier cases
- Sufficient number of cases
- Sufficiently low variance in LOS
- Sufficiently low excess daily costs of long-stay outliers compared to the daily add-on payments for outliers

- Accurate classification according to existing ICD-10 codes and the German surgery and procedure classification system (OPS codes) used for grouping.

If any of these criteria are not met, the InEK will not assign a cost weight. However, there is no fixed definition or threshold for these parameters (such as the number of cases required to calculate a cost weight). Each exclusion from DRG-based payment is assessed individually, considering its impact on the entire DRG system.¹⁰⁹

Finally, as a main exception, psychiatric and psychosomatic cases are reimbursed by flat rates (*Pauschalierendes Entgeltsystem Psychiatrie und Psychosomatik*, PEPP) that work differently from DRGs because they depend on the LOS. The system was first introduced in 2013, and from 2018 it was mandatory for all psychiatric hospitals and hospitals that run psychiatric departments. The design of the reimbursement system includes adjustments for factors such as LOS.¹¹⁰ With an increased LOS, the per-day payments per patient decrease according to a pre-defined per-day payment in the PEPP catalogue. In addition, there are several PEPPs for which no daily flat rates were set and which have to be negotiated with the sickness funds.^{111, 112}

4.3.2. Exclusion of products/services

Services or products are excluded from the DRG-based payment system if they occur sporadically and cannot be attributed to a specific DRG, incur high costs for both the hospital's overall budget and individual cases, or are delivered by a limited number of care providers who would be disadvantaged without the allocation of an additional fee relative to other providers.¹¹³

The products/services excluded from the DRG are mainly implantable medical devices, complex therapies and treatments, high-cost pharmaceuticals, advanced diagnostic and monitoring services, and rehabilitation and multimodal treatments. As of 2024, there are 161 services which are excluded from the DRG and reimbursed separately via additional fees (*Zusatzentgelte*).¹¹⁴ This number has decreased compared to 2017, where there were 191 services that were excluded from the DRG payment scheme.¹⁰⁹ In 2019, additional fees for excluded products or services



accounted for 4.2% of overall hospital revenues, amounting to 2.786 billion euros. Compared to the previous year, this reflected an increase of 15.6%. The top 5 additional fees in 2019 by revenue are:

1. High-effort care for adults (ZE130) with 355.5 million euros, making up 25.3% of the additional fee budget;
2. Increased care effort for patients in need of care (DRG Table 2) (ZE163) with 99.7 million euros, accounting for 7.1%;
3. Administration of human immunoglobulin, polyvalent, parenteral (ZE93) with 91.2 million euros, representing 6.5%;
4. Haemodialysis, intermittent (ZE01) with 80.1 million euros, contributing 5.7%;
5. Haemodialysis, continuous, venovenous, pump-driven (CVVHD) (ZE120) with 52.6 million euros, making up 3.7% of the additional fee budget.¹¹⁵

A distinction is made between rated (priced) and unrated (hospital-specific) additional fees. Rated (priced) additional fees have a monetary value and the price applies to all hospitals. Unrated (hospital-specific) additional fees for which the determination of a payment amount was not possible (e.g., due to insufficient data) are to be negotiated individually with the relevant hospitals.

Further, there may be new treatments or diagnostic services (*Neue Untersuchungs- und Behandlungsmethoden*, NUB) that are currently not reimbursed through DRGs or additional fees because they are too new to be included in any of these catalogues. For such services, providers and sickness funds (the same parties which also negotiate the hospital budget) can negotiate payments on a per-case basis (§ 6 Abs. 2 Krankenhausentgeltgesetz (KHEntgG)).

4.3.3. Exclusions of staff groups

In 2020, the nursing staff costs for direct patient care on wards with beds have been separated from the DRG flat rates per case. The motivation for this was that policy makers wanted to strengthen nursing staff numbers, increase the quality of care and satisfaction of nurses with their profession.¹¹⁶ Based on the principle of full cost compensation, these are now financed in parallel to the DRG flat rates per case via a hospital-specific nursing budget. The design of the new financing framework from 2020 was necessitated by the legal changes in the Nursing Staff Strengthening Act (PpSG) and represents the most lasting change in the DRG system since its introduction.

The nursing staff costs to be excluded from DRG payments were published in a catalogue with standardised national valuation ratios per full or partial inpatient occupancy day. This catalogue was used for the first time in 2020 and is to be further developed annually.

The German Hospital Federation, the National Association of Statutory Health Insurance Funds (*GKV-Spitzenverband*) and the Association of Statutory Health Insurance Funds (*PKV-Verband*) were required to submit reports (interim: August 2022; final August 2025) to the Federal Ministry of Health on the effect that the introduction of the nursing budget had on the development of nursing staff positions and costs in the years 2020 to 2024.¹¹⁷ Unfortunately, as of 2024, it appears that the interim report has not yet been published.

The outsourcing of nursing staff costs was criticised because it creates incentives for using nursing staff for non-nursing tasks. Since the full cost of nursing staff is covered, they may end up performing additional tasks that are normally covered by staff financed through DRG payments. This can lead to inefficiencies in the DRG system.¹¹⁶ Critics argue that the outsourcing of nursing staff costs increases the administrative burden, as negotiations are already cumbersome and often conducted retrospectively rather than prospectively. Now, with additional aspects such as the design of provision and performance compensation negotiations are further complicated.¹¹⁸



The German Federal Government introduced the Hospital Nursing Relief Act (*Krankenhauspflegeentlastungsgesetz*, KHPfIEG), mandating that from 2024, nursing personnel needs in hospitals will be calculated using the PPR 2.0 system. Under PPR 2.0, each patient in a ward is assigned to one of sixteen (adults) patient groups. A fixed time value in minutes is allocated to each patient group, and these minutes are then converted into full-time positions to determine the target staffing levels. The goals are to provide an objective assessment of care needs and to align actual nursing staff deployment with calculated requirements. This aims to prevent understaffing on wards and to avoid the exploitation of reimbursement within the nursing staff budget as mentioned above. In a next step binding compliance levels with the PPR 2.0 calculated targets are to be defined, which can also be sanctioned.^{119, 120}

4.3.4. Exclusion of hospitals or hospital departments

4.3.4.1. Emergency care

The German health system distinguished emergency care into four different categories: hospitals that do not provide emergency care, level 1 (basic emergency care), level 2 (advanced emergency care) and level 3 (comprehensive emergency care). If a hospital does not participate in emergency care, it pays € 60 per case treated at the respective hospital. If a hospital is categorised into level 1 emergency care, it receives an annual lump sum payment of € 153 000, if it provides level 2 emergency care, it receives an annual lump sum of € 459 000, and if it provides level 3 emergency care, it receives € 688 500 per year.¹²¹

4.3.4.2. Special institutions

Special institutions (*besondere Einrichtungen*), which can be either a part of a hospital (e.g., one or multiple departments) or the whole hospital, can be excluded from the DRG reimbursement. It is possible to achieve special entity status via the following ways. First, special institution (e.g., a department) status can be granted if, in the previous year, three-quarters of patients with a LOS between the lower and upper LOS thresholds were above the average LOS of the respective category. Second, special

institution status can be granted if more than half of all patients reached the upper LOS threshold for their respective DRG. Third, hospitals can try to establish special institution status for palliative care units that have at least five beds. Fourth, hospitals or wards focused on youth/children's rheumatology or the treatment of tropical infections, as well as wards that mainly treat patients with special diseases such as multiple sclerosis or Parkinson's disease, can be granted special institution status. Fifth, hospitals that offer special services with high non-variable costs necessary for the population, but for which the number of cases is too low to be predictable, can be granted special institution status. Sixth, there remains the possibility to argue for an exceptional case. Once an institution reaches special institution status, payments are negotiated and can be either case- or LOS-dependent.⁹²

4.3.4.3. Assurance subsidies and lump-sum allowances

Assurance subsidies (*Sicherstellungszuschläge*) are financial support payments for hospitals essential for regional basic healthcare but unable to cover costs due to low patient numbers. These subsidies, paid on top of the regular DRG payment on a case-by-case basis, ensure hospitals maintain necessary services like emergency care, obstetrics, gynaecology, and paediatrics. Eligibility criteria include meeting specific departmental requirements and accessibility thresholds. Quality standards are monitored, and compliance is enforced by state authorities. Additionally, rural hospitals receive an annual flat-rate subsidy (*Pauschale Zuschläge für bedarfsnotwendige Krankenhäuser im ländlichen Raum*) regardless of financial deficits.¹²² Lump-sum allowances are flat-rate subsidies provided to essential hospitals in rural areas. Each eligible hospital receives a minimum of € 400 000 annually, independent of financial deficits. This amount increases based on the number of essential departments, with hospitals receiving an additional € 200 000 per department, up to a maximum of € 800 000. These subsidies are designed to ensure continued operation and basic healthcare services in sparsely populated regions without the need for proof of financial shortfall (*Gemeinsamer Bundesausschuss*).



4.3.4.4. Additional payments for centres

Specialised centres subsidies can be paid since 2020. They are financial supplements for hospitals designated as specialised centres (*Zentren*) that take on advanced medical tasks beyond standard patient care and treat a predefined minimum volume of patients.¹²³ The specialised tasks include providing expert consultations, organising interdisciplinary case conferences, and managing specialised treatments. The G-BA has set nationwide criteria and quality standards for these centres to ensure consistency and high-quality care across all federal states. Specialised centres subsidies can be negotiated between the hospital and health insurance on the state level.¹²⁴

4.3.4.5. Outliers

Outliers are defined as patients with a LOS below or above a trim-point for each DRG. The lower and upper trim-point are derived by the InEK based on formulas focusing mainly on the deviation of the LOS from the arithmetic mean. For outlier patients, additional fees are subtracted or added to the DRG for each day below/above the trim-point.¹²⁵

4.4. Control mechanisms

4.4.1. Negotiated annual budget and shortfall/surplus compensations

Every year, individual hospital providers enter negotiations with the health insurance funds in which they agree on their prospective activity level, specifically the case mix. Using a prospective budget puts economic incentives on hospitals as they become responsible for hitting the target if the incentives are set reasonably.¹²⁶ A hospital budget is set for the current year using the following formula:

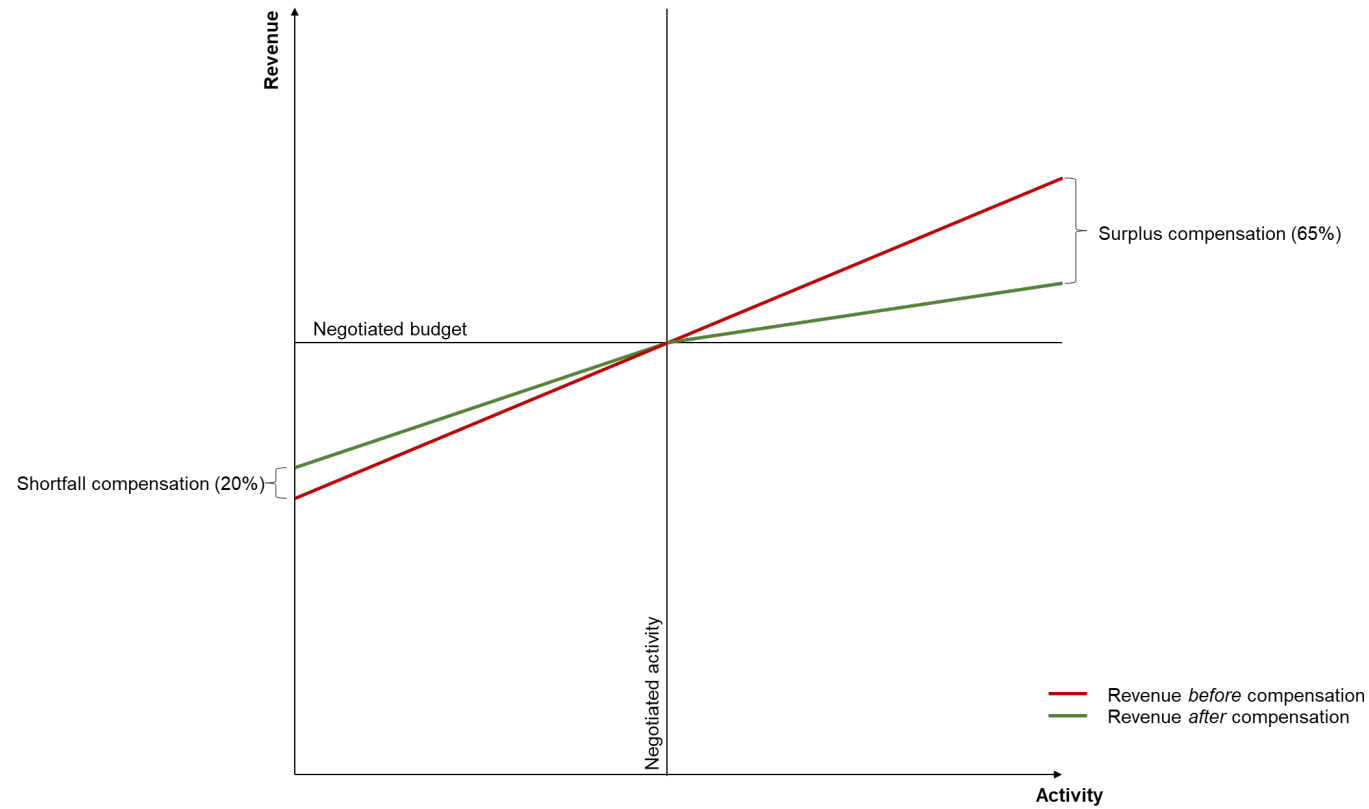
hospital budget = $\sum$ prospective DRG cost weights (= case mix) x state base rate + priced and unpriced additional charges (see section 4.3.2)

Negotiations are based on the previous year's activity level and the changes planned for the coming year (e.g. planned reductions or increases in services).

There are two mechanisms in place to ensure that the prospectively agreed activity level is complied with within a given year:

1. If hospitals overrun the prospectively agreed activity level, they receive a *surplus compensation* which is 65% lower than the regular DRG compensation for each case (called *Mehrerlösausgleich*).
2. If hospitals have a lower volume than the negotiated budget, they receive a *shortfall compensation* of 20% of the difference between negotiated budget and actual revenue (called *Mindererlösausgleich*).¹²⁷

Both mechanisms and the hospital budget are illustrated Figure 11. It has to be noted that shifts in activity are – at last partly – limited by hospital planning, where the states set rules for either departments or procedures that have to be provided by a hospital.

**Figure 11 – Hospital budget and compensation mechanisms**



It is worth mentioning that the hospital budget and associated shortfall and surplus compensation only hold for DRG-related revenue and additional fees as referenced in section 4 (1) Krankenhausentgeltgesetz (KHEntgG), but not for revenues generated by other mechanisms, specifically:

- the hospital budget for the care of children and adolescents (section 4a KHEntgG)
- hospital-individual additional fees (section 6 (1 to 2a) KHEntgG) (see 4.3.1, 4.3.2)
- surcharges and deductions in accordance with section 7 (1) KHEntgG (see 4.3.4)
- the additional fees for the treatment of haemophiliacs
- pilot projects according to section 63 SGB V and projects for integrated care according to section 140a SGB V.

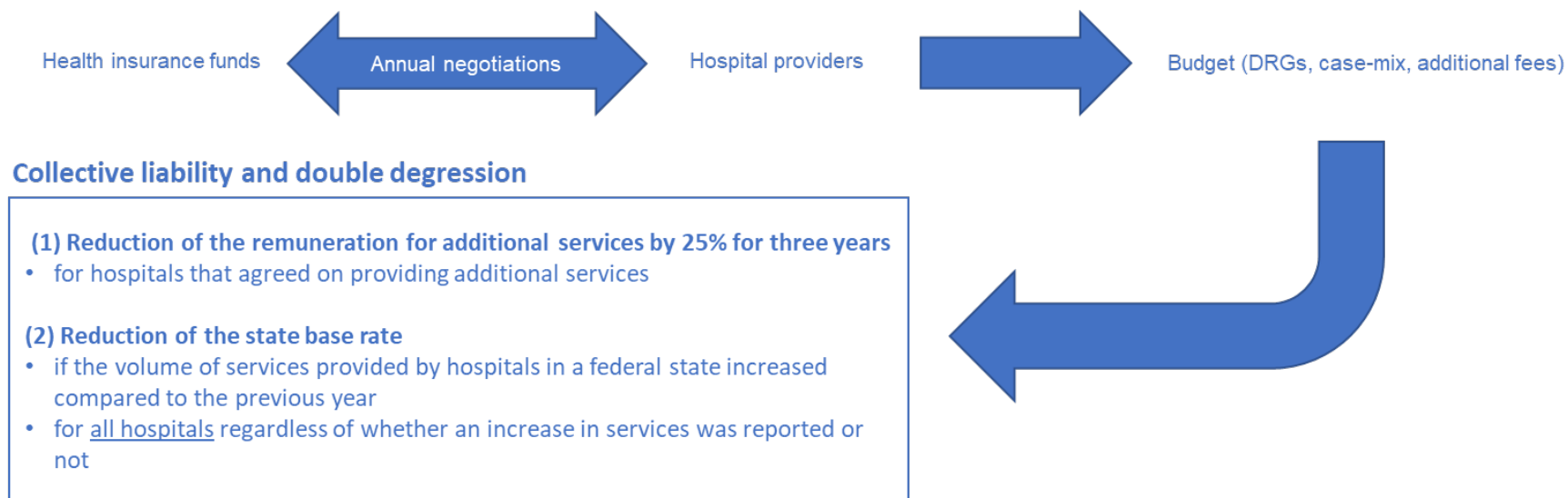
4.4.2. Regulation of budget evolution over time

4.4.2.1. Before 2017

From 2009 until 2016, another budget control mechanism called additional-volume-deduction (*Mehrleistungsabschlag*, MLA) was in place. With the mechanism, the legislator responded to cost containment pressure and increasing case numbers after the introduction of DRGs.^{104, 127} Accordingly, for hospitals that agreed additional service increases with the health insurance funds, the remuneration for the additional services was reduced by 25% for three years. In addition, there was a further 'sanction' in the form of a reduction in the state base rate if the volume of services provided by hospitals in a federal state increased compared to the previous year (i.e. a collective liability). This affected all hospitals without exception, regardless of whether they had an increase in services, or not. This phenomenon consisting of reduced remuneration of additional services on the individual hospital level as well as the collective liability was referred to as 'double degression'.



Figure 12 – Additional-volume-deduction (*Mehrleistungsabschlag*, MLA), until 2016



Source: Modified representation in accordance to Reimbursement Institute (2024)¹²⁸

4.4.2.2. Since 2017

In 2017, the collective liability and the associated so-called ‘double degression’ were ended with the introduction of the fixed-cost degression deduction (*Fixkostendegressionsabschlag*, FDA). Within the FDA – which caused a shift in volume control from the state to the hospital level – only those hospitals that actually provide additional services pay a discount. As of April 2017, the contracting parties have not been able to agree on a discount amount, which is why the legislator has set the discount at 35% for a period of three years.

The FDA has the following economic background: The negotiated additional services, e.g. by increasing the number of cases, result in an increase in the revenue budget. However, the fixed costs of a hospital are distributed over

a larger number of cases, enabling the hospital to achieve volume-related cost advantages/efficiency gains. The increase in treatments thus results in a reduction of fixed costs per case. The FDA is intended to counteract these economies of scale.

The following services are exempt from the FDA regulation: medical devices, categorised as variable costs, are not included in fixed cost reductions. Unrated flat rates per case (DRGs), supplementary fees (ZEs), new examination and treatment methods (NUB), and non-DRG reimbursed services are also allocated to variable costs and thus exempt from deductions. DRGs that have already been reduced or downgraded (according to section 9 (1c) Hospital Remuneration Act, *Krankenhausentgeltgesetz*) are excluded to avoid double discounts, as these valuation ratios have been adjusted by the Institute for the Hospital



Remuneration System (InEK) due to indications of significantly economically driven increases in case numbers. In 2024, the cost weights of nine DRGs have been downgraded (see Table 11).

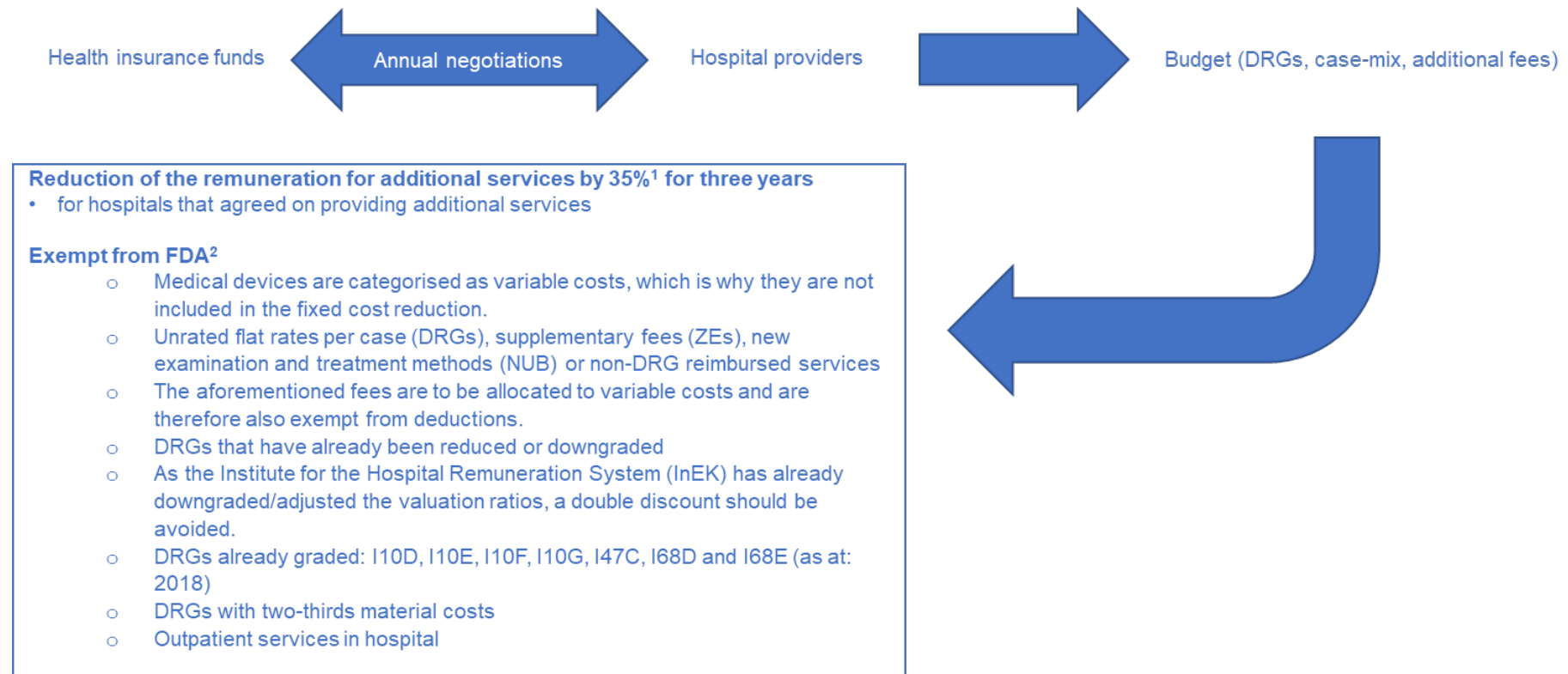
DRGs with two-thirds material costs are listed by the InEK, with exemption lists published annually for 2017, 2018, and 2019. Additionally, outpatient services in hospitals are exempt (Figure 13). Furthermore, half of the FDA is applied to services that are not volume-sensitive. The self-governing partners at federal level have drawn up a respective catalogue in accordance with Section 9 (1) No. 6 KHEntgG. The 94 DRGs for 2019 (89 DRGs in 2017 and 91 DRGs in 2018) can be found in the agreement on the implementation of the FDA.


Table 11 – Downgraded DRGs according to section 9 (1c) Hospital Remuneration Act (*Krankenhausentgeltgesetz*)

DRG code	DRG description
I10D	Other spinal interventions with complex spinal intervention or with major or severe complications or comorbidities (CC) without disc infection, without discitis, and without specific other spinal interventions
I10E	Other spinal interventions with moderately complex intervention, specific minor intervention, or less complex intervention, more than 1 day of hospitalization, age < 18 years, or with specific other minor intervention without major or severe CC
I10F	Other spinal interventions without a moderately complex spinal intervention, with specific minor intervention or less complex intervention, more than one day of hospitalization, or without specific other minor intervention, age > 17 years
I10G	Other spinal interventions without a moderately complex spinal intervention, without specific minor intervention, without less complex intervention, or with one day of hospitalization, involving another minor intervention
I10H	Other spinal interventions without a moderately complex intervention, without a specific minor intervention, and without any other minor intervention
I47C	Revision or replacement of the hip joint without specific complicating factors, without complex diagnosis of the pelvis/femur, without specific endoprosthetic procedures, without joint-specific procedures on the hip joint, without implantation or replacement of a radial head prosthesis, and without removal of osteosynthesis material.
I68D	Non-surgically treated diseases and injuries of the spinal column, > 1 day of occupancy or other femur fracture, except in the case of discitis or infectious spondylopathy, without sacral fracture, without moderate, complex or highly complex treatment, with spinal fracture. treatment, with spinal fracture
I68E	Non-surgically treated diseases and injuries of the spinal column, > 1 day of occupancy or other femur fracture, except in the case of discitis or infectious spondylopathy, without sacral fracture, without moderate, complex or highly complex treatment. treatment, without spinal fracture spinal fracture
I68F	Non-surgically treated conditions and injuries in the spinal region, one day of hospitalisation or contusion of the femur

Source: InEK GmbH (2023)¹²⁹

Figure 13 – Fixed-cost depression deduction (*Fixkostendegressionsabschlag*, FDA), since 2017



Source: Modified representation in accordance to Reimbursement Institute (2024).¹²⁸ Notes: 1: Half of the FDA is applied to services that are not volume-sensitive; 2: The InEK publishes a corresponding list of all DRGs that are exempt from the FDA. The list for 2017 is available [here](#); the list for 2018 [here](#); the list for 2019 [here](#).



4.4.3. Evaluation

Although research has accompanied the G-DRG reform throughout its implementation, there is a lack of clear causal evidence on its effects. The mandatory and nationwide rollout of the reform means that there is no control group within the German healthcare system. As a result, studies often can only describe trends without being able to make causal inferences.¹³⁰ In a review, Koné et al. conclude that there is no robust empirical evidence indicating either positive or negative effects of the DRG introduction in Germany.¹³¹ Aggregate trends suggest that the average length of stay has decreased, but not as sharply as before the G-DRG was introduced. The number of cases has increased, along with hospital expenditures. Inpatient discharges rose from 16.6 million in 2004 to 19.4 million in 2017, representing one of the largest increases in hospital discharges in Europe, despite a stable population. Using German billing data, Schreyögg et al. (2014) demonstrated that an increase in the relative DRG weights led to an increase in the number of cases. However the same effect could not be identified for an increase in the base rate.¹³⁰ In their econometric analyses based on aggregated OECD data, Messerle & Schreyögg (2022) showed a significantly increased hospital activity in Germany by around 2 percent annually, but no clear influence on the average length of stay.¹⁰⁴ Also, they were not able to identify any effects on the nursing staffing level. Due to the lack of conclusive studies, public discussions largely occur without evidence, with particular focus on the negative consequences for hospital care and staffing. For example, the assumption that financial incentives under the G-DRG system contributed to nursing understaffing led to the decision to exclude nursing staff costs from DRG-based payments.¹⁰⁴

The same applies to the budget control mechanisms, where the effects are discussed on a theoretical level and based on descriptive figures. The MLA (*Mehrleistungsabschlag*), which was in effect until 2016 but due to its prospective nature also affected periods afterwards, saved 396.9 million euros in 2017, while in 2018, it still saved 213.2 million euros.¹³²

The FDA, which was introduced in 2017, accounted for cost savings of about 149.4 million euros in 2017 and 233.9 million euros in 2018.¹³² Messerle & Schreyögg (2024) argue that, among other factors, due to the FDA,

increases in case volume have been stopped.¹¹⁸ In fact, in 2018, the total hospital budget increased by 3.1%, which is very similar to the 3% increase of 2017. However, volume increased only by 0.3%, so that price increases were responsible for almost the entire budget increase. In addition, the volume increase was due to changes in the case-mix rather than changes in the number of contracted cases. Actually, in 2018 the number of cases declined for the second time in a row. Before that, the number of cases had risen continuously since 2005.¹³³

4.5. Payment reforms

Germany, similar to many other European nations, is encountering challenges such as rising healthcare expenditure and staff shortages. Additionally, OECD data reveal that Germany, despite having the highest healthcare expenditure in Europe (of which 27% is dedicated to hospital services), does not perform as well in international comparisons of avoidable mortality as commonly perceived.¹³⁴ To address these and other pertinent issues (e.g. insufficient investment cost financing and heterogenous hospital planning methods across states, see section 4.1.1), a comprehensive hospital reform process was initiated. This reform is supported by a multidisciplinary government commission established in 2022, tasked with developing a modern and needs-based hospital landscape. To date, the commission has published ten recommendation statements. Following criticism and resistance by some relevant stakeholders, particularly the state health ministries, some recommendations were modified or rejected, others were adopted in the draft bill of the Hospital Care Improvement Act (*Krankenhausversorgungsverbesserungsgesetz*, KHVVG). The most significant reform plans can be categorised as follows: (i) shift from DRG towards global budgets as the dominant payment system, (ii) expansion of hospital planning and (iii) shift from inpatient to outpatient care.^{135, 136} The Hospital Care Improvement Act was approved by the Bundestag, the lower house of parliament, on 17 October 2024. The Act also got approval from the Bundesrat, the upper house of parliament, on 22 November 2024.



4.5.1. Shift from DRGs towards global budgets as the dominant payment system

Investment cost financing by the federal states has been inadequate for years, leading to strong economic pressure on hospitals. In addition, the current German DRG system is strongly volume-orientated, which incentivises hospitals to treat as many cases as possible. As a result, some treatments were not carried out because hospitals were prioritising profitable treatments and were forced to reduce the resulting investment backlog for urgently needed purchases or construction measures by utilising DRG revenues.¹³⁵

To address the misaligned incentive of expanding case numbers, a retention payment (*Vorhaltevergütung*) will be introduced alongside the DRG's case-based reimbursement. The retention payment will be paid irrespective of care provision and will constitute 60% of the previous aG-DRG-based reimbursement volumes at the hospital level. Initially, the commission recommended a 60:40 ratio (DRG: retention payment), based on an estimation of fixed costs in the hospital setting from 2016.¹³⁷ However, the draft bill finally established a 40:60 ratio (DRG: retention payment). The nursing staff budget, which has been separated from the DRG since 2020 (see section 4.3.3), will be included in the retention fee. Simultaneously, the revenue shortfall compensation (*Mindererlösausgleich*, see section 4.4.1), which was intended to cover fixed costs in the event of lower case volumes, will be eliminated. To continue counteracting any incentives for increased service provision the regulations for revenue surplus compensation (*Mehrerlösausgleich*, see section 4.4.1) will remain unchanged.¹³⁵

The overall reimbursement budget shall not be increased, though a transformation fund of up to € 50 billion will be established for structural adaptations (e.g. cross-site cooperations, restructuring to become a cross-sectoral institution, telemedicine infrastructure) in the years 2026 to 2035. The proposal involves utilising health fund surpluses of up to € 25 billion, generated through savings from the new reform, and supplementing these funds with financing from the states. Additional yearly funds are made available for the areas of paediatrics (€ 288 million), obstetrics (€ 120 million), stroke units (€ 35 million), special traumatology (€ 65 million) and intensive care (€ 30 million) as well as for the participation of hospitals in

emergency care (€ 33 million). University hospitals are allocated an additional annual funding of € 200 million to support their coordination functions and specialised retention needs.¹³⁵

4.5.2. Expansion of hospital planning: introduction of care delivery groups

The increasing number of hospital closures, blamed on inadequate funding of investment costs among others, has worsened accessibility. Hospital closures in Germany are often met with protest from the local population.¹³⁸ In addition, the rising cost pressure has led to hospitals no longer offering less lucrative medical services or ceasing operations - regardless of regional care needs. Necessary cost cuts can compromise the quality of medical care and lead to deficits regarding essential infrastructure for effective treatment. Additionally, the infrequent provision of certain services in many hospitals contributes to quality deficits, adversely affecting outcomes.¹³⁵

Aiming to make hospital restructuring driven more by actual care needs rather than economic factors, the reform will expand and standardise hospital planning. Central to this reform will be the establishment of care delivery groups (*Leistungsgruppen*, LG). Hospitals will only be eligible for retention payments for LGs that had been assigned to them by state planning authorities. 65 LGs were initially defined, and all treatments were allocated to one of the groups. LGs were grouped wider than DRGs but finer than specialist medical departments. Each LG defines nationwide standardised quality criteria that the hospitals must fulfil. The quality criteria include minimum requirements regarding:

- provision of related LGs
- material equipment
- personnel equipment and
- other structural and process criteria (all requirements for LG cardiac surgery are exemplified in Table 12).



The criteria may also be fulfilled through cooperations and care networks where applicable. To ensure nationwide coverage, exceptions are planned for essential rural hospitals, with further increased surcharges (see section 4.3.4.3) for these facilities. LGs must be assigned to a hospital by the planning authorities if no other hospital is nearby. For the LG in General Internal Medicine and General Surgery, a maximum travel time of 30 minutes by car is required, while for all other LGs, the maximum travel time

is 40 minutes. If criteria are not fulfilled and the maximum travel times cannot be met, temporary exemptions of up to three years may be granted to hospitals. In addition to quality criteria, minimum provision numbers per LG will be established. Minimum provision numbers refer to the minimum number of treatment cases provided at a hospital location. The legislator anticipates that the implementation of these measures will lead to an increased level of specialisation, thereby enhancing overall quality.¹³⁵

Table 12 – Minimum requirements for LG cardiac surgery

LG	Provision of related LG at own location	Provision of related LG at least through cooperation	Material requirements	Personnel requirements	Other structural and process criteria
LG Cardiac surgery	LG General Internal Medicine LG Intensive care medicine, quality requirement: highly complex LG Interventional Cardiology	LG General Surgery	Catheter lab, echocardiography, ECG, Doppler or duplex sonography, DSA, X-ray, CT available 24/7, tele-radiological diagnostics possible, heart-lung machine	Minimum five specialists in Cardiac Surgery available on call 24/7	Fulfilment of the minimum nursing staff limits specified in Section 6 of the PpUGV

Source: Bundesministerium für Gesundheit (2024)¹³⁵

4.5.3. Shift from inpatient to outpatient care

To ensure quality-assured basic medical infrastructure, particularly in structurally and demographically disadvantaged regions, and to shift Germany's relatively high number of hospital resources to outpatient resources, the expansion of cross-sectoral and integrated healthcare is being advanced through the introduction of cross-sector care facilities (also referred to as level 1i facilities). State planning authorities are legally empowered to designate these facilities, which shall be able to provide both outpatient and inpatient services, with a focus on outpatient treatment. Cross-sector care facilities shall primarily be created out of former hospitals.

These facilities can in particular provide the following services:

- outpatient treatment
- outpatient surgery
- minimum and voluntary inpatient services which are to be determined by self-governing bodies by 2025
- transitional care and short-term care (for patients, where inpatient care is no longer needed, but a discharge is not possible for some reason, i.e. no home care is available).



The long-term vision is to achieve cross-sectoral remuneration for these facilities.¹³⁹ However, initially, full and partial (= same-day cases) inpatient services as well as nursing care will be reimbursed through degressive hospital specific daily rates. Outpatient services will be reimbursed through the standard outpatient reimbursement scheme.¹³⁵

Previous reforms with the aim to decrease inpatient cases and promote cross-sectoral care were the introduction of same-day cases hospital reimbursement mechanisms (*Tagesstationäre Fälle*) in 2022 and the introduction of hybrid DRGs in 2023. Hospitals may offer same-day treatment without an overnight stay, instead of full inpatient care, if there is a medical indication for inpatient somatic treatment and the patients agree. The treatment must require a daily stay of at least six hours in the hospital, during which mainly medical or nursing care is provided. Day cases are billed in the same way as normal inpatient cases according to the aG-DRG system but will be subject to an average reimbursement deduction of around € 160 (2023) per night that is saved. The deduction may not exceed 30% of the total remuneration for the stay.¹⁴⁰ Special sector-equivalent remuneration (*Spezielle sektorengleiche Vergütung*), commonly referred to as 'Hybrid DRGs', regulates the remuneration for selected services, irrespective of whether the remunerated service is provided on an outpatient or inpatient basis. The catalogue currently comprises 10 treatment areas and is to be expanded continuously.^{141, 142} The hybrid DRGs were selected according to the following criteria: a high number of cases in hospital, a short LOS and a low degree of clinical complexity.¹⁴³

5. HUNGARY

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5.1. Brief overview of the hospital sector

5.1.1. Brief overview of the healthcare financing system

After the political changes of the 1990s, the Hungarian health system changed from the Soviet-style Semashko system to a Bismarckian system, like many other Eastern European countries. This is a national health insurance system based on solidarity, in which participation is compulsory for all citizens. Those classified as insured under Act LXXXIII of 1997 can use healthcare providers that have a funding contract with the National Health Insurance Fund Administration (*Nemzeti Egészségbiztosítási Alapkezelő*, NEAK).¹⁴⁴ The coverage of healthcare expenditures is provided by income-based social insurance contributions, which are shared between employers and employees. In 2020, 94.18% of the Hungarian population was insured, and the proportion of individuals paying income-based contributions within the population was 42.01%.¹⁴⁵

Responsibility for financing health services was transferred to Hungary's Health Insurance Fund, operated by the NEAK, Hungary's sole public and national health insurance provider, since its establishment in 1993. It has been financing all healthcare providers that have signed a funding contract on a national level in a so-called sector-neutral way, meaning it equally finances private, foundation, church, and state providers.

The revenue of the Health Insurance Fund (HIF) is primarily derived from social insurance contributions paid by employers and employees and transfers from the central budget (coming from the government from tax revenues) which have fluctuated to varying degrees since 1993. Payments from the central budget accounted for only 3.11% of HIF revenue in 1993. The proportion of contributions reached its peak in 1998 (97.88% compared to 0.68% for central budget payments), while in 2014, in line with the Bismarckian model, it was at its minimum (47.02% for contributions, 47.04%



for central budget payments).¹⁴⁶ From then on, the ratio between the two sources of revenue has been shifting again (by 2023, the proportions were 66.37% and 33.63%, respectively). As tax sources have also been introduced to cover health expenditure, the current health insurance system can be defined as a hybrid mix of the Bismarck and Beveridge systems.¹⁴⁷ Other revenue sources are also increasingly contributing to health insurance funding including payments from pharmaceutical companies and drug distributors, reimbursements for services provided under international agreements, the accident tax (until 2019), and the public health product tax.

From the 1990s, responsibility for the provision of health services at all levels of healthcare (primary care, outpatient care, hospitals, etc.) was transferred from central to local governments. Exceptions are universities and national health institutes, which represent the highest level of health services (tertiary care) and remained under the national government responsibility. After 2010, a so-called re-centralisation was implemented, bringing most hospitals back under the control of the central government.¹⁴⁸⁻¹⁵¹

The HIF consists of more than 30 sub-budgets based on different types of services (general practice, outpatient care, acute and chronic inpatient care, etc). The NEAK uses different payment methods for providers at different levels of care.¹⁵²

In outpatient care, a fee-for-service (FFS) payment system is used, based on the German points system. Medical procedures are identified according to the WHO International Classification of Procedure in Medicine (ICPM) code system, where each code is assigned a number of points, and one

point is worth 1.98 HUF (Hungarian forint^h) as of 2023. A similar principle is used to finance residential care, laboratory diagnostics and CT-MRI diagnostics. Due to budgetary constraints, a floating-point system was used to determine the monetary value of outpatient points until June 2000. However, this system was soon abolished because it made revenue planning difficult for providers. From July 2000, a fixed value was set in advance for outpatient points. In 2004, the Performance Volume Limit (PVL) was introduced, which set annual quota for patient care (see section 5.4.2.3). Between 2004 and 2006, degression tariffs were applied for exceeding the quota, and from July 2006, the base value was changed to 95%, with no payments made beyond this limit. However, this system faced strong professional and policy-related criticism, leading to the introduction of a preannounced performance base-fee (PPBF) in April 2009, which lasted for seven months until October 2009. Under the PPBF system, 70% of the activity was funded by a pre-determined fixed reimbursement, while the remaining 30% was financed under a floating fee system with a monthly variable reimbursement. The application of PPBF made the financing of institutions unpredictable. With the withdrawal of PPBF, the PVL reappeared.¹⁵³⁻¹⁵⁵

Since July 1993 and as the first in Europe, acute inpatient care has been financed by a payment system similar to the American Diagnosis Related Groups (DRG) system (in Hungarian: Homogeneous Disease Groups (*Homogén Betegségcsoportok*, HBCs)). This adapted DRG payment system covers all Hungarian acute care hospitals (including one-day surgical care).¹⁵⁶ The system is described in more detail in section 5.2.

^h 1 euro = 407 HUF on 10/11/2024

**Table 13 – Financing methods of healthcare services in Hungary**

Type of services	Dominant way of financing	Other elements of reimbursement
General practitioners	capitation, fixed fee	quality indicators (11% of total budget)
Home nursing care	fee for a visit	N.A.
Home hospice care	fee for a visit	N.A.
Outpatient care	fee-for-service (German points system)	performance volume limit (PVL)
Laboratory examinations	fee-for-service (German points system)	floating rate (70% of total volume)
Acute inpatient care	Diagnosis Related Groups (DRG, HBCs)	performance volume limit (PVL)
Chronic inpatient care	daily fee	adjusted according to the type of care (nursing, rehabilitation, hospice, etc.) in some special cases DRG
CT-MRI	fee-for-service (German point system)	performance volume limit (PVL)
Renal dialysis	case fee	≈ floating rate
Transport of patients	fee per km	

The largest expenditure item is acute inpatient care. Since the mid-2000s, efforts have been made to curb the share of acute inpatient care. To improve the health status of the population and ensure the efficient functioning of the healthcare system, recent reforms have focused on primary care, as well as on restructuring outpatient and inpatient care funding. Accordingly, the structure of inpatient care has been reorganised several times.¹⁵⁷ As for financing, a ceiling, the Performance Volume Limit (PVL), was established for Hungarian publicly funded hospitals in 2004, above which the NEAK only partially reimburses the reported output (outpatient care score, acute inpatient care DRG cost weights), avoiding overproduction. Since the introduction of the PVL, although it set justified limits, it has been a source of criticism from hospitals, as it noticeably complicated financial

management. Despite this, it has an undeniable advantage over the previous base financing system by encouraging providers to increase the number of patients. However, it penalises excessive activity by not funding or only partially funding the care provided in a given month. Since April 2021, the PVL has been replaced by an annual cap, which allocates budgets based on the activity of the previous financial year, taking into account the distribution of case numbers across different specialties and diagnoses. Another noticeable change was brought by the structural reorganisation of 2007, during which 11% of active beds were eliminated or converted into chronic inpatient beds. The continuous, steep increase in active inpatient expenditures began to moderate after 2004.



In chronic inpatient care, financing is based on a fee per day and per patient, adjusted by multipliers according to the specialisation of the department. At this level, care ranges from simple chronic nursing activities to palliative care and the particularly costly chronic rehabilitation of patients with coma and spinal cord injuries. Currently, there are approximately 21 categories of multipliers. All of these multipliers are specified in Annex 8 of Government Decree No. 43/1999 (III. 3.).¹⁵⁸

5.1.2. Brief overview of the hospital sector

The regulation of healthcare is defined by the Act CLIV of 1997, which outlines the structure, responsibilities and operational principles of the healthcare system, and the rights of patients.¹⁵⁹ The main actors involved in the provision and financing of health services are identified as the National Assembly, the central government, the State Secretariat for Health (currently within the Ministry of Interior), the National Centre for Public Health and Pharmacy (NCPHP) and the owners of health providers. Since 1990, the latter have been mainly county and municipal governments, but after 2010, specialty care providers were set back under the control of the central government.¹⁵² The majority of health services are provided by state and municipal institutions, but the role of the private sector is also growing.

The Hungarian healthcare system is progressive and multi-level. The primary care system (gatekeeper function) is the fundamental protection line of the system, with the main providers being general practitioners, general paediatricians, primary dental care specialists, primary on-call care providers, health visitors and school healthcare services. Specialty care is provided in the form of outpatient and acute/chronic inpatient specialist care. Other healthcare services as defined in the Act also include on-call care, rescue, patient transport, home care, hospice care, rehabilitation, medical equipment and medicines, psychotherapy and clinical psychology.

The Hungarian healthcare system is publicly funded and based on an insurance-based model, managed by the NEAK. The central government

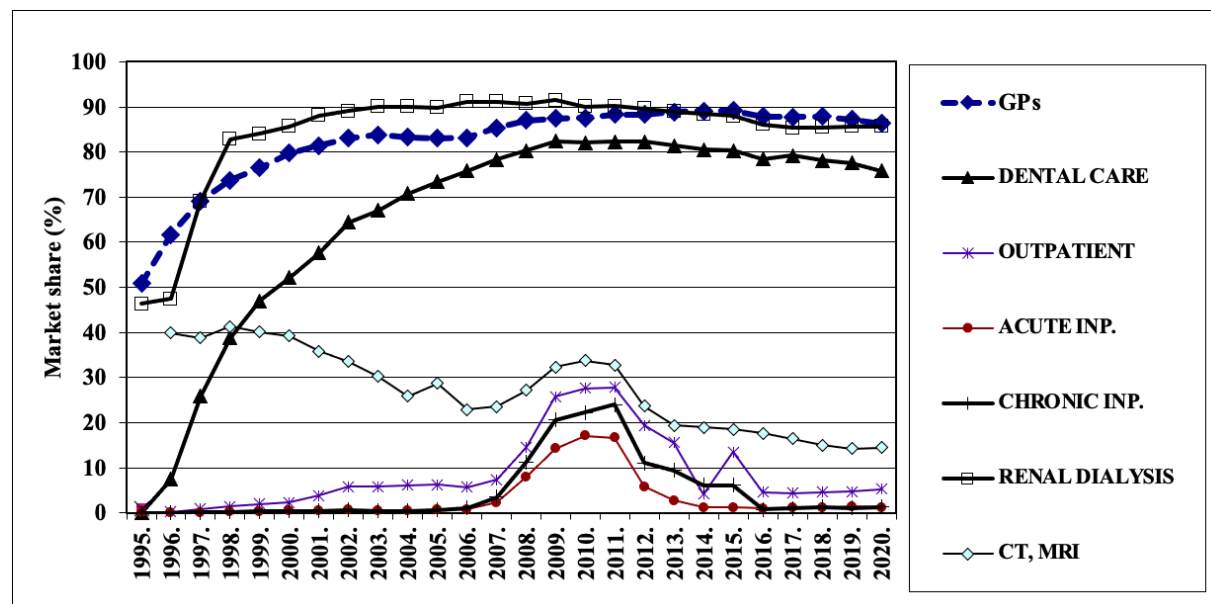
owns most inpatient care providers, with a few exceptions of university clinics and church hospitals. All healthcare providers have a reimbursement contract with the NEAK, which is a precondition for NEAK payments to providers.

In the Hungarian healthcare system, there are also private healthcare providers. In addition to private entrepreneur general practitioners, which are widespread, many outpatient units are also privately operated. Numbers and market share of private providers deviate greatly in some healthcare types. For example, in 2017, private providers represented 30.4% of national outpatient care providers but received 69.5% of all outpatient reimbursement. Only 15.8% of dialysis centres were operated by private enterprises but received 85.4% of all dialysis-related public funding.¹⁶⁰ There are also private providers (mainly non-profit, including church hospitals) in inpatient care.¹⁵¹ However, these are small facilities with usually 20 or less beds.¹⁶¹ Most private healthcare providers do not receive NEAK public funding and there is no DRG system for financing. However, some providers contract with the NEAK for certain tasks, e.g. for one-day surgeries. There are private healthcare providers who even participate in reducing the national waiting lists. In private care, patients pay for services directly or are covered by private insurance. An exception to this could be one-day surgical care provided by private clinics.

Between 2007 and 2010, there was a large increase in the number of private healthcare providers in outpatient care, acute and chronic inpatient care, because many Hungarian hospitals were privatised from local authorities (city and county councils) to private investors. Their market share reached 20-30% of the relevant health insurance sub-budget (see Figure 14). However, between 2012 and 2014, Hungarian hospitals were transformed back to public institutions and their ownership was taken over by the government. Therefore, the market share of private healthcare providers significantly decreased.



Figure 14 – Market share (of the national health insurance budget) of private for-profit healthcare providers



Source: Own figure based on NHIFA data

The Hungarian healthcare system provides care at different levels, including city and county hospitals, university hospitals, clinical centres and national institutes. The National Directorate General for Hospitals (NDGH) started its operations in 2020, restructuring the healthcare system and integrating healthcare institutions to provide more efficient and unified healthcare nationwide.

Twenty-one Hungarian universities were transformed in 2021 from a governmental institution to a public foundation. This change also affected those four universities which operated a clinical centre (university hospital). Therefore, the four Hungarian clinical centres were transferred from state hospital to public foundation maintenance. But they are entitled to the same public financing as governmental hospitals.



5.2. Main characteristics of the DRG system

5.2.1. *Hospital payment system in place before the introduction of H-DRGs*

The Hungarian hospital reimbursement system was based on a so-called input (annual budget) reimbursement system. The annual resource allocation related to inpatient care was based on the previous budget that was modified for inflation and changes in capacity (new hospital beds, new hospital facilities). The input-oriented (annual budget) hospital funding was independent from actual activity, performance, and quality of care. Hospitals built their budget plan after the local governments (payers) set the final budget. Hospitals were reimbursed monthly. By that time, there were disparities between hospitals both in terms of supply structure and of reimbursement methodology. Global budgeting was the most applied funding technique, but since operating costs differed between hospitals, some institutions were remarkably overfunded compared to others.

Patient's treatment pathways were long as the route to the appropriate care provider was made through a strictly enforced system of referrals – mostly by general practitioners. This represented a considerable waste of time and resources at other levels of the healthcare system. In addition, there were several problems in setting a sufficient budget because only limited activity data were available (the number of patients, and number of different diagnoses), and there was no data related to the resource allocation used for service provision.

Due to the reimbursement methods, the financial status of hospitals, quality of care, and accessibility were very heterogeneous and unequal across the Hungarian landscape. Demand was growing for healthcare activities and performance to be measurable and appraisable in a more realistic way.

5.2.2. *Objectives and principles of the H-DRG system*

The initial aim of the development of DRGs was to encourage a fundamental transformation of the financing of acute inpatient care, encouraging cost-effectiveness and cost containment. One of the main obstacles to change was the lack of information on the use of resources within hospitals and the nature of the activities carried out. In practice, the limited data available made it impossible to judge what resources were used, how they were used, what were the results, or how to change the structure and treatment processes. In this situation, with the development of Health IT, a case-mix based approach promised a solution that could deliver results.

The main objectives for changing the hospital financing system were:

- Patients should be admitted to hospital only for the treatment they need;
- Hospitals should provide only those services that cannot be effectively provided elsewhere;
- Patients must be treated in the right place and receive the right quality of care;
- Hospital cases should be managed cost-effectively after admission (reducing nursing time, adhering to specified nursing times, and avoiding unnecessary tests);
- It is essential that there are no significant regional or other variations in the availability of treatment;
- Funding limits must be realistic.

The DRG system was also expected to solve other problems in hospital care: the average length of stay could be reduced; the technical cost-effectiveness of treatment and the cost-effectiveness of distribution could also be improved. Hospital cases that no longer require inpatient treatment should be transferred to chronic hospital care promptly. It was necessary to reduce the number of hospital cases in favour of outpatient care. Equity of funding could be increased by applying an activity-based system.



5.2.3. *Description of the DRG payment system and its evolution*

From 1974, the Ministry of Health regularly collected data on a sample of about 10 percent (the 'minimum database') of inpatient care. In the early years, the data were sent in paper form; later, more and more hospitals provided the information electronically. IT applications were introduced in the larger hospitals firstly for clinical, diagnostic and financial management purposes. The main international coding systems were also systematically applied for the management of health records. Physicians were familiar with the ICD and ICPM code systems released by the WHO for the classification of diseases and medical interventions. Basically, by that time many prerequisites of the DRG system were already known and used. However, the costing data needed to determine the cost weight associated to diagnosis groups were not available initially.

The adaptation of the DRGs for use in Hungary started with an assessment of resource use and treatment pathways. A study of the main areas of clinical care in a single hospital was carried out in 1986 for six months. This evaluation was intended to form the basis for a wider study involving several hospitals to identify the types, characteristics, and cost requirements of hospital cases and to define classification algorithms. Between 1987 and 1991, data were collected from an increasingly wide range of sources; around twenty hospitals participated in the study. Cost estimates and analyses were prepared, as well as the Hungarian clustering algorithm. Previously published studies provided an important reference point for the development of the case mix.

In 1992, the significant majority of hospitals (all general hospitals, universities, and national institutes) introduced the IT systems needed to begin the process of case-mix assessment. DRG-based funding was introduced on 1 July 1993 for all publicly run hospitals' inpatient treatment.

The application of the Hungarian DRG system took place in three major phases. The first period, between 1993 and 1997, can be described as a phase of tariff equalisation. During this period, different institutions and groups of institutions had different base DRG tariffs (HUF/ DRG cost weight), the reason for this being the different budgetary positions of each institution. This phase was an integral part of the period of equalisation following the introduction of the DRG. Prior to the introduction of DRG funding (1980s, early 1990s), disparities existed in the base funding of hospitals (global budget). If these disparities had been eliminated overnight with the introduction of a single DRG tariff, overfunded hospitals would have faced a financial crisis.

The second phase of the DRG implementation is characterised by the introduction of a nationally uniformised DRG base tariff. Here, the former institution-specific HUF/ DRG cost weights were abolished and replaced by a uniform DRG base tariff. These pre-announced tariffs made budgeting more predictable for hospitals.

The third phase started after the introduction of the Performance Volume Limit (PVL) (from 2004). This fundamentally changed the theoretically predetermined national uniform HUF/ DRG cost weight. If hospitals treated patients above the predetermined threshold (maximum volume of DRG cost weights), they were only partially financed by the health insurance fund (see section 5.4.2.3).

The national legislation clearly regulates the institution-specific annual quota (PVL) that healthcare institutions have for inpatient care and one-day surgery in the current financing year. PVL is also based on the DRG system and the annual volume is expressed in DRG cost weights for each institution. In addition, the legislation defines DRGs that are exempt from this system (maternity, stroke care, AMI care, etc.). They are funded on the same DRG basis but are not accounted for in the institution's quota, so that the possible overproduction does not bring financial consequences for the hospital.

**Table 14 – Evolution of the Hungarian DRG system**

Version	Period of availability	Main characteristics
HBCS 1.0	1 July 1993 – 30 June 1994	The first Hungarian DRG-like version. No general correspondence between medical procedures and ICD code
HBCS 2.0	1 July 1994 – 28 February 1997	The medical procedures and ICD codes correspond to each other. From 1 January 1996, application of ICD-10.
HBCS 3.0	1 March 1997 – 30 September 1997	Changes in the number of groups and the process of classifying very serious, complicated cases
HBCs 3.1.	1 October 1997 – 31 March 1998	Changes in upper LOS limit, according to the application of guaranty rule
HBCs 3.2	1 April 1998 – 30 April 1999	New groups in the fields of cardiac surgery, haematology, and pulmonology
HBCs 4.0	1 May 1999 – 31 May 2000	The version with some very distinctive Hungarian characteristics, where some grouping rules are not based on foreign DRG system
HBCs 4.1.	1 June 2000 – 31 March 2001	New groups in the fields of short-term cases and emergency cases
HBCS 4.3	1 April 2001 – 31 January 2004	Decrease in the number of groups, mainly simple medical procedures with co-morbidities. New groups according to age groups for children and in some groups for adults
HBCs 5.0	1 February 2004 – 1 December 2005	Changes in DRG weights due to an increase in public servant wages of 50% on average. Preference of disease groups with medical procedures (surgery, urology, gynaecology)
HBCs 5.1	1 December 2005	New groups for chemotherapy based on reimbursement medical protocol and new groups for minor surgery to harmonise the tariff with outpatient payments

Source: updated from Boncz et al. (2004)¹⁴⁸, based on NEAK data

5.2.3.1. Scope of DRGs: which providers

In the Hungarian public-funded healthcare system, every hospital, which provides acute inpatient or one-day surgical care must be reimbursed via the DRG system. There is no correlation between the type of the hospital (university clinic or municipal hospital) or its location and the multiplier of the DRG tariff; a universal tariff is applied in the whole country.

5.2.3.2. The DRG classification system and its evolution

In the Hungarian point of view, the DRG means that the diseases are grouped according to the medical knowledge, skills and costs required to treat them. Homogeneous groups of diseases are formed based on the following objective factors that essentially determine the resource requirements of care:

- the main diagnosis justifying the care (based on WHO ICD)
- the interventions indicated by the principal diagnosis (based on WHO ICPM)



- the diseases associated with the principal diagnosis (complication, concomitant disease)
- the patient's age
- the patient's discharge status (e.g. referred to another hospital, dying in the hospital).

The classification of DRGs includes sub-groups called 'pre-main groups' and 'main groups', and within these, distinguished group items, according to the classification factors, and classification rules. The DRG system consists of a 'pre-main group' and 25 'main groups' defined by disease. Following the pre-main group tests, the cases should be assigned to a main group and then the appropriate group within the main group should be selected.

The pre-main group includes cases for which:

- based on the principal diagnoses determining the nature of the care, the items in the group could belong to more than one main group, but the homogeneous nature of the treatment does not justify their inclusion as separate sub-items in each main group;
- it is justified by the cost intensity and severity of the case group.

Cases not in the pre-main group are classified in the main group based on the main diagnosis. All diseases of a given organ system are included in the same main group.

Table 15 – Current number of DRGs in each main group (November 2024)

Main Group Code	Main Group Denomination	Number of DRGs
01	Nervous system diseases	64
02	Eye diseases	22
03	Ear-nose-throat diseases	30
04	Respiratory diseases	36
05	Circulatory system diseases	91

06	Digestive diseases	55
07	Liver and pancreas diseases	21
08	Musculoskeletal and connective tissue diseases	87
09	Breast and skin diseases	13
10	Endocrine, nutritional and metabolic diseases	25
11	Kidney and urinary tract diseases	29
12	Male reproductive system diseases	15
13	Female reproductive system diseases	22
14	Pregnancy, childbirth	24
15	Newborns	26
16	Blood and hematopoietic diseases	15
17	Myeloproliferative diseases	24
18	Communicable diseases	11
19	Mental illness	16
20	Alcohol and drug addiction, organic mental illnesses caused by alcohol and drug abuse	4
21	Injuries, poisonings	13
22	Burns, frostbite	10
23	Signs, needles	1
24	AIDs	1
25	Surgery for polytraumatised condition	10
99	Homogeneous groups of diseases without a main group	96



Other factors are important in the classification of DRGs:

- Lower and upper length of stay (LOS) limits: These are the minimum and maximum number of days of care necessary for treating a patient in a given DRG. The healthcare institution is entitled to the tariff payable for the total DRG cost weight for the period between the two values. Cases shorter than the lower limit are financed as short-care cases, while those exceeding the upper limit are financed as long-care cases.
- Short-care cases: If the duration of care of the case does not reach the lower LOS limit set in advance, the tariff payable for the given DRG cannot be billed. In such a case, the payment is equal to the product of the number of actual days of care and the daily fee of the given disease group, determined as the quotient of the current DRG tariff and a normative number of days of care.
- Long-care cases: Healthcare institutions also have the possibility to provide long-term care. If the duration of care of a given case exceeds the upper LOS limit of the given DRG, but the patient is still in need of care, the DRG cost weight applicable for the DRG can still be billed. In addition, a daily fee is paid for days of care exceeding the upper LOS limit, that corresponds to 75% of the chronic base fee (excess days x chronic base fee x 0.75). In the case of intensive care, the daily fee is four times the chronic base fee (intensive excess days x chronic base fee x 4).
- Normative number of days of care: This is the length of care between the lower and upper LOS limits determined for the given DRG. The healthcare provider can bill the payer for the DRG cost weight applicable for the given DRG.
- Case Mix Index: The Case Mix Index (CMI) is an index built from the weighted average of the DRG cost weights for all realised DRGs. It can be calculated either for wards or for institutions. The CMI shows the average activity of the examined unit. In the case of DRGs, the higher the weight number, the more expertise and/or costs are necessary for the care of a given case, and this is also true for the calculation of the CMI. At the higher level of care (e.g. university clinic) the value of the

index is much higher than in the case of healthcare facilities providing care for less complicated cases (e.g. municipal hospitals).

- Days of treatment: Within the normative number of days of care, healthcare institutions can bill the DRG cost weight that corresponds to the provision of care for the given DRG. For example: in the case of 'Groin, umbilical and femoral hernia operations over 18 years of age' (DRG 5.0 code: 281B) the lower LOS limit is 1 day, while the upper limit is 25 days. Between these two extreme values the healthcare facilities can bill for the same weight (0.43497), therefore hospitals are not incentivised to provide excess care for the patients.
- Standardised Day Quotient (SDQ): The average number of days of care of an institution or ward can be compared to the normative number of days of care for the given DRG. The ratio between these two values is the standardised day quotient. If the value of the SDQ is lower than 1, the average length of care of the institution examined is shorter than the normative number of days of care for the given DRG, in which case the hospital does not provide excess care for its patients.

5.2.3.3. H-DRGs price setting

The tariff of the H-DRGs in the Hungarian system is based on a calculation of resource use at the patient level and cost data for setting DRG relative cost weights. The patient-level resource use and cost data are verified by hospital official accounting data of the hospitals participating in the survey.

The reimbursement parameters of H-DRGs are determined within the framework of the health legal regulatory system as part of the complex so-called regulated publicly reimbursed healthcare market.

The primary principle of H-DRGs pricing is that the reimbursement in publicly funded healthcare must cover all necessary costs in accordance with the certified normative resource needs (or the average acute hospital care costs), taking into account that a same effort should correspond to the same remuneration in each medical specialty, and that remuneration should ensure adequate effective and quality care. Certified costs are costs that were collected by hospitals, evaluated by NHIFA and included into the DRG reimbursement.



H-DRGs pricing is based on two main components, namely the relative cost weight of each H-DRG (accepted as normative, based on the average acute hospital case cost), and the base rate value for the case with the relative cost weight equal to one in a given year. The specific HUF tariff value for each group is given by multiplying these two factors.

Determination of the relative cost weights

To get appropriate, fair, proportionate H-DRGs tariffs, they must be based on a detailed cost calculation. This should be a multi-level survey for measuring, evaluating, and assessing resource use and costs, involving participation from several selected hospitals. The task is carried out under the direction and supervision of the Ministry's Working Committee (MWC) established to determine and review the reimbursement fee parameters. The preparatory calculations are carried out by the NEAK (Hungarian abbreviation for the National Health Insurance Fund) associations. The decision on the reimbursement parameters is made by the Ministry responsible for Health, based on the tariff proposal by the MWC.

Determination of the H-DRGs base rate

The base rate is typically determined annually as part of the fiscal year budget planning process but may not be adjusted every year. The base rate is defined considering the annual acute inpatient budget and the expected acute hospital activities in the planned fiscal year, also taking into account the budgetary impact of new services.

In Hungary, hospitals that have a contract with the NEAK for publicly funded care – regardless the type of ownership, organisational form, territorial location or level of care – are currently all under the same standard regulation regarding the method for calculating the cost weight, the base rate and finally, the H-DRG tariffs.

Differences in reimbursement between hospitals result from differences in their portfolio (different case-mix and number of cases treated in H-DRG classes). Groups of cases requiring a higher professional input have a higher relative cost weight. Typically, university hospitals have a higher proportion and number of cases from these groups. In addition, certain types

of cases requiring a high level of professional competence can only be handled by designated service providers (H-DRGs marked *).

During the refinement of the new versions of H-DRGs, one of the key expectations was to achieve a funding proportional to needed resources. This was not always the case. Initially, in 1993, the cost weight was uniform nationwide, but the base rate was set at a different value for each hospital for another five years. The initial base rate of each hospital was defined individually based on the total acute care cost in the year prior to the introduction of the H-DRG system (1992). It was calculated as the ratio of the hospital's total cost divided by activity in that year. Five years later, the base rate could be uniformised by the simultaneous introduction of new, refined H-DRGs that more accurately reflected severity and complexity.

This provider-specific base rate also varied monthly. The individual base rate was adjusted by an additional multiplier based on the total national acute hospital activity for the reference month. In Hungary, this monthly adjusted base rate, corrected for activity levels, is known as the 'floating point fee'. Currently, the base rate is generally uniform nationwide, with minor differences in certain cases due to volume limit rules. These variations occur when a provider exceeds the predetermined annual volume cap, after which the base rate becomes degressive for activity above this cap.

Determination of the H-DRG tariffs

Theoretically, there are two basic methods to calculate costs for price setting for H-DRGs or single procedures. In principle, two main tariff formation paths can be considered: calculation according to real practice and determination according to professional medical protocol. This means that the tariffs are not always based on itemised cost assessment of real care cases, rather partly or completely on the medical protocol (for example, H-DRGs for chemotherapies).

While **professional protocol-based tariff calculation** might be viewed as an ideal and fair solution, its application has not resulted in a convincing approach to be adopted as the primary method. During the initial phase of H-DRGs adaptation, there was no clear justification for how different care pathways might occur within a group or how they should be accounted for.



Only part of the care for a disease is carried out within the hospital. Some interventions included in the treatment pathway may take place before or after hospitalisation. The boundary between what happens in hospital and what happens outside the hospital varies from patient to patient. Tariff determination according to the protocol is expected to significantly exceed the average actual resource consumption. Therefore, the Hungarian H-DRG tariff setting begins with gathering resource utilisation and cost data based on actual hospital practices. This data is then reviewed and validated according to protocols (professional evaluation).

In the meantime, numerous changes have been implemented in the methodology. For example, in the case of certain antitumor therapies with strictly prescribed protocols, the calculation of the tariff can be based on the protocol. This solution is also used as combined calculation, at the start of the reimbursement for a new service or technology. The protocol can serve as a guideline for price setting of new technologies alone, while other cost elements will be carried over from similar care until the next official tariff revision.

The determination of **H-DRG tariffs based on real hospital care practice** is based on the principle that the average actual resource consumption at the case-level in a well-defined sample provides good normative base data for the payer. The average value covers the small resource differences expected within each group at the individual case level due to differences in patients' condition and care processes. Therefore, the individual value is close to the average for a longer period. If this principle is applied, we refer to micro-level or patient's case-level calculations.

The cost and price setting of H-DRG cases also requires calculating the cost of each intervention required during the hospitalisation. This type of calculation process is also part of the complex tariff setting and review.

Both practice and protocol-based calculations are used for cost and price setting for one single procedure or groups of similar procedures.

In tariff calculation, several levels of resource expenditure measurement can be distinguished. Within this, both for individual hospital cases or interventions, the cost measurement is first made in nature, the HUF value of the costs is determined afterwards.



Table 16 – Major steps for H-DRG price setting

Level	Steps to H-DRG price setting	Measurement unit	Direct expenses	Unit
I/A	Collection of resource consumption for procedures in elementary natural unit	Procedures (or series of procedures, for example lab)	Staff, materials, medicine related to the intervention, occupancy time of the special care unit	Time, pcs (=DRG), case number, etc.
I/B	Collection of resource consumption for individual hospital departmental patient' case in natural unit of procedures that has been done	Hospital case departmental	Procedures, bedside drugs, blood product medicine	pcs, case number, ampoule, etc.
II/A	Cost calculation of procedures in value	Procedures (or series of procedures, for example lab)	Summarised total cost direct + indirect	HUF
II/B	Cost calculation of individual hospital departmental patient' case in value	Hospital case departmental	Summarised total cost direct + indirect	HUF
III/A	Assessment of resource utilisation data of H-DRG groups in natural unit for each class	Classes of H-DRGs	Summarised, and average direct resource consumption of average case of H-DRGs itemised per observed procedures in nature unit, and probability of occurrence	pcs, case number, etc. rate of utilisation
III/B	Cost calculation for each H-DRG group	An average case	Summarised total direct and indirect cost for an average case	HUF
IV	Setting of relative cost weight for each H-DRG	An average case	Summarised total cost of the given H-DRGs/ average cost of the H-DRGs totally in the survey	Relative ratio

In the Hungarian system, the approximation of practice-based and protocol-based price setting is achieved through the review and oversight of resource use, calculated from a sample, by medical professionals in accordance with established protocols. Doing so, deviations and the causes of deviations are determined.

The following principles apply to corrections based on professional protocols:

- The value calculated on the basis of the survey may be modified to take into account the cost of the services, professional materials or medicines that are required to provide care of appropriate quality.
- The amendment described above may be made if a professional guide exists or is published simultaneously with the introduction of the new tariff, which prescribes the use of the resource concerned (calculation item, service) as a mandatory part of the supply.

Problems arising from '**upcoding**' should also be mentioned. The data used for resource measurement are linked and evaluated with the data of the



same case from reimbursement reports. In this process, coding anomalies are detected, and diseases not confirmed by expense items are identified.

Revision of the H-DRG tariffs

The revision of the H-DRG tariffs can be carried out through three procedures:

- General comprehensive tariff parameter refinement process covering all H-DRG groups;
- Partial refinement only for one type of cost (e.g. correction of wage cost elements because of an increase at the national level in publicly reimbursed hospital care);
- Individual price setting when new technologies are covered by public reimbursement.

In practice, all three types of price refinement are used.

Among the advantages of comprehensive tariff parameter refinement should be highlighted:

- No specialty is excluded, and there is no opportunity for lobbying or gaining an unfair advantage at the expense of others. However, it is important to note that partial price revisions have occurred in Hungarian practice, such as in paediatrics and traumatology, and in several instances, these revisions were necessary.
- By linking resource utilisation survey data at the case level with hospital accounting data, consistency and validity checks can be conducted. This approach relies on a comprehensive, non-selective, and inclusive measurement, making it essential for effective price-setting to begin from such a broad perspective.

- In case of partial refinement, it is always critical in inpatient care if the measurement focuses on only one area – if partial refers to partial expense measurement – given that:
 - Typically, other medical areas are usually involved in the same patient's care provision. Therefore, these medical areas must also be accounted for in the survey, otherwise the total cost cannot be known. Therefore, the tasks for price setting refinement for procedure codes are the same as in the case of a comprehensive survey.
 - In the case of partial measurement, the possibility to modify the classification rules is also limited, because cases that would otherwise have affected the calculation may be omitted.

Legal bases for determining H-DRGs and other tariff parameters

A ministerial decree defines the procedure, standards and participants of cost and price setting procedures. The calculation is made according to a uniform methodology – the same cost structure, cost elements calculation, and overhead coverage calculation. The methodological description is determined by the Reimbursement Code and Fee Maintenance Working Committee of the responsible Ministry. The organisation of the survey is carried out by the NEAK. The NEAK receives survey data, checks the data, prepares calculations and makes data submission, data controlling, calculation, measurement and a proposal for price setting.¹⁶²

Participants in the fee definition and refinement process

The H-DRG fee calculation procedure ensures that all stakeholders can contribute, check and comment on the results according to their participation, bearing in mind that this procedure is a decisive task for public expenditure.

**Table 17 – Organisations and tasks involved in determining relative cost weights**

Organisations	Tasks
Providers	Submission of data on expenditure at the patient's case level or procedure case level in natural units, submission of cost data, accounting data at the cost-centre level in HUF value, participation in correcting, validating and checking data.
National Health Insurance Fund Administration/ Information Centre for Health Care	Organising, directing, training data provision and providing consultation; processing and checking resource and cost data, managing correction, calculating 'virtual bill' for - each individual patient case observed, - each procedure observed separately, - all individual H-DRGs and define relative cost weights, measure impact. Until 2003, this task was carried out by the independent institute under the Ministry of Health, namely the Information Centre for Healthcare (GYÓGYINFOK). Since 2003, this organisation is run as part of the NEAK.
College of Health Professionals	Review of code systems used in survey; review and evaluation of resource utilisation for each type of hospital case, for each H-DRG.
Health providers associations (Association of Hospitals, Association of Outpatient Specialist Care), Association of Managers of Health Care Economics	Checking data, supporting the survey task, participation in Reimbursement Code and Price setting Refinement Working Committee
Reimbursement Code and Price setting Refinement Working Committee (RPRW)	Supervising coding system, cost and price setting refinement tasks, approving methodology, submitting the results of individual, partial and comprehensive price-setting for approval.
Ministry of Health	Approval, publication in legislation.



Methodology for comprehensive cost measurement

In acute hospital care, patient's case-level costs can be calculated in several ways. From the very beginning in the Hungarian system, these costs were determined based on the comprehensive observation and assessment of healthcare services provided to the patient during the hospitalisation, according to the type of services. In Hungary, the coding system used for procedures is based on the WHO system (International Classification System of Procedures in Medicine) which is constantly updated, and is called OENO system. The procedures and their number at OENO level are identified per patient during their hospitalisation in natural units. Subsequently, they are used to calculate direct medical costs at the patient's case level in monetary unit (in HUF).

This calculation results in total costs, that cover all operating cost elements, both resource use related to patient care and all other costs that cannot be observed at the patient's case level.

It should be noted that officially the remuneration paid by the payer does not include the coverage of capital costs. However, the survey also includes the measurement of occupancy rates of devices and medical units.

Table 18 – Data sources and sample size

Data source	Sample size
Mandatory hospital minimal medical database set reporting at the department level, operating since 1993	Regular monthly reporting, coverage of 100% (all hospitals provide data)
Direct resource utilisation data of individual patient cases (medicine, blood tests, imaging procedures, etc.): code of procedures, date and quantity	Usually, 1-2 months closed period during which all cases of the department are observed; if a survey during this period will likely result in a small number of cases for some groups, the assessment period is extended 2.5 – 5.0% of total hospital annual cases; 18 – 40 hospitals
Direct resource data of each procedure (working time, materials, tools, medicines, unit occupancy time, etc.)	Usually, all cases during one to two weeks with participating service providers, a survey of rare cases over a longer period
Annual accounting data by cost centre at each hospital involved in the survey	Clinical departments, independent diagnostic and therapeutic units, hotel service units, etc.

Service providers are entitled to remuneration for providing data, depending on the number of cases assessed.

The survey is carried out using various IT tools. In the beginning, this task typically involved processing medical documents which were digitalised in the second step. Currently, resource utilisation data at the case level can be generated almost entirely from hospital HIS systems. Such support is not available yet for assessing procedures, and the use of elementary resources is not tracked down by service providers with few exceptions.



Functional subgroups of cost-setting

Elements serving the same purpose are grouped into a single functional cost block, regardless of where they were performed (e.g. within the department, in-house diagnostics, or outsourced to another institution) or where their costs were recorded in the hospital's accounting system:

- Direct medical and nursing care related to the case
- 'Residual' medical cost of related department cost per case, e.g. indirectly accountable medical costs (residual of doctor's salary, other medical materials, etc.) which are not part of procedure costs
- Other costs per case at the department level
- Hotel services
- General administrative costs (general overhead).

The 50 cost items of the H-DRG system can be found in Table 19.¹⁶²⁻¹⁶⁴

Table 19 – 50 cost items of H-DRG system

Direct cost of medicines
Blood, blood product
Diagnostic and therapeutic services
Histology
X-ray, ultrasound
CT, MRI
Feeding tube endoscopy
Laboratory tests
Isotopic diagnostics
Surgeries
Anaesthesia
Implants A (Classified)
Implants B (other surgical material)

Physiotherapy
Radiation therapy
EEG
ECG
Other tests
Psychiatric activity
Other therapies
Professional material (one-time use tool, etc.)
Total direct medical cost diagnostics and therapy
Other physician cost of department level (indirect)
Total cost of diagnostics and therapy (direct + indirect)
Nurses' salary
Nursing materials
Low value tangible assets
Total cost of nursing (indirect without direct which could be parted of direct medical cost)
Other pharmacy expenses
Cost of other personal allowances
Other cost at the department level
Other indirect costs of department
Support staff
Non-medical professional materials
Auxiliary services:
Maintenance
Energy, gas, water, heating, sewerage
Laundry, sewing shop
Central sterilisation



Patient catering
Other auxiliary services
Total auxiliary services
Total hotel service cost
Costs of centralised management and administration (overhead)
Total cost of case

Source: NEAK (2024)¹⁶⁵

Reliability and validation of survey data for resource utilisation and costs

In the current system, the survey does not cover yet all hospital cases in Hungary, costs are measured only in a sample of them (about 5%). In the sample, all levels of care are represented, but data from universities and national institutes are overrepresented. The prevailing view is that resource data provided at the highest level are more effective for determining appropriate cost weights.

An extended survey period is used to achieve an appropriate sample size for rare cases, so that at least 50 cases are assessed for each group.

The survey medical data are cleaned and corrected by a professional control operation built into a multi-level process. For example, elementary items are validated using a strain that limits the amount of daily or case interventions. The direct cost from the survey is compared with the time-proportional portion of the same accounting cost element. Medical Professional Colleges review the source data and give an opinion on their acceptability. Hospitals must check, correct and verify the items highlighted for further examination. In every step of the calculation, back-control plays a key role, taking into account accounting data. Data from the survey that differ significantly from accounting data are not considered as acceptable.

From cost measurement to price setting

The multi-step process includes the following phases:

- Cost calculation at patient's case level and H-DRG level using the own resource and cost data of each hospital involved in the survey to check data validity and to examine differences.
- H-DRGs calculation based on verified and corrected data at the national level, taking into account average indirect accounting costs: during that phase coding anomalies may also be revealed, which may sometimes lead to modification of grouping rules or lead to refinement of code verification rules.
- Professional verification of calculations.
- Cost calculation according to the modified H-DRG classification in order to determine the new cost weighs based on normative indirect costs (with normative indirect costs for the expected normative bed occupancy level).

The Hungarian system has been based on this process from the beginning to the present day. It ensures the verification and correction of data, and the determination of the cost weights in line with the actual accounting costs.

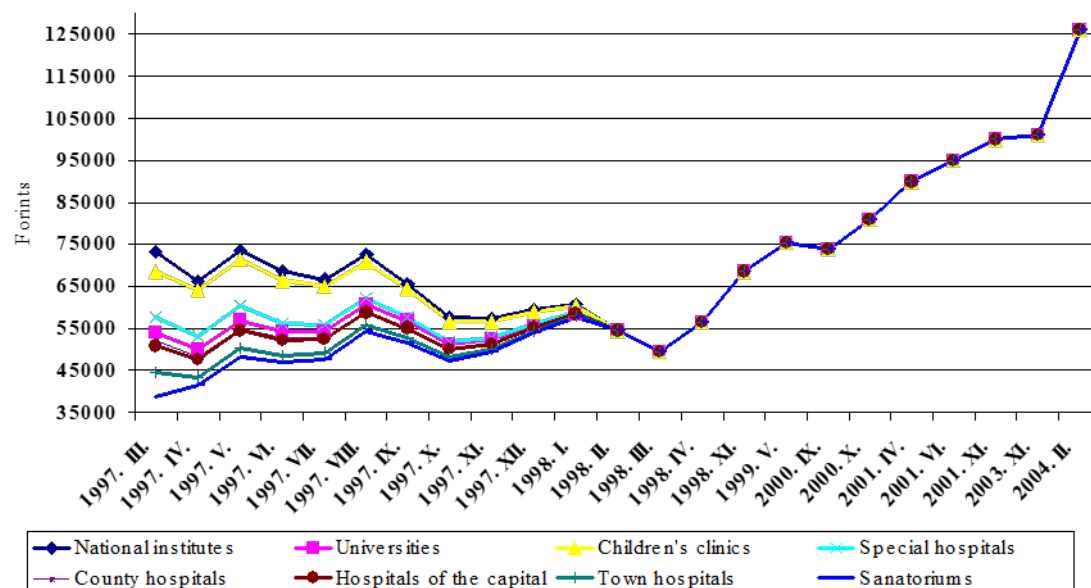
Definition and value of the base rate (for 1 cost weight)

Definition and value of the base rate (the tariff for 1 cost weight) is another main parameter of the H-DRG tariff.

As mentioned earlier, between July 1993 and February 1997, the value of the base rate was specific for each acute hospital and was adjusted monthly by the same modifying factor on the basis of the national activity level. After a one-year adaptation period, since March 1998, the base rate is uniform at the national level, and is the same for all hospitals.



Figure 15 – H-DRG base rate of 1 cost weight



Source: Own calculations based on NHIFA data.

This transition towards a uniform base rate was made possible by the introduction of version 3.0 of H-DRGs, which introduced appropriate differentiation according to severity, ICD-code, and interventions in the selection of groups requiring a higher level of hospital care. Since then, the base rate does not vary monthly anymore, but is announced in advance, and is the same for a longer period (a year or even several years). This change did not cause significant tension, but at the same time, other reimbursement conditions created new challenges.

Factors taken into account when determining the base rate

In the Hungarian system, changes in the base rate are adjusted to the budget situation, as the current value of the base rate depends on the expected activity. It happens that the base rate does not adequately cover costs. This characteristic is often cited as the cause of hospital debt and inadequate level of quality.

A 'central wage increase' took place several times. In that case, service providers received an additional payment through a separate channel for 1-2 years, based on the number of employees and the salary situation of each employee, on an individual basis. Typically, this additional coverage element was consolidated into the base rate only after 1-2 years, which

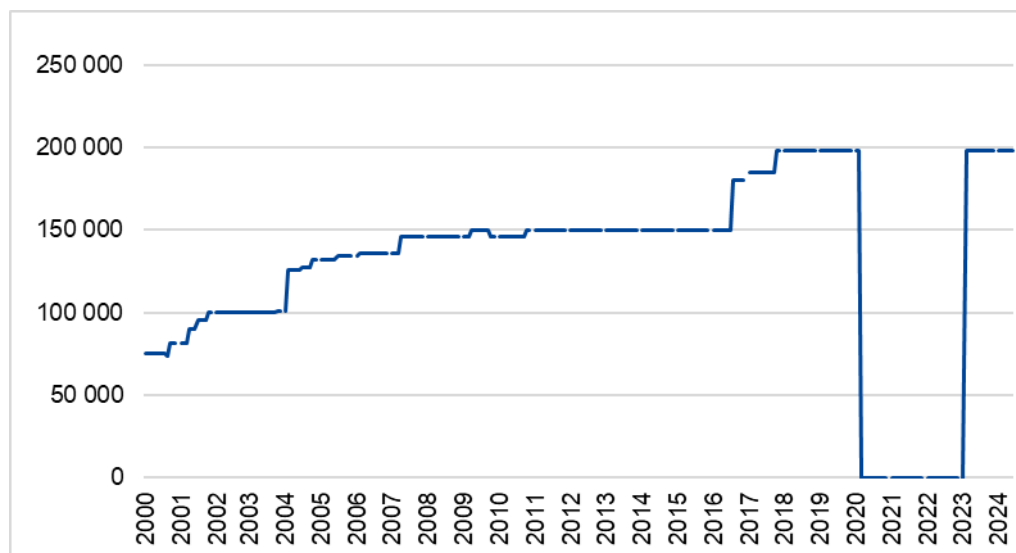


could cause problems at the service provider level, as not all service providers received back the separately designated wage mass with the increased base rate. The situation remains unchanged in 2024.

The timely, significant central wage increase, which began during the COVID-19 years and is still ongoing, improved the wage situation of healthcare workers, which resulted in a more than two-fold increase overall, and even a three-fold increase for some staff categories. Simultaneously, this also implied that the salary surplus, which accounts for a substantial portion of hospital reimbursement, is not currently allocated to hospitals through the base rate. The process of incorporating the wage supplement has commenced, tied to the calculation involved in the current comprehensive expenditure measurement.

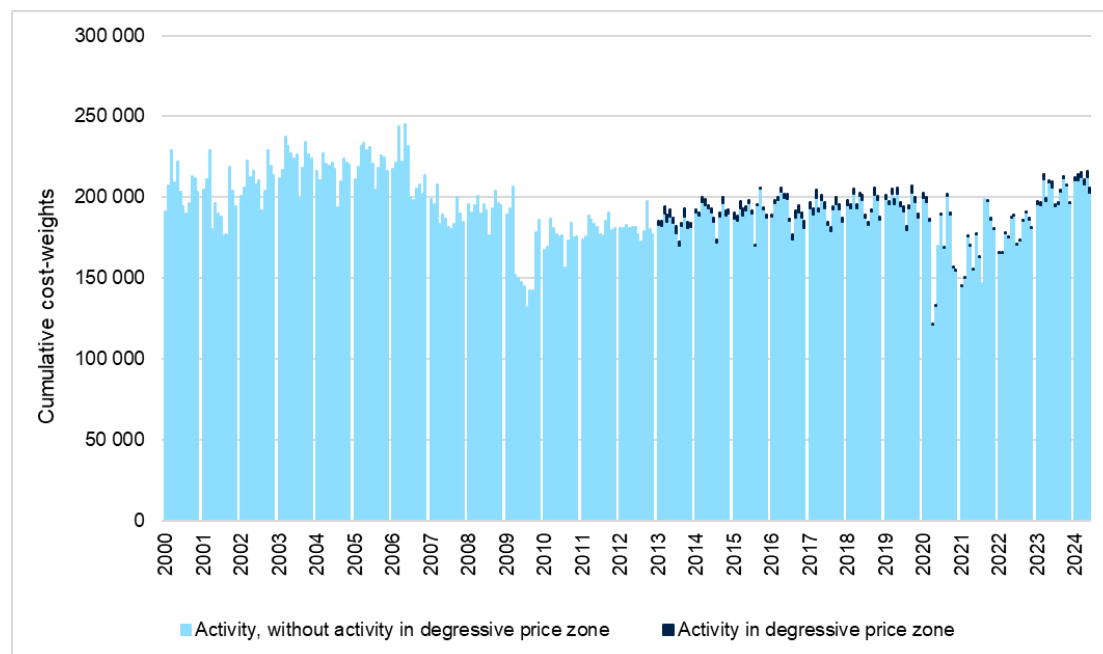
The future aim is to progressively expand the sample to include more hospitals, enabling regular and fully comprehensive case-level expenditure and cost analyses. The necessary data sources for this are partially already available, as hospitals already operate the relatively advanced hospital information system (HIS), which is in constant online connection with the National eHealth Infrastructure (EESZT), where medical documents about all events are uploaded and made available to patients and to other healthcare providers. However, this system contains only a small part of the information suitable for digitalised processing. The level of digitalisation must be deepened in the near future.

Figure 16 – Changes in the HUF base rate for 1 H-DRG cost weight (2000-2024)



Source: Own calculations based on NHIFA data.

Figure 17 – Changes in the activity of acute hospitals measured by cost weights (2000-2024)



Source: NEAK (2024)¹⁶⁶

5.2.4. Number of DRGs

At the time of the introduction of a DRG-based hospital payment in Hungary in 1993, there were **435** DRG groups available. The current version (as of November 2024) contains **761** DRG groups. It means that there was a significant increase in the number of DRG groups.

The main reasons of the increasing number of DRG groups during these 31 years are:

- Widespread adoption of existing health technologies (e.g. CT, MRI examinations became increasingly common);

- Emergence of new health technologies in clinical practice (coronary stents, implantable medical devices, invasive EEG monitoring, robotic surgery, etc.);
- Withdrawal of outdated medical technologies;
- Expansion of same-day surgical services;
- Changes in the cost structure.



The role of health technology assessment (HTA) became more and more important in the past decade, and the results of HTA should be implemented into the new DRG groups.¹⁶⁷

5.3. Overview of exclusion mechanisms and their payment method

5.3.1. Hospital revenues covered by DRG payments

While H-DRG-based payments are used in acute inpatient care in Hungary, the percentage of hospital revenues covered by these payments may vary due to several factors. In general, it can be said that social health insurance covers the healthcare services that are necessary for the prevention, diagnosis, treatment, and rehabilitation of a patient with a given disease. In the H-DRG system, hospital care is financed, such as inpatient care, surgeries or even intensive care.

Altogether, DRG accounts for 30-40% of total hospital revenues. However, within acute inpatient care, DRG accounts for 50% of acute inpatient care's revenues. The other ca. 50% comes from targeted funding of wage increases.

Inpatient care, as a part of curative and preventive care in an inpatient care institution, is care for which the care time can be planned and is mostly of short duration. The goal of care is to restore health as soon as possible, or if this is not possible, to stabilise the condition and prevent the development of complications.

In the H-DRG financing system, inpatient care can be:

- Staged with diagnostics aimed at detecting diseases followed medical treatment;
- Conducted at specific times of the day, with diagnostics aimed at detecting diseases;
- A one-time or course-like intervention, after which observation for a specified period is required, and during the observation period – if

necessary – further immediate healthcare is provided (e.g. chemotherapy);

- One-day surgical interventions, which are often carried out in an inpatient care facility, with the patient being discharged on the day of admission, or within maximum 24 hours.

We can summarise this as follows: the H-DRG system finances inpatient care (with an overnight stay), one-day surgical interventions and one-day medical interventions (such as chemotherapy).

Also, some of those one-day surgical interventions can be provided both in an inpatient and outpatient hospital setting, and the latter can either belong to a hospital or be an independent outpatient organisation. A typical example for such one-day intervention is cataract surgery. Upon the introduction of the DRG system in Hungary in 1993, cataract surgery was almost entirely performed in an inpatient hospital setting and financed by DRGs. During the past 30 years, cataract surgery underwent substantial changes and can now be performed in one-day form and outpatient form. The financial rules followed the changes in medical practice and allowed outpatient care providers to perform cataract surgery as a one-day surgery. They receive the same DRG-based reimbursement as hospitals. It is worth mentioning that the reimbursement for a cataract patient is the same, whether the intervention is performed as a one-day surgery or involves a hospital admission, such as a 4-day stay

Based on legal provisions, within the framework of inpatient care, the H-DRG system finances:

- Tests necessary to determine the illness;
- Medical treatment – including surgical interventions and the medical materials and prosthetic devices used during them – and medical care;
- Medicines, blood products, bandages and temporary medical aids required for medical treatment, as well as training in the use of medical aids;



- Care and specialised care required for medical treatment, as well as lifestyle counselling and dietary counselling for the period after discharge;
- Meals, taking into account doctor-prescribed diet;
- Accommodation for as long as the care is justified in inpatient hospital conditions.

The H-DRG 50-item cost item statement shows how the aggregated costs (direct + indirect costs) are expressed in terms of relative cost weights. Table 19 shows the cost structure considered in the calculation from the beginning. Originally, the H-DRG system was meant to cover the entire operating cost. This is best characterised by the 50-item cost statement, which covers the hotel costs of the hospital stay (laundry, meals, cleaning, hygiene), the human resource care-related costs (medical, other graduate healthcare provider, nursing), used materials, devices, implants, and diagnostic costs.

Another aspect was the marked separation of operating and investment costs. In the Hungarian social health insurance system, the NEAK has from the beginning been responsible for financing the operating costs, predominantly on an activity basis, through the H-DRG cost weights expressed by HUF including mainly the amortisation of low-value tangible assets. In addition to this, the state and other owners are responsible for financing the investment costs, the hospital's building stock (including the purchase of operating rooms, sterilisation and anaesthesia equipment), its renovations and modernisations (e.g. comfort, air conditioning), as well as the purchase of high-value diagnostic machines, therapeutic equipment, assets and surgical beds (e.g. CT, MRI, laparoscope tower, ventilators).

Dilemmas in the dual financing system

In this so-called dual financing system, the source of all responsibilities and budget items is not clear. For example, as a result of the lack of annual maintenance, which is an operating cost covered by DRG payment, the condition of individual buildings or wards may deteriorate within a few years. However, their renewal requires a renovation budget from the owner from separate investment funds. Another example is the replacement of

expensive parts of some high-value diagnostic equipment (CT tube replacement, or the purchase of additional heads for ultrasound devices), the acquisition of additional sets for laparoscopic towers, which can be used to expand the surgical repertoire.

In the first decade of H-DRGs (between mid-1990s – mid-2000s), governments spent approximately HUF 25-40 billion on real estate investments and HUF 10-12 billion on targeted support for the purchase of assets. At the end of the 1990s, the digitalisation of the X-ray machine fleet and the construction of PACS systems took rapidly place. In 2006, a central national purchase of ventilators occurred for HUF 6-7 billion. In 2015, approximately 50 CT and MRI devices were purchased with EU support in the framework of the EU 'Environment and Energy Operational Program' (KEOP).

Between 2007 and 2013, the hospital investments realised from the EU Structural Funds reached HUF 403 billion at nominal prices. The majority of the rural county and city hospital infrastructure was renewed, and a large proportion of them were expanded and made more comfortable. From the point of view of DRG financing, a new challenge has emerged in the management of hospitals: the additional operating costs for 2-3-bed wards, spacious hallways, new building wings, and air-conditioned facilities were not factored into the H-DRG base rate value. This is one of the factors that explain the increased hospital indebtedness from the beginning of the 2010s.

Since the most recent measure (beginning of 2024), so-called overhead costs (approximately 6.5% to 7.0% of the H-DRG based financing) have been separated from the institutional budgets and brought under a new national organisation: the Public Procurement and Supply Directorate (*Közbeszerzési és Ellátási Főigazgatóság*, KEF).¹⁶⁸ However, this measure and indirect payment mechanism to the KEF does not directly influence the DRG activity-based hospital payment scheme nor affects the value of DRG weights. This operational mechanism represents a shadow financing of some parts of the operational tasks and costs concentrating to this nationwide directorate. To our knowledge, there is no such a concentrated method of organisation and operation elsewhere in other EU country, and it fundamentally calls into question the management independence of



hospitals, the management's pursuit of efficiency, and the flexible provision of high-quality care that matches needs. It means that the overall financing is based on DRG, and it provides revenues for the hospitals. But on the expenditure side, the so-called overhead costs are paid by Public Procurement and Supply Directorate (KEF).

5.3.2. DRG exclusion mechanisms and other hospital payments

From the beginning of the H-DRG system, the Hungarian Health Insurance financing included items that were not included in the cost weights of given DRGs. The number of such items has expanded over the decades, partly due to the devaluation of the value of the DRG base rate (the DRG base rate has not followed the inflation rate for about a decade and a half). On the

other hand, this is how the NEAK tries to 'keep control' of technology changes and development, by controlling expenses through the expansion of case financing and itemised financing. The main areas of these categories are presented in the next subsection.

Since 2017, inpatient medical institutions receive a fixed personalised wage subsidy for increased salaries in addition to the H-DRG payment, on a monthly basis, following the government's centrally ordered wage increase measures, mainly for doctors, specialists and other healthcare provider graduates. By 2022-2023, this amount had already reached 40-45% of the curative-preventive expenses. This targeted wage subsidy includes the wages of those working in specialised outpatient care and those working in primary care (see Table 20).

Table 20 – Share of fix-financed personnel costs in total public healthcare financing (2018-2024)

Data source	2018	2019	2020	2021	2022	2023	2024
Curative-preventive spending (million HUF)	1 306.3	1 272.9	1 429.3	1 926.5	2 203.2	2 247.6	2 657.4
Fixed personnel spending (million HUF)	34.6	25.9	118.3	384.3	625.6	746.6	971.4
Share fixed personnel spending / Curative- preventive spending	2.6%	2.0%	8.3%	19.9%	28.4%	33.2%	36.6%

Source: NEAK

It is evident that this health policy increases the fixed payment component each year, thereby reducing the proportion of H-DRG-based activity-oriented payments. Since 2021, this fixed payment has accounted for over 20% of total hospital payments.

5.3.2.1. Services excluded from DRGs

Many procedures are excluded from the current H-DRG financing system due to their indications, or are otherwise excluded by regulation mainly because the type of surgery itself is not publicly funded, and there are no suitable H-DRGs for them.

Exclusions based on the Health Insurance Act

These indications for exclusion are based on the Health Insurance Act:¹⁶⁹

- Interventions for cosmetic (beauty) and recreation purposes
- Hospital services, diagnostics and surgeries related to extreme sports
- Sterilisation not due health reason
- Bariatric surgeries
- Hospital services related to clinical examinations



- Inpatient services financed by private insurers
- Employment-related aptitude tests.

Education, research and innovation

The activities of hospitals related to education, research and innovation are completely excluded from the DRG system, and from the healthcare reimbursement system. Educational activities are financed through the ministry responsible for education. Research and innovation are predominantly financed throughout grants announced by governmental authorities. Human clinical trials are financed throughout pharmaceutical companies or Clinical Research Organisations (CROs).

5.3.2.2. Hospital facilities excluded from DRGs

Private healthcare facilities are excluded from the DRG system. As a basic rule, the NEAK contracts only with public hospitals. There are a few exceptions, when the NEAK makes a contract with private healthcare facilities in very rare cases: one-day surgical centres, spine surgery, hip prosthesis surgery.

Some Hungarian public hospitals provide so-called private services. In this case, the public hospitals provide special treatments for private, self-financed patients. These services are also out of the scope of the DRG system.

Chronic care provisions are financed through a daily fee (per diem). This includes nursing care, different types of rehabilitation (locomotor, mental, cardiac, etc.) and hospice care. Most of the Hungarian hospitals provide both acute care and chronic care services. But chronic care is excluded from the DRG system, and is reimbursed on a per diem base.

Annual activity of different types of hospitals

Table 21 shows the annual activity (2023) of different types and ownerships of hospitals (annual number of cases, nursing days, and DRG cost weights). Seemingly, the University Clinical Centres provide more intensive, higher level care (higher CMI also), providing 23.9% of the total cases but 27.2% of total cost weights. On the contrary, the municipality hospitals take care of 22.3% of the cases but receive only 19.2% of the total DRG cost weights. Moreover, the county and partly the municipality hospitals face the longest average length of stay in the Hungarian health insurance system.

**Table 21 – Annual activity of different types of hospitals (2023)**

Type of hospitals	Annual case number	Share of case numbers (%)	Annual nursing days	Share of nursing days (%)	Annual DRG cost weights	Share of DRG cost weights (%)	Average length of stay (days)
University Clinical Centres	490 927	23.9%	2 142 339	22.0%	683 648	27.2%	4.37
Hospitals of Budapest	154 639	7.5%	755 114	7.8%	194 623	7.7%	4.9
County hospitals	771 205	37.5%	3 865 929	39.8%	908 736	36.2%	5.04
National institutes	121 939	5.9%	568 122	5.8%	187 968	7.5%	4.67
Specialised hospitals	16 104	0.8%	87 024	0.9%	16 668	0.7%	5.42
Municipality hospitals	458 015	22.3%	2 229 958	23.0%	483 593	19.2%	4.9
Other institutions	42 885	2.1%	67 995	0.7%	38 501	1.5%	1.59
Total	2 055 714	100.0%	9 716 480	100.0%	2 513 736	100.0%	4.75

5.3.2.3. *Special financing of high-cost / high-value devices and procedures*

Some procedures are typically not included in the H-DRG financing system, such as organ transplants, certain cardiology devices, orthopaedic devices, prostheses, surgical sewing devices, etc.

As technological innovation presented an increasing challenge to the healthcare systems, high-value surgeries (including transplants) became more and more important from the beginning of the 2000s and the payment of drug therapies is made on a separate line.

The essence of this is that the basic therapeutic costs of hospitalisation and care and the costs arising in connection with hotel care must be covered from the most suitable H-DRG (cost weight x base fee). At the same time, special high-value diagnostic procedures, therapies, single-use high-value medical devices, but mainly surgical devices and later on, in the 2010s, more and more high-value drugs are covered by the NEAK from a separate budget line. Typical examples are cardiology devices (pacemakers, cardioverter-defibrillators), prostheses for orthopaedic surgery, anaesthesia therapies, plasmapheresis. For example in 2017, high-value drugs cost

reached HUF 88 billion, while the annual cost of high-value surgeries and medical devices was HUF 40.3 billion. These products, drugs, devices are financed on a case-base or item-based form.

Pharmaceutical products subject to special financing

Annex 1/A of NM Decree 9/1993 (IV.2.) on certain issues of social security financing of specialised healthcare contains the list and code of active substances subject to itemised accounting, as well as indication areas and the range of institutions authorised to prescribe them.¹⁷⁰

Medical devices and procedures subject to special financing

The relevant ministerial order distinguishes two main lists of high-value, item-based devices and procedures.



The structure of specially financed technologies in the NHIF since 1st of January 2017.
In 2019 this subfund reaches 45.9 bHUF = 150 million EUR

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graph TD
    A[Heart valve] --> B[The structure of specially financed technologies in the NHIF since 1st of January 2017.  
In 2019 this subfund reaches 45.9 bHUF = 150 million EUR]
    B --> C[High-value medical devices]
    B --> D[High-value procedures]
    C --> E[NHIF tender/public procurement]
    D --> F[Financial budget by NHIF]
    E --> E1[Pacemaker]
    E --> E2[Cardioverter defibrillator]
    E --> E3[Heart valve]
    E --> E4[Middle and inner ear implant]
    E --> E5[Deep brain stimulator (neuropacemaker)]
    F --> F1[Drug-eluting stent]
    F --> F2[Mapping catheter]
    F --> F3[Vascular prosthesis]
    F --> F4[HALO-device]
    F --> F5[Sewing machines and heads]
    F --> F6[Heart transplantation]
    F --> F7[PET/CT]
    F --> F8[Combined spine surgery]
    F --> F9[Stem cell selection]
    F --> F10[Apheresis therapy]
  
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High-value medical devices

NHIF tender/public procurement

- Pacemaker
- Cardioverter defibrillator
- Heart valve
- Middle and inner ear implant
- Deep brain stimulator (neuropacemaker)

High-value procedures

Financial budget by NHIF

- Drug-eluting stent
- Mapping catheter
- Vascular prosthesis
- HALO-device
- Sewing machines and heads
- Heart transplantation
- PET/CT
- Combined spine surgery
- Stem cell selection
- Apheresis therapy

1/3 of these high costs products and services purchased through national public procurement processed by the NHIFA;
 2/3 is purchased directly by hospital managements

The centrally purchased high-value drugs were separated into a separate fund since 01/01/17

5.4. Control mechanisms in the H-DRG system

5.4.1. Scope of control mechanisms in the H-DRG system

The control system contains the following elements:

- cost control and activity control
- professional control
- reimbursement report (minimum basic dataset (MBDS), at the patient case level) with data quality control.

The regulation rules interact with cost control and activity control. This includes the determination of an annual acute hospital fund following the process of the Hungarian budget determination. In order to fulfil with the financial limit of the national annual acute hospital fund, annual acute hospital activity planning is also carried out. To ensure compliance, a number of sophisticated regulations have been implemented.

Currently, quality and effectiveness are supported by the so-called guarantee rule. Under this rule no new reimbursement is allowed in case of readmissions within a specified time period – the upper trim point – after discharge.

In order to ensure the validity of reported data for reimbursement, several checks are performed. The data of the hospital reports as well as accounting data are regularly reconciled with the data of an online national waiting list system.

Also, it is checked whether cases reported for reimbursement were registered or not in the National eHealth Infrastructure (*Elektronikus Egészségügyi Szolgáltatási Tér*, EESZT).



5.4.2. Data, methods and process used for control

5.4.2.1. Planning hospital budgets and activity to satisfy financial limits

There are several levels of cost-containment for hospital financing that aim to ensure financial balance. At the same time, the rules try to guarantee universal accessibility to high-priority hospital care that can only be performed in hospitals.

Table 22 – Tools for cost, activity and provision control in the H-DRG system

Operation, function	Stakeholder	Regulation related
National Acute Hospital Budget	Parliament	Act LV of 2023 on Hungary 2024 Central Budget (sample) Annex 5. Government Decree, § 6. (2) 43/1999 (III.03).
Total planning yearly activity of acute hospital care	Government	Government Decree, § 6. (2) 43/1999 (III.03).
The rules of calculation of volume limit value for each hospital and reimbursement regulation for payment for activity over volume limit	Government	27. §; § 27/A; Annex 28; Annex 28/B of Government Decree 43/1999 (III.03).
Lower and upper LOS limits, normative number of days of care, and cost weight, at H-DRG level	Ministry Responsible for Healthcare	Annex 3 1993 (IV.2) NM decree
Guarantee rule	Government Ministry	
Pilot for bundling payment to optimise patients' pathways (TBC, COPD)	Government	Decree § 48/C; § 48/D§ 6. (2) 43/1999 (III.03).
Definition of base rate	Joint statement by the minister responsible for state budget and ministry responsible for healthcare	Government Decree, § 6. (2) 43/1999 (III.03).
Yearly performance volume limit of each hospital	National Health Insurance Fund Administration (NEAK)	NEAK announcement



Keep performance volume limit and planning seasonality at hospital level	Hospital management and/ or National Directorate General for Hospitals	
Medical and reimbursement protocol	Ministry responsible for Health	Ministerial Decree No. 18/2013 (III. 5) EMMI on the uniform rules for the development and editing of examination and therapeutic procedures, as well as the conduct of professional consultations concerning them. Ministerial Decree 26/2020 (IV.22) EMMI on the operation of the health professional college. Ministerial Decree 13/2009 (IV.22) EMMI outlining the procedures for drafting and conducting professional consultations to establish medical protocols for the reimbursement of each priority disease group.

Reimbursement protocols sources: NEAK (2024)¹⁴⁵; Medical professional protocols sources: NEAK (2024)¹⁷¹

It should be emphasised that in the original development model, financing solutions supporting the organisation of care, following the example of Managed Care in the US, were given a prominent role. So far, only a few initiatives have been tested, of which only a few have been introduced. The introduction of managed care organisation solutions is important because this special care model can result in a significant step forward both in terms of professional control, reduction of avoidable care, and compliance with financial limits.

5.4.2.2. *Budget planning of the Health Insurance Fund and budget constraints*

A significant part of publicly funded healthcare – apart from public health expenditures, not counting co-payment systems used in some areas of healthcare, such as pharmaceutical supply, dental care or certain development resources – is defined in the central budget law of the Hungarian state. A separate chapter of this law is Annex 1, entitled LXXII Health Insurance Fund.¹⁷² The Act contains ‘the budget of the publicly funded Health Insurance Fund’ at national level by main category of revenue and expenditure. In the annex to the Act, item 7 in the ‘Expenditure section’ is the ‘sub-budget for curative and preventive care’, within which a

separately defined item, without further breakdown, is the ‘aggregated budget of total specialist care’. This item is an amount that can be used for different subtypes of hospital care. The law does not provide further detail. Further sub-items of this budget item are already defined in government decrees, in accordance with governmental decisions. The government decree divides the annual sub-budget for acute hospital care, chronic hospital care, etc. at the national level.

A more detailed further division of this item is defined in Annex 5 to Government Decree 43/1999 (III.3.) on the detailed rules for financing health services from the Health Insurance Fund. This decision is made at the government level.¹⁷³

The process of budget determination and for planning are defined by Act CXCV of 2011 on Public Finance.¹⁷⁴ The main person responsible for planning is the current minister responsible for public finances. At this level are determined: the budget plans, growth opportunities, the expected effects of price increases and distribution rates, which are given as planning corners, as a requirement for the managers of the individual chapters, including those responsible for healthcare (minister responsible for healthcare). Further planning steps, such as planning the aggregated budget amount for ‘total specialist care’, is carried out with the involvement



of the organisation responsible for managing the Health Insurance Fund, namely the National Health Insurance Fund Management, under the direction of the minister responsible for health.

After the central obligatory budget indicators for planning are given by the ministry responsible for the central budget, the NEAK carries out analyses to verify how the expected budget framework can provide the resources necessary for care with regard to the price effect, wage increase effects, the effect of new providers and new technologies already permitted during the previous year, as well as the budgetary demand for new services planned for the budget period and the coverage of other care tasks that are planned. It should be noted that the presentation of the budgetary effects is also a mandatory element of any legislative amendment proposal.

During the planning phase, the positions of next year's budget proposal are clarified several times during budget negotiations.

Not everyone considers the current procedure satisfactory.

Therefore, the NEAK must enhance this planning process by prioritising the legitimate financing expectations stemming from the development of healthcare plans, while considering demographic and technological changes in the medium and long term.

This planning process is partly blamed, among other factors, for the recurring debt issues, despite numerous interventions and consolidations aimed at curbing financial instability. In many respects, the current budget planning procedures do not take into account the evidence-based expected care needs and the legitimate, evidence-based reimbursement needs. However, it is challenging to determine the causes of hospital debts later on due to the absence of essential information. Clarifying what caused the deficit, in what proportions, such as the necessary resources, patient numbers, or the hospital management's performance, is difficult. In any case, it is striking that similar issues occur in many countries, and it remains unclear how much of this reflects a legitimate need for additional funding and how much requires other forms of intervention.

In Hungary, too, we can mention a number of unsettled, abandoned financing anomalies. One of these fundamental concerns is ensuring the

coverage of long-term fixed assets. Everything that has been mentioned here about the planning of budgetary frameworks is essentially only about operating cost coverage, and does not concern asset replacement and investment coverage.¹⁷⁵

The organisation managing each 'central budget chapter' may designate other institutions to carry out all or part of its tasks, with the exception of planning, amending and transferring appropriations and approving the annual budget accounts.

Even in a system where regulations and the nationally uniform pricing of H-DRGs are announced in advance, unplanned, acute policy interventions can occur to ensure additional financial requirements. In recent years, these measures were primarily aimed at reducing hospital debt, centrally arranging higher wages for healthcare workers due to their extremely low level, and sometimes focusing on waiting lists. The emergency additional funding allocated to healthcare during the COVID-19 period should also be highlighted. In that context, extra expenses and wages were provided to cover the cost of epidemiological protection.

5.4.2.3. Compliance with budget, provision plan, activity reimbursement based on H-DRGs, volume control

Hospitals receive funding according to the activity principle, in which the DRGs system is the central element. However, this activity principle has a volume cap: the Performance Volume Limit (PVL).

In the early years, since 1993 until 1998, the monthly floating base rate ensured that the hospital budget set for a given year could be respected, based on the monthly relationship between national activity and national budget, i.e. remuneration decreased in case of increasing activity. However, this also resulted in a volume chase where, despite falling prices, hospitals that accepted more, less severe cases for relatively inexpensive short care could earn relative additional revenue compared to those who did not.

So, at that time, the H-DRG cost weights were already nationally uniform, but the base rate was still different for each hospital depending on their own starting financial situation. In each month, the monthly national budget amount was divided by the value of the monthly national acute hospital



activity based on H-DRGs. Each hospital's own base rate was adjusted uniformly with this multiplier for the month in question to determine the amount of funding. It was not considered as a suitable method, but other devices were not yet ready to keep hospital activity under control.

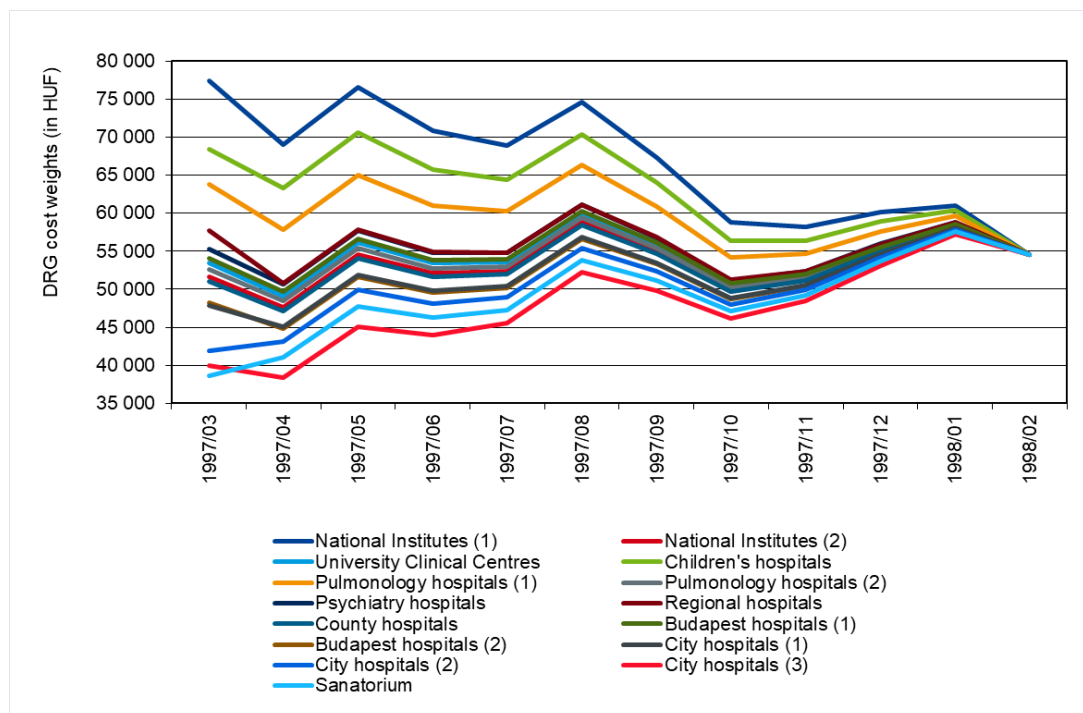
Between 1993 and 1996 the reimbursement tariff was not a nationwide uniform tariff, because the base rates differed for each hospital. The H-DRG cost weights were uniform across the country. In the next two years, 150 Hungarian hospitals were classified into 15 hospital groups and these groups had a group-specific HUF / DRG base rate. The rationale behind that approach was that before the introduction of the DRG system in 1993, there were huge differences in the public funding of Hungarian hospitals. The introduction of a nationwide uniform reimbursement rate in 1993 would have led to significant and immediate changes in the annual budget of the hospitals, resulting in either huge increases or decreases. To avoid these

immediate changes, a 5-year equalisation period was applied between 1993-1998. The reimbursement rates were gradually decreased for those hospital groups, which had better financial positions before the introduction of the DRG system in 1993, and gradually increased for those hospital groups which had worse financial positions before 1993. In 1998, this method was abolished. Since 1998, there is a uniform, nationwide base rate applied to all Hungarian hospitals. The level of activity continued to increase in the system operating with a pre-announced base rate, and there was no adequate financing and professional control.

Considering that the financing model related to the pilot project on managed care failed in the early 2000s, a much more drastic solution was introduced starting in 2004, to stop the increase in acute hospital activity: the performance volume limit control system.



Figure 19 – HUF reimbursement of 1 DRG cost weight in different hospital types (1993-1998)



Source: Own calculations based on NHIFA data.

The Hungarian performance volume limit control solution is not a strictly closed system

As a first step for the volume limit, the national upper limit is set. The NEAK plans the annual volume of each service provider within this limit, based on the designated methodology. The value of the PVL is defined as an activity volume in term of cost weights. The methodology takes into account the population of the hospital catchment area, the type of hospital (city or county

hospital, university clinical centre, etc.), the activity of the hospital in the previous year, and the introduction of new medical technologies.

Within the limits of the annual volume set for them, hospitals can plan their monthly activity, considering the seasonality of care.

The PVL was calculated for all hospitals considering their own activity in 2003 and set at a 98% level. Neither the 2003 activity benchmark, nor the 98% rate, reflected strategic considerations, the PLV was calculated independently of the real needs. It can be stated that, despite minor and



major adjustments and established principles, no adequate method for determining the PVL has yet been established.

There have been many detailed regulations that have changed in the meantime. For instance, PLV averages per medical specialty were used to modify the hospital's PLV framework for newly received capacities, or new type of cases or reorganisations. The service providers could convert the inpatient PLV value to their own outpatient specialised care PVL value in proportion to the decrease in the number of beds.

From 2004 to 2006, activity above the limit was financed in a so-called degressive way in the Hungarian PVL system. In this period, the base for the PVL was 98% of the activity of the previous year, which indicates a 2% decrease in the total hospital budget. The activity (measured by aggregated cost weights) above the PVL was partially financed as follows: by 60% for volumes 0–5% above the PVL, by 30% for volumes 5–10% above the PVL and by 10% for volumes more than 10% above the PVL. Between 2006 and 2010, the base for the PVL was further reduced at 95% of the activity of the previous year. The activity above the limit was not reimbursed at all. Between 2011–2012, the activity of hospitals up to 10% above the PVL was reimbursed by only 30% of the pre-announced DRG tariff. Since 2013 and up to now (November 2024), the activity of hospitals **up to 4% above the PVL** has been reimbursed by only **25% of the pre-announced DRG tariff**.

Other main features of the H-DRG-based financing system with volume limits are:

- Not all types of hospital care are subject to the volume limit, for example emergency events (e.g. stroke, AMI), maternity care, or newborn care are outside the volume framework, i.e. not subject to restrictions. Instead, they are always entitled to the full DRG-tariff.
- The volume determined for each hospital is not broken down into types of care. However, government regulation on financing names priority rules in four categories of care, ranked according to their importance. It is the responsibility of the hospital to decide on the repartition of the volume within the limit to avoid supply disruptions.

- Significant additional activity above the volume limit is possible (reimbursed at a reduced tariff). This corresponds to a non-negligible level of activity.
- If the hospitals do not reach the activity volume limit, they are only entitled to the DRG-financing related to their actual activity.
- Hospitals have the opportunity to submit, several times a year, applications for additional capacity, and thus for additional volume, if the assigned volume is not sufficient. Another typical reason is the introduction of new technologies.
- The maintainer of the hospital can transfer the assigned volume between the hospitals under its control. The main maintainer of the hospitals is the Hungarian government and on behalf of the government, the National Directorate General for Hospitals (*Országos Kórházi Főigazgatóság*, OKFŐ) acts as a maintainer and can allocate DRG volume among approximately 90 hospitals. There are five church hospitals maintained by the relevant church, four University Clinical Centres maintained by the university, and one military hospital maintained by the Ministry of Defence.
- Hospitals – if they modify the contract for the PVL of their own inpatient and own outpatient care – can transfer assigned volume from acute inpatient care to outpatient care according to the exchange rate given by law. The hospital maintainer is in a special situation, because this organisation can also be the owner, but typically it is an organisation entrusted by the owner with the management of the hospital's affairs, who acts on behalf of the owner.

We have to emphasise that we are focusing on DRG payment, but in Hungary there is a PVL for outpatient care also. There is a legal possibility for hospitals to transfer DRG volume to outpatient care and back. But it is a very rare situation. Also, the PVL is not broken down by the National Health Insurance Fund Administration into types of care (internal medicine, surgery, gynaecology, traumatology, etc.). The hospitals have the possibility to break down the volume into types of medical specialities.



The state (National Directorate General for Hospitals) can only transfer volumes between the hospitals under its operation.

In acute inpatient care, when determining the planned annual volume, it is necessary to take into account the number of residents who are part of the healthcare provider's territorial care obligation, determined according to medical professions (internal medicine, surgery, traumatology, gynaecology, etc.) and care levels (city hospital, county hospital, University Clinical Centre), not including the national or special regional care obligation. It should be noted that there are many other rules for setting the volume limit and that the rules have changed several times since their introduction.

5.4.2.4. *Quality control and compliance*

Regulation of the provision process

The designated health state administrative body, the NNK (National Public Health Centre or *Nemzeti Népegészségügyi Központ*), carries out official professional supervision and professional quality assessment for the purpose of quality improvement. Within this framework, it checks compliance with the recommendations of the professional guidelines. NEAK's responsibility is to check the availability of resources (human resources, tools, equipment, infrastructure), examine compliance with professional guidelines and financing-related protocols, and enforce financing-related restrictions.

Consistency checks in order to validate the data of the hospital report for reimbursement purposes

The regular validity of the hospital settlement reports is checked primarily with methods built into the process, on a monthly basis. This inspection is complemented by an on-site inspection. This control is less frequent but problem-oriented.

The controls built into the digitalised process include:

- validity checks of the data and data connections regarding elementary items of the reimbursement record (hospitals are contracted, provision

is involved in the insurance basket, patient's legal relationship, code system validity, etc.);

- examination of the hospital care for a given patient, not only in the timeframe of the current reporting period, but along his health life course;
- examination of parallelism between all health records on a monthly period of a given patient.

The validity of accounting records has been a problem for a long time. The problems are not due to formal errors and lack of elementary logical conditions. Unfortunately, in order to obtain a higher fee, upcoding appeared, which had to be prevented by a number of coding rules and on-site inspections. In the case of discovered and verified data errors, the NEAK withdraws the reimbursement and can also impose sanctions on the hospitals.

In addition to these, new types of checks have also appeared, during which a data reconciliation procedure is carried out with the items of the health data system independent of the accounting report. According to the Act XLVII of 1997 on the Processing and Protection of Medical and Other Related Personal Data, the National eHealth Infrastructure (EESZT) sends defined information to the NEAK in accordance with the hospital reimbursement report for the previous month.¹⁷⁶ This reconciliation procedure is also carried out with the online real-time waiting list registration data. In both cases, in case of misalignment, the reimbursement for the concerned hospital cases will be withheld until the reporting element has been replaced. In addition, hospital cases without waiting list registration receive a financial penalty. In order to protect the quality of the data, the financial penalty can also be charged to the hospitals if the waiting list item has been incorrectly published for more than 10 days. The penalty rate is 20% of the base rate.



5.4.3. Evaluation

The PVL system had a notable impact on hospital admissions and overall activity. Between 2003 and 2006, while the growth in hospital activity stabilised, the number of inpatient cases continued to increase, and the average length of stay decreased, reflecting more efficient use of resources. It was observed that in the degressive pricing zone, hospitals tended to admit patients with very low variable costs, as most patient care expenses were already covered by fixed hospital costs.

Between 2007 and 2008, there was a marked decline in both the number of cases and the average length of stay, indicating that the PVL system successfully curtailed hospital activity. Estimates suggest that by imposing caps on annual hospital activity, the PVL system reduced national hospital volume, achieving annual health insurance budget savings of 1.9% to 5.6% from 2004 to 2008.

However, this reduction in admissions led to unintended consequences. Long waiting lists developed, and patient referrals shifted from lower-tier hospitals to university hospitals and national centres. These higher-level facilities, unable to refer patients elsewhere, saw their activity levels exceed the PVL limits, resulting in uncompensated care.¹⁵³

5.5. Payment reforms

5.5.1. Use of case-mix type based reimbursement for rehabilitation care

As a general rule, DRG payments cover acute hospital care, not chronic care. However, there is an exception: in acute hospital departments, an additional rehabilitation H-DRG fee can be reimbursed alongside the acute care H-DRG fee if the patient receives acute care for skeletal muscle diseases, meets certain health criteria, and undergoes a specified combination of rehabilitation procedures for at least 7 days. However, this applies to only a small portion of hospital rehabilitation care, which is provided by hospital rehabilitation units independently from acute care and reimbursed on a per diem basis.

The willingness to enhance the efficiency of rehabilitation care, from both the professionals' and payer's perspectives, was expressed some time ago. The aim is to implement a new financing system that prioritises complex rehabilitation tasks to achieve better outcomes. Additionally, the goal is to exclude cases where only nursing care is provided.

The medical experts in rehabilitation developed treatment protocols for different functional conditions depending on the level and type of function loss. The future model (integrated or bundled rehabilitation reimbursement) aims at paying activity, independently of where the patient is treated (inpatient, outpatient or day rehabilitation hospital unit). This new model is called Rehabilitation Treatment Programme (the Hungarian name is *Rehabilitációs Ellátási Programok*, REP) and is associated with rehabilitation services provided by rehabilitation units, based on rehabilitation medical protocols.

The protocol description includes details about the indications related to diseases, functional levels, the rehabilitation interventions to be performed, their combinations, schedules, minimum quantities, required professional competencies, recommended medical units and care levels, as well as the frequency of treatment.

The new system is being implemented. The scope of rehabilitation benefits has been expanded to include the elements required for the new system.¹⁷⁷

5.5.2. Bundled payment

There are further new possibilities to integrate patient pathways as coordinated care, and it is a great challenge to support the organisation and scheduling of individual patient journeys supported with an IT platform and to develop appropriate reimbursement solutions for effective case management.

The foundations of the new reimbursement system have been laid in 1993. Since then, activity-based financing procedures have been carried out in a nationwide unified IT system, based on elementary, patient case level IT reports. The new system builds on this basis by opening new avenues of reimbursement.



These new roads will be developed by the so-called bundled payment assessing the entire care provision with evaluation of result, quality, and infection control. With this change, better quality care and practical implementation of professional guidelines can be achieved. The audit process is elevated by integrating and interconnecting IT systems. This solution eliminates problems in financing that previously arose due to the low level of control. A higher-level of professional control is possible by the use of digitalised medical protocols.

Bundled payment or episode-based payment is the reimbursement of healthcare providers (such as hospitals and physicians) on the basis of expected costs for clinically-defined episodes of care. It means that all events (general practitioner, outpatient care, diagnostics, inpatient care) of a healthcare treatment procedure are covered by a bundled payment.

Following the proposal of the Country Office of the World Health Organization Hungary (Dr. Szabolcs Szigeti and colleagues) a pilot was implemented for evaluating the introduction of bundled payments in Hungary for patients suffering from Chronic obstructive pulmonary disease (COPD). With the bundled financing method, the NEAK summarises the amounts paid for outpatient specialist, hospital and other healthcare provider services in a single average bundled payment.¹⁷⁸ As a result of the project, it was found that hospitalisations have significantly decreased, as well as the referral rate of patients who are readmitted to the hospital.

The digitalised medical protocol also helps to create patient pathways and scheduling elements of the pathway in their IT platform.

5.5.3. *Shifting from inpatient to ambulatory care*

A recurring task in the Hungarian healthcare system is to reduce the number of cases that do not require acute hospital treatment from providers. This result was only partially achieved by providing the so-called 'price harmonisation'. Price harmonisation means that regardless of the type of care – inpatient or outpatient care – reimbursement tariffs for small surgical interventions (e.g. one-day surgery) is the same. This harmonisation was partially achieved by financing one-day surgical care with the H-DRGs system.

The other solution was that a few small surgical interventions that can also be performed in an outpatient setting were reimbursed a higher tariff than earlier. In the end, a real effect could be achieved with the first method.

The transformation of the hospital landscape also served this purpose. The number of acute hospital beds decreased significantly, and the number of beds that were transferred to chronic care increased in 2007.

Another interesting feature of the Hungarian system is that the hospital reimbursement (H-DRGs based) system has been expanded to include one-day surgical care (or same-day surgery), if the conditions requiring treatment can also be provided in outpatient departments. The number of procedures eligible for one-day surgery expanded significantly, increasing from 408 in 2010 to 781 in 2019. A major policy change in 2015 removed the PVL for one-day surgeries, allowing hospitals to perform an unlimited number of these procedures without facing reduced tariffs. Beginning in 2017, hospitals received an additional 10% DRG tariff for cases managed as one-day surgeries instead of inpatient care. This incentivisation led to significant growth: the proportion of surgical cases handled as day surgeries increased from 20% in 2010 to 45% in 2019. Additionally, the percentage of eligible cases actually treated as day surgeries rose from 42% in 2010 to 80% by 2019, reflecting a marked improvement in the adoption of day surgery practices.¹⁵⁶

This also applies to anti-tumour oncology treatments (e.g. chemotherapy), which are carried out in the hospital, but a continuous hospital stay is not necessary for the patient. This means that the reimbursement fee for the same care has become the same whether the care is provided at a hospital site or in an outpatient unit with the hospital setting. This anti-tumour oncology treatment is also part of the H-DRG system. The anti-tumour oncology treatment does not usually require overnight stay.



5.5.4. Comprehensive cost measurement

A comprehensive cost measurement pilot which has already begun with a complex scope is being organised in order to know the current resource utilisation structure both in kind and in value. On this basis, H-DRG cost weights could be calculated corresponding to 'real' costs. The priority goal of the cost and price setting process is to include the significant wage increase together with other cost elements into the new cost weights and the base rate.

This survey of hospital cases is conducted at the patient case level, following the existing methodology. This approach involves documenting the interventions performed during the patient's care to determine their appropriate depth, type, and extent based on the items and quantities of the coding system used in the accounting system. Additionally, a separate measurement phase is carried out to survey the interventions in natural units of measure and value. HIS systems are utilised for data collection. It is important to note that the report on outpatient care now includes laboratory, imaging, CT, MRI, and pathology interventions for inpatients during their hospital stay. Although these data were previously deemed inaccurate, they are now used as a control data source.

The regular update of the parameters of the financing model ensures proportionality of financing, tracks price changes and the introduction of new procedures, thereby improves the fairness of financing.

5.5.5. Other issues determining development priorities in the current system

Financial and professional controls do not work perfectly in practice

In order to increase the power of the controls built into the digitalised process, more medical protocols, a professionally appropriate evidence-level development solution, and even more so a uniform digitalisation of these protocols would be needed. The lack of adequate, extended controls also significantly contributes to the financial disproportionality between service providers. Based on inspection experience, upcoding occurs in smaller or larger proportions in the reports sent to the payer.

In recent years, financing at real cost level has been a problem. One of the reasons for this was certainly the delay in the regular comprehensive price-setting update. Previously, this task was carried out regularly, as a successful survey covering a significant number of cases was carried out. Since then, in essence, only partial and individual updates have been carried out.

Even in the original financing model, strengthening the model of managed organisation of care was given a prominent role. These organisations are seen as a coordinating force for care providers, they direct the patients rational care pathway, shorten the time to appropriate care and can prevent unnecessary care. The preference for managed care organisations has already appeared as a system element but has not yet become a common solution.

Previously, based on the English model, the so-called fundholding model was highlighted, which could have prevented unjustified inpatient and outpatient specialist care incidents while adequately supporting the patient's recovery. That is why, to slow down or stop the increase in the activity of acute hospital care, a much more radical solution was finally adopted: the performance volume limits.¹⁴⁹

Physicians' salaries

For a long time, low wages were an important issue but they have now increased significantly. In 2021, there was a significant increase in physicians' salaries in Hungary: salaries were approximately tripled. The low salaries contributed to inappropriate health practices and anomalies, accompanied by illicit payment or bribes and distorted power. After the significant increase of the salaries of medical doctors, bribes were legally prohibited and strongly controlled by authorities.

The issue now arises from the fact that the substantial wage increase (nearly equivalent to the total acute care financing) is not integrated into the activity-based payment system. It means that the current H-DRG system contains the previous salaries (before 2021) of medical doctors, but the increased salaries were not included into the DRG system. The latter are reimbursed to the hospitals as a different budgetary support, unrelated to the H-DRGs.



The additional substantial wage increase effectively functions as input-based financing. It is important to note that following the COVID-19 pandemic, the focus is not on reducing hospital activity but on addressing postponed services.

Hospital debt

The debt problem has triggered a variety of measures in the system, none of which can be called an effective or definitive so far. Moving away from the former municipal approach, the hospital debt situation led to the centralisation of maintenance tasks for allegedly better management and supervision. The difficulties were compounded by the health crisis of recent years. That is why it is important to know the real resource need for adequate healthcare, regularly update the reimbursement tariffs, define the professional minimum requirements, and accordingly ensure realistic cost coverage.

Methods and databases for analysing the output and cost of healthcare should ensure that the cost effect of health management' intervention and professional provision' decisions is separated from the part of the cost that results from unavoidable external price increases or in some cases, exchange rate changes. A published example of one of these additional reimbursements is available on the NEAK website.¹⁷⁹

Reimbursement priorities and key elements for the future

Given the current state of the health sector, two key elements can be identified as foundational for achieving meaningful progress in advanced case mix and care pathways:

- Digitalised medical and financing protocols;
- A deeper digitalisation of the medical part of the information set of encounters in the National e-Health Infrastructure (EESZT). This subsystem is called the 'encounter's catalogue' section. Currently, only the event identification data is digitalised, but the information related to the disease, the intervention, and the result are uncoded data: the medical part is registered as a PDF-document.

If these two fundamental conditions are met, substantial support could soon be directed toward financing objectives that are currently constrained in their development. The ongoing reimbursement development initiatives, currently in the preparation phase, focus on refining the existing hospital case-mix system and establishing several new ones.



6. ITALY (LOMBARDY)

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6.1. Brief overview of the hospital sector

6.1.1. The Regional health system

In 1978, the Italian National Health System (*Sistema Sanitario Nazionale*, SSN) – a tax-funded, Beveridge-type public insurance scheme – was established aiming to offer universal, free and uniform health coverage nationwide, in accordance with Article 32 of the Italian Constitution. Funding was completely public based on a global budget payment system defined by local politics. This system, which had become economically unsustainable, was deeply reformed in the 1990s with the introduction of a new financing mechanism, managerial principles, hospital autonomy, and extended regionalisation.¹⁸⁰ In fact, Italy is a de-centralised state: the Constitution allows for a considerable portion of public functions to be delegated (exclusively or concurrently) to the regions. The 2001 constitutional reform further strengthened the power of regions in healthcare, classifying it as a concurrent legislative matter between the state and regions (the latter have regulation power in health matters). This is also due to the fact that the Italian territory is made up of 19 regions and 2 autonomous provinces, each differing significantly in terms of size, population, and socioeconomic status.

On the basis of the regulatory and administrative framework, *Regione Lombardia* has thus developed its own regional healthcare system (*Sistema Sanitario Regionale*, SSR) with specific features appropriate to the regional context. One of the most relevant features is that since 1997 *Regione Lombardia* has adopted a clear separation of the healthcare provider and purchaser functions: the structure of the regional health system in Lombardy is the result of three key reforms that have been implemented since the 1990s. Starting with Regional Law No. 31/1997 (which established the first local health authorities), passing through Regional Law No. 33/2009, up to the most recent health system reform in 2015 (Regional Law No. 23/2015). As early as 2009 – with a governance structure that was strengthened in

2015 – the health territorial authority (*Azienda Socio Sanitaria Territoriale*, ASST) and the health protection agency (*Azienda di Tutela della Salute*, ATS) were established. Each ASST is supervised by a specific ATS. ASSTs provide health services to the population while ATSs have as main tasks the management of contracts with health providers, and the accreditation of public and private hospitals.¹⁸¹

Regione Lombardia has established 8 ATSs and 27 ASSTs covering the entire regional territory, which is not homogeneous both in geographical and urban terms (it is sufficient to consider the presence of the metropolitan city of *Milano*, Italy's second most populous city with over 3 million inhabitants). The distribution of healthcare providers is also not homogeneous, in terms of complexity of the services provided, capacity of healthcare facilities and ratio between public and private facilities. This implies that each ATS has to know its own territory, the social and epidemiological characteristics of the population, and the accredited providers in order to guarantee the maintenance of healthcare pathways and the specificity of each territory. According to the list of accredited healthcare facilities (legally authorised to provide healthcare services), in *Regione Lombardia* there are 200 hospitals (106 public and 92 accredited private and 2 non-accredited private). If a healthcare facility is considered as an acute hospital based on the presence of an adult emergency department, in Lombardy there are 99 accredited acute hospitals.¹⁸² There are also 6 public and 14 private accredited scientific institutes of research, hospitalisation and healthcare (*Istituto di Ricovero e Cura a Carattere Scientifico*, IRCCS – some of which are considered acute care hospitals); IRCCS are under the direct control of the competent ATS. Lombardy has more than 33 000 hospital beds available (inpatient and one-day hospital admissions), 24.87% of them are in private hospitals. Given a total population of 10 019 218 residents, in 2019 in *Regione Lombardia* the hospitalisation rate was 115.1 per 1 000 inhabitants (inpatients care rate 91.5 per 1 000 inhabitants, same day care rate 23.6 per 1 000 inhabitants); the number of healthcare services provided as outpatient care was approximately 160 million.¹⁸³ Data on the volumes delivered in 2019 were taken into account as the spread of SARS-CoV-2 in *Regione Lombardia* had a significant impact on the regional healthcare system (e.g. in 2021 the number of hospital stays decreased by 17.6% compared to 2019). From 2022 onwards, great efforts have been made to catch up on



the backlog of services that had led to a burden on the phenomenon of waiting lists (already on the rise before the pandemic due to systemic shortages of healthcare personnel, stringent regulatory framework, and continuous underfunding of the SSN since the 2008 financial crisis). Lombardy has also two central health agencies, the Social and Health System Control Agency (*Agenzia di Controllo del Sistema Sociosanitario*, ACSS) and the Emergency Regional Agency (*Agenzia Regionale Emergenza Urgenza*, AREU). The role of ACSS in the regional health system is to coordinate control activities carried out by each ATS to guarantee uniformity and equity at system level. The role of AREU in the SSR is to ensure efficient regional networks for extra-hospital emergency care, transfusion activities, organ and tissue procurement and transplantation, health transport, and continuity care.

6.1.2. Financing system

The Budget Law annually determines the resources allocated to the SSN for assuring health services guaranteed by the state. Hence, the first step in the process of determining the budget available for healthcare lies with the national government which sets a total health expenditure ceiling for the SSN. In a second step, the national budget is allocated to the regions. The funding allocations are determined through allotments, which essentially outline the needs of each region and, consequently, establish the source and amount of funding. These allotments are proposed by the Ministry of Health, approved by the Standing Conference of States and Regions, and then implemented through a resolution by the inter-ministerial Committee for Economic Planning.¹⁸⁴ The allocation of resources to the regions is based on a capitation formula, including demographic characteristics (e.g., age and sex) and historical hospital expenditures. The objective is to achieve horizontal equity by matching resources with the healthcare needs of different populations. However, the formula does not incorporate other critical factors like social deprivation, education, and employment, which are influential in health outcomes, which can lead to underfunding for regions

with higher levels of socioeconomic disadvantage. Starting from 2024 balancing criteria based on mortality (< 75 years) and some socioeconomic indicators have recently complemented the capitation formula. The capitation formula uses historical expenditure for hospital care as a primary basis, ensuring that regions with a history of higher healthcare costs receive proportionally higher allocations. In a third step, each region then develops its own regional health budget using its share of the SSN, with the possibility of adding its own additional resources. The ceiling limits are monitored to ensure that total spending does not exceed the allocated budget.

Public healthcare in Italy is funded through a mix of national and regional taxes, along with contributions from citizens via co-payments for specific services. The central government allocates resources, ensuring that all citizens have access to essential health services. The regional government allocates additional resources (through regional taxes). Special arrangements exist for regions with autonomous status, allowing them to contribute independently to healthcare funding.

The regions allocate financial resources to healthcare facilities based on various parameters (such as the services provided (inpatient and outpatient); the provision of certain functions, etc.), which are then utilised by these facilities to ensure the provision of services specified in the Essential Assistance Levels (*Livelli Essenziali di Assistenza*, LEA) to citizens. The allocation of resources to healthcare facilities takes into account both passive mobility (residents seeking treatment in facilities outside their region or health authorities) and active mobility (when individuals from outside their ATS are treated). Additionally, healthcare facilities receive funding from the region based on services provided either through inpatient care (using the expected cost determined by Diagnosis-Related Groups - DRGs) or through outpatient services (using the fee schedule for specialised and diagnostic services).

SSN patients (all individuals who are covered by the Italian National Health Serviceⁱ) can seek assistance in any hospital, either public or accredited

ⁱ This includes Italian citizens and foreign residents who are registered with the SSN. While private patients (those who choose to pay out-of-pocket or have

private insurance) can also seek care at public or accredited private hospitals, the reimbursement mechanisms and mobility patterns described in the text are specific to SSN-covered patients. Therefore, 'SSN patients' are those who



private, everywhere in Italy. This results in the formation of an internal market with considerable intra-regional and inter-regional mobility. The health service provider has the right to seek reimbursement from the patient's health authority of residence. Lombardy has the second highest positive mobility balance in Italy (€ 250.9 million).¹⁸⁵

In 2022, the national public healthcare expenditure was € 130.364 million. However, the estimated need, and, thus the public healthcare funding amounted to € 124.960 million (before regional interventions). The 2022 overall healthcare expenditure was – indeed – higher, as public expense makes up 75.9%: every year private citizens spend € 38.835 million out-of-pocket. Another phenomenon is intermediate expenditure (voluntary health insurance schemes with or without cost-sharing agreements), which amounts to € 4.668 million: € 3.512 million spent by insurance companies (direct payment or total/partial reimbursement for health services on the basis of voluntary health insurance schemes signed by private citizens), € 432 million spent by non-profit institutions (provision of health assistance based on donations from citizens, public administrations or companies) and € 724 million spent directly by enterprises (direct provision or funding of medical services to promote health in the workplace for employees). In 2022, the *Regione Lombardia* public healthcare expenditure was € 21.908 million while the public healthcare funding amounted to € 21.529 million.^{186, 187}

In Lombardy, the Regional Council must approve – by 31 December of the year preceding the financial year to which it relates (e.g. 31 December 2023 for the financial year 2024) – the budget document for the allocation, management and monitoring of the financial resources. In the document the regional government annually defines the regional healthcare fund based on the resources that are transferred from the national fund (and on any additional funds of its own). In 2024, a regional health budget of approximately € 22 billion was allocated (out of approximately € 32 billion^j,

i.e. around 69% of the total allocated regional budget), which represents an increase of € 874 million compared to 2023 thanks to an agreement with the national government. The regional budget is then allocated to ATSS according to the capitation formula and regional health policies (for example, the development of healthcare facilities in rural/mountain areas) which are also annually defined and each hospital contracts the budget with its own competent ATS.

6.2. Main characteristics of the DRG system

During a period characterised by a significant increase in public healthcare expenditure, the introduction of an activity-based financing methodology represented a notably innovative departure from previously adopted approaches, effectively 'replicating' market dynamics within a public context. The remuneration system, introduced in 1995, is based on national maximum tariffs which were revised in 2012 and related to the 2009 coding system update. In Italy, over the years, four different versions of DRGs (versions 10, 14, 19, 24) have been progressively introduced, including the latest version utilised since 2009, which encompasses a total of 538 valid groups numbered from 1 to 579 (44% of which are surgical). From a theoretical standpoint, three main advantages explained the rationale and utilisation of this financing system in the Italian context: i) enhanced transparency in services actually delivered by hospitals, facilitated by clearer identification of the produced 'outputs'. Through patient classification into hospitalisation classes, distinguished clinically and homogeneous in terms of absorbed resources and production costs, known as the iso-resource system, it becomes possible to quantitatively describe hospital activity and compare different facilities in terms of length of stay, costs, and quality of care within the same DRG group; ii) increased incentives for hospitals to utilise resources efficiently, as their funding depends on the type and number of cases treated, shifting the focus to the final output of hospital

receive healthcare services under the public system and are subject to inter-regional reimbursement procedures.

^j The total regional budget (€ 32 billion) includes funding for all sectors under regional jurisdiction, such as healthcare, education, infrastructure, and

transportation. Of this, € 22 billion is allocated to the regional healthcare budget, which includes funds provided by the National Health Fund as well as additional regional resources.



activity; iii) as a combined arrangement and the primary consequence of the first two advantages, the DRG system was expected to ensure better cost-effectiveness of healthcare. This is also due to the fact that hospitals face stronger disincentives to provide unnecessary services, potentially deliverable in other healthcare settings.

In practical application, following an initial period of implementation and utilisation of DRGs in hospital settings, several authors and practitioners have raised questions about the potential unintended negative consequences stemming from the application of this monitoring and financing system. Moreover, as pointed out by the Italian Higher Health Council, the DRG classification system, as currently conceived, is not up to date to adequately describe the healthcare situation, both from a clinical and an economic/financial point of view. The definition and update of a national hospital services valorisation system that responds to the specific needs of the Italian hospital reality should be a fundamental tool for an effective healthcare planning.¹⁸⁸

6.2.1. DRG system: introduction and evolution

Until the early 1990s public and non-profit hospitals operated on a global budget financing system: funding was primarily calculated on historical expenses, regardless of individual hospital activity. In this system, hospitals had little incentive to increase efficiency or optimize service delivery because their funding was not directly linked to their performance or patient care activities. For-profit hospitals were reimbursed on an analytic approach: a detailed calculation of costs was performed. Unlike the global budget used for public hospitals, this system involved a more granular evaluation of the hospital's activities. Each year, the government and the for-profit hospitals negotiated a predetermined budget that took into account expected service volumes, specific costs, and tariffs for different types of procedures. This approach allowed for closer monitoring and control over both the prices and the number of services provided, ensuring that costs aligned with the agreed budget and maintaining financial oversight. The compensation for medical specialists operated on a fee-for-service model. The annual health budget grew dramatically. The 1992 reorganisation of the SSN brought about a profound revision of the system adopted: regions (through the Local Health

Authorities) became the commissioners of healthcare services that were delivered by an accredited public or private entity. With the first systematic reform of the SSN and with the introduction of the first quasi-market mechanisms, there has been a shift from an *ex ante* financing system (with *ex post* replenishments to cover deficits) to a system of prospective payment, based on provided services (with DRG codes and tariffs associated per single episode of hospitalisation). The shift to a DRG-based financing still involved *ex ante* determination of the tariff rates, as DRG tariffs are set in advance for each type of hospitalisation episode. What changed was the basis for reimbursement: previously, funding was calculated using historical costs and adjusted after the fact (*ex post*) to cover any deficits. With DRGs, the tariffs are predefined (*ex ante*), but payment is made based on the actual services provided, meaning that hospitals are reimbursed only for the treatments they deliver according to these pre-set tariffs, rather than simply receiving a lump-sum budget allocation.

The objective of this framework was not only to ensure greater equity and consistency with the health planning objectives in the allocation of resources, but also to orient the system towards greater efficiency, by introducing a mechanism capable of controlling the production capacity of the providers.¹⁸⁸

Under paragraphs 1 and 4 of article 8-sexies of Legislative Decree 502 of 30th December 1992, it is stipulated that inpatient and one-day hospital admissions are remunerated according to predefined rates. Under paragraph 5, these rates are determined – by decree of the Ministry of Health – based on the standard costs of services provided by selected facilities (according to efficiency, appropriateness and quality of care criteria). Given this legislative background, the DRG system was identified as the applicable reimbursement system in Italy by the Ministerial Decree of 15 April 1994. That same year eight healthcare institutions with sufficiently validated accounting accuracy were identified, data were collected, and costs were analysed. This process led to the issuing of the Ministerial Decree of 14 December 1994 which confirmed the adoption of the HCFA-DRG v.10 system for the classification of hospital admissions and determined the first national tariffs applied as of 1 January 1995. In 1997, the Ministerial Decree of 30 June 1997 updated the national tariffs as well



as the values of the relative weights associated to each DRG. The same decree confirmed the autonomy of each region in determining the local DRG reimbursement. The possibility of introducing dedicated financing methods based on healthcare provider, care complexity and/or volume of medical services provided was also included in the decree. In 2001, Essential Assistance Levels (*Livelli Essenziali di Assistenza*, LEA) were identified, which are the healthcare services that must be guaranteed and provided by all SSN providers nationwide; it is also important to emphasise that healthcare services not covered by the LEAs are not reimbursed according to the DRG mechanism but have to be paid out-of-pocket by patients. Under Law 311 of 30 December 2004, it was established that the national tariffs must be considered as the maximum reimbursement value for the remuneration of services to plan the national health budget; if exceeded, the additional cost must be covered by the regional budget. The latest national regulation on DRG reimbursement has been advanced in 2012 with the Ministerial Decree of 18 October 2012. The update of the national tariffs was based on a group of 41 public and private hospitals of various sizes (121-350, 351-600 and over 600 beds) and from 7 out of 20 regions (Lombardia, Veneto, Emilia-Romagna, Liguria, Umbria, Puglia, and Sicilia). These hospitals were selected by their respective regions and each selected hospital participated in the study providing its own activity and costs data for the financial year 2009 (collected according to a uniform methodology). Despite the regulatory provision for triennial updating, the 2012 maximum tariffs are still in force to this day.

Hospital admissions assigned to each DRG^k are remunerated according to four distinct rates:

- one-day admissions for patients not deceased or transferred to other hospitals (one-day stay, *regime di ricovero in day hospital*): it represents the reimbursement rate for all hospitalisations lasting one day or less, including day hospital procedures.
- standard admissions within a predetermined length of stay (ordinary admission, *regime di ricovero ordinario*): it represents the reimbursement rate for all admissions within the low – high trim point period.
- admissions with a longer duration compared to the regional DRG predetermined length of stay (high trim point): it represents the reimbursement rate for all admissions with a duration exceeding the high trim point, it consists of the DRG tariff with the addition of a daily rate (lower than the same day care tariff).
- admissions with a length of stay exceeding one day but lower than the trim point identifying anomalous admissions: when identified by the regional government, all admissions with a duration below the low trim point are reimbursed on a per diem basis (with a tariff lower than the same day care tariff); when not identified by the regional government, the low trim point matches with the second day of admission (admissions are reimbursed the one-day admission tariff).

The high trim point identifies the predetermined length of stay for regional reimbursement. The national threshold value is determined through the identification of the number of days which significantly deviates from most other observed length of stays, taking into account the first and the third quartile of the length of stay distribution.¹⁸⁹ The threshold (high trim point) is not necessarily the same for all regions. The national threshold value is defined using a standardised formula based on the distribution of LOS data

^k The number of tariffs associated with each of the 538 DRGs can vary based on several factors, including length of stay, complexity, and type of facility (public or private).



(e.g., first and third quartile). However, regions have the autonomy to adopt or adjust these thresholds to reflect local conditions or healthcare policies. This means that while the methodology for calculating the threshold is consistent at the national level, the actual values can differ between regions, depending on regional regulations and specific healthcare strategies.

The initial system was based on the Italian version of the ICD-9-CM manual under the HCFA-10 version. Since 1995, there have been three updates of the ICD-9-CM manual (in 1997, 2004, and 2008) and two DRG system updates (CMS-DRG v.19 in 2006 and CMS-DRG v.24 in 2009). The slow-paced maintenance of the DRG-related national tariff contributed to the inter-regional variability of existing tariff systems in relation to volume and expenditure regulation systems.¹⁹⁰

Consistent with the goals of decentralisation within the SSN, regions were granted autonomy to define their own fee schedules, which served as significant policy tools to incentivise hospital appropriateness. In a more detailed manner, regarding the pricing of hospital services, regions have the opportunity to:

- a. Adopt the tariffs indicated by the Ministry of Health, with the option to modify them (either increasing or decreasing) by specific percentages, potentially differentiated based on the type of admission/facility (recognising lower tariffs for providers with lower levels of organisational and clinical complexity).
- b. Employ the weighting method, thus defining their own regional tariffs while maintaining national weights and only varying the value per DRG. In other words, constructing standard production costs (personnel costs, costs of consumable materials and equipment, general unit production costs) attributable to specific DRGs and then reconstructing tariff values for all other DRGs, applying the appropriate relative weighting system indicated by the Ministry.
- c. Opt for the analytical method, meaning to establish their own regional tariffs based on cost analyses conducted on facilities within their own territory, through the estimation of standard production costs across a series of hospitals, adjusted for costs attributable to outpatient services,

and subsequently assigning each DRG through specific algorithms, taking into account the observed case mix.

Furthermore, realistically acknowledging the inapplicability of the DRG model to all types of organisational functions in a first phase, the regions had the possibility to modulate the financing system with a combination of the two previous financing criteria (historical expenditure and production volumes). According to different timing and modalities, the regions adopted the new DRG system also by integrating it with function-based financing principles (e.g. to recognise the need to remunerate specific activities regardless of services rendered, such as the emergency departments – see section 6.3) and rebalancing mechanisms (to mitigate the redistributive effects of the new financing system).

6.2.2. The current DRG system in Italy

The Italian DRG system (CMS-DRG v.24) includes 538 homogeneous admission classes which are grouped into 25 Major Diagnostic Categories (MDCs) encompassing all diagnoses that can be attributed to a single organic system or a specific etiology. The coding handbook and the maximum reimbursement rates are determined at the national level, but economically stable regions are given the power to modulate the maximum DRG tariffs (yet remaining within the maximum national healthcare spending ceiling (cf. section 6.1.2), otherwise excess costs are borne by regional treasuries). This flexibility is granted to ensure that regions with better financial health can optimise healthcare service costs while maintaining overall budgetary discipline. For regions not meeting these criteria, the tariffs set at the national level are mandatory.

The latest update of the Italian version ICD-9-CM enlists 12 432 diagnoses and 3 733 medical procedures (including surgical procedures), which can be traced back to a specific DRG. On one hand there were positive effects on the entire health system in terms of reducing the length of hospital stays, increasing the complexity of cases treated in hospital admissions and gradually shifting less complex cases to day hospital and outpatient settings, etc. This shift helps ensure that less complex cases are managed in day hospitals or outpatient settings, thereby freeing up hospital resources for patients who require intensive or specialised care. In other words, hospitals



are being used more efficiently by prioritising complex cases, which is in line with the goals of healthcare reform to optimise resource allocation and improve overall system efficiency. On the other hand there are significant critical points, primarily linked to two factors: i) varying administrative and institutional capacities of the regions in implementing models that progressively diverge from traditional criteria (historical expenditure) and adopt a full output-based logic ii) and a substantial misalignment between the objectives pursued by national and regional tariffs. At this regard, it is important to emphasise the significant delays of the central system in updating tariff values: this is why DRGs, from a flexible tool available to the regions, have become a constraint on regional autonomy in defining tariff policies.¹⁸⁸

The DRG tariff is an all-inclusive remuneration, based on the average treatment profile associated with the category of admission. It includes 'standardised' facility costs, remuneration of all medical professions (physicians, nurses, physiotherapists, etc), consultations, diagnostic tests, operating theatre, daily consumption of common drugs, room and board, etc. Outpatient care is based on a fee-for-service system, except for consultations during hospitalisation and medical examinations provided 30 days before and/or after hospitalisation (which fall under the DRG tariffs). Pre- or post-hospitalisation services must be closely and directly related to the scheduled or realised hospitalisation. Additionally, these services must be provided to the patient by the same inpatient facility and are typically conducted within 30 days before or after the hospitalisation. Prosthetic aids and medical devices provided outside a hospitalisation episode are reimbursed on a national tariff base. Regions can identify services that are financed through direct payment (non-priceable functions, as described below in section 6.3).

The DRG specifications are based on protocols and criteria which have been established to ensure accurate classification of patients and costing of hospital services. These include specific diseases, specific medical or surgical procedures, complex medical conditions and/or pregnancy and childbirth. Each DRG is associated with a pre-determined tariff, which represents the estimated mean cost of treatment for the group of patients assigned to that DRG code. While the length of stay is the key decisive factor¹, further analysis and adjustments are usually considered in assessing DRG tariffs. The elements analysed are: standardised incidence of overhead costs per facility; hourly cost of operating theatres; hourly cost for the functioning of the haemodynamic units; cost per day of care activities in intensive care units; cost per day of care activities for the different specialties; cost of implanted devices; daily consumption of drugs (excluding those reimbursed through the F-file, e.g. innovative drugs – see section 6.3, Function 11 'Drugs management'); hotel cost per day of hospitalisation; average cost of diagnostic tests per inpatient case.

6.2.3. *The DRG system in Lombardy*

Italy has witnessed a gradual evolution towards a system of regional holdings: the shift from a competitive logic to a collaborative and centralised planning logic constitutes an extremely relevant transformation.¹⁹¹ In the regional contexts, there has been a progressive specialisation and differentiation of healthcare providers, in terms of mission and activities, making them – in some aspects – mutually complementary, less bound by a competitive logic. In this context, the DRGs remain as a clinical governance tool and as a metric for evaluating the performance of the individual departments within the same facility (in fact contravening the main purpose for which they were originally conceived, i.e. to measure the cost-effectiveness of the hospital as a whole).¹⁸⁸ As it was not possible to adopt a different financing system other than the DRG system provided at the national level, the regional government progressively introduced coding

¹ The average LOS is used to establish the standard DRG tariff: the LOS is the average duration used for calculating the expected cost of treatment under normal conditions (in order to determine the national/regional DRG tariff).



rules and additional reimbursement requirements. These adaptations served to recognise a higher economic value for up-to-date procedures and devices not yet listed in the official codifications. Other intended aims were to raise the tariffs of low-yielding specialties (paediatrics, obstetrics, psychiatry), to increase reimbursements for clinically appropriate day-surgery procedures, and to introduce new values in the calculation of the thresholds for length of stay. Over a 20-year period, the regional government has – on several occasions – deliberated changes to DRG tariffs which are based on a regular analytical survey of production costs,¹⁹⁰ focusing particularly in recent years on endoprostheses and high-cost devices.

The most recent comprehensive update of the entire regional tariff sheet took place in 2014. Analytical (cost) accounting data from public facilities and from 75 different private hospitals – for the financial year 2013 – were collected and processed. Cost analysis was managed at the regional level, without direct involvement of organisational representatives and/or healthcare stakeholders. From the analysis, which covered more than 95% of hospital expenditures, some facilities were excluded (those with incomplete cost accounting or otherwise inconsistent with the reclassification of the financial statements). The data were processed in relation to the individual departments, showing the differences between direct costs incurred and directly attributable revenues. A ‘standard’ percentage of overhead and facility costs was identified (16% of total expenses).

Some cost elements represent fixed costs that are generally independent from the duration of the hospital stay (cost of the operation, cost of the devices, minimum diagnostic set), other elements can be estimated for each individual case (cost of the days in intensive care units), others finally contribute to the increase in cost as the duration of the hospital stay varies (consumption and assistance). The association of certain codes in the SDO (*Scheda di Dimissione Ospedaliera*) flow – a standardised hospital discharge form used to record clinical and administrative data – can change the classification of a hospitalisation episode from uncomplicated to complicated, resulting in a higher DRG reimbursement. For more details on the SDO and its role in coding hospital episodes, please refer to

section 6.2.4. The 2015 tariff scheme includes about 200 DRGs with a higher tariff (mainly in the areas of cardiac surgery, thoracic surgery, orthopaedics, gynaecology) and 270 DRGs with a lower tariff than the national tariff (the other DRGs are aligned with the national tariff). The aim was to associate each DRG with a tariff proportional to the observed costs incurred, while limiting excessive profit margins recorded by hospitals, so the changes shifted the overall reimbursement expenditure only by a small amount.¹⁹² The last generalised increase in tariffs for higher costs incurred by healthcare providers was made in 2020 (1.95% increase in all reimbursement rates, excluding DRGs identified by the regional government as being at risk of non-appropriateness).

Regione Lombardia has pursued the political will to keep tariffs identical between different types of providers (public and private hospitals, small/medium/large hospitals). From 2015 onwards, taking advantage of the regulatory framework to modulate DRGs, the regional government introduced further classifications within each DRG to differentiate the provided healthcare services and the different associated costs. Key examples include:

- Differentiation of reimbursement for total and subtotal mastectomy procedures (based on the sentinel lymph node examination, the performing of radical lymphadenectomy, and the histological confirmation after radical lymphadenectomy).
- Sub-codification based on birth weight for the DRG ‘severely immature or respiratory distress syndrome infants’ (treated in a neonatal intensive care setting). Previously, any hospitalisation under this DRG was reimbursed a single rate (€ 18 259). With the modification, reimbursements were divided into three classes (weight at birth < 1000g – € 55 000, 1000g ≤ weight at birth < 1750g – € 28 000, weight at birth ≥ 1750g – € 11 000).
- In 2019, the cost of implantable endoprostheses was separately refunded from the DRG tariff and a purchase cost recognition was implemented (which ended in 2021). Since 2022, endoprostheses are included in the DRG with different codifications: the information obtained after the cost analysis was used to increase the tariffs to



ensure the economic sustainability of performed surgical procedures. The endoprosthesis detection flow called SDO4, used for cost analysis, is monitored to reassess the tariff if necessary; this is possible because it extracts the direct cost and highlights significant deviations from the tariff reimbursement. The SDO4 flow especially allows the identification of new devices that were not present in the DRGs outlined 20 years ago (e.g. cochlear prosthesis; transcatheter aortic valve implantation; interventional radiology) or to stratify costs when there are very different types of interventions within the DRG with widely differing average resource consumption (e.g. DRG 518 represents all percutaneous cardiovascular interventions without stent insertion in the coronary artery without acute myocardial infarction and includes auricle repair, ablation, electrophysiology, etc).

- Also in 2019, the reimbursement for spinal surgery (especially arthrodesis surgery) was revised as the overall volumes were

increasing, with reference to a large and diverse caseload. In-depth studies were carried out, also with clinical experts, in order to properly value the different complexity of care and clinical benefits. Reimbursement was differentiated according to the presence or absence of: spondylolisthesis; spinal deformities; tumours; infections; injuries.

- The last post-acute rehabilitation tariff update took place in 2022. In line with previous regional regulatory provisions, the reimbursement rate for the territorial rehabilitation area (outpatient care) is disbursed on a per diem basis according to a regional coding based on: setting (inpatient, outpatient, day hospital - individual or group rehabilitation); intensity of care; age (elderly, adults or minors). A rehabilitation DRG classification for hospital care is currently being discussed at the regional level.

Table 23 – Survey on revenues of 9 health territorial authorities (Azienda Socio Sanitaria Territoriale, ASST)

Revenues	ASST 1	ASST 2	ASST 3	ASST 4	ASST 5	ASST 6	ASST 7	ASST 8	ASST 9
Hospital admissions (DRG tariffs)	23.2%	31.9%	27.6%	33.8%	28.5%	26.3%	43.9%	30.2%	30.7%
Outpatient care (Fee-for-service)	16.7%	12.4%	14.4%	8.1%	12.4%	9.2%	17.6%	11.2%	19.4%
Pharmaceuticals (Territorial and File F hospital drugs)	3.2%	9.0%	9.7%	11.5%	17.8%	13.0%	4.5%	18.1%	4.4%
Remuneration per function	7.5%	8.1%	5.7%	2.6%	6.9%	3.6%	6.5%	5.4%	6.0%
Territorial care (Residential care, home care, GPs, etc.)	5.3%	3.1%	3.7%	0.4%	2.8%	2.8%	4.4%	1.3%	4.3%
Regional funding and rebalancing	31.2%	23.1%	26.0%	21.9%	19.2%	27.5%	7.4%	19.7%	24.1%
Interregional mobility (Nationally agreed DRG tariffs^o)	3.1%	2.0%	1.3%	8.5%	4.3%	6.9%	1.7%	2.8%	0.7%
Other revenues (Institutional activities, etc.)	9.9%	10.5%	11.5%	13.2%	8.2%	10.8%	13.9%	11.3%	10.4%
Total*	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: CERGAS SDA Bocconi

* Some percentages deviate very slightly from 100% due to rounding off

^o For interregional mobility, the reimbursement is agreed at national level to avoid regional differences in DRG tariffs



Acknowledging the fact that the DRG model is not applicable to any type of activity provided by a healthcare facility, the regions have also the power to modulate the combination of financing by volume (per DRG – inpatient care / fee-for-service – outpatient care) and remuneration per function. As stated in a report prepared by the Italian Higher Health Council,¹⁸⁸ *Regione Lombardia* is the Italian region that predominantly utilises DRGs compared to the per capita criterion, which, on the other hand, is largely relied upon by other regions. The document contains an analysis – elaborated by the Centre for Research on Health and Social Care Management (CERGAS), Bocconi University, Milan – based on the 2019 financial statements of a pool of 9 ASSTs (see Table 23) which shows the revenues as a percentage of total revenues, reclassified according to Lombardy healthcare funding. What can be inferred is that there is high variability – within the sample – in terms of productivity between one public provider and another. There is considerable variability in inpatient and outpatient care activities offered by the ASSTs, which weigh on total revenues from a minimum of 35.4% (ASST 6) to a maximum of 61.5% (ASST 7). The same variability is observed in regional funding (remuneration per function, regional funding for strategic health objectives/projects, rebalancing funding) which weigh from a minimum of 7.4% to a maximum of 31.2% of total revenues; an effective balance of the ASSTs financing is guaranteed by an explicit repayment by the Region through the allocation of additional rebalancing funding. Based on data from the budgets of the eight ATSS, the share of DRG payments in total healthcare-related payments for hospitals in Lombardy is approximately 30%.

6.2.4. Medical data

Information regarding patient characteristics (name, surname, place and date of birth, gender) can be found through a unique code printed on the health insurance card. Given that not all hospitals have implemented an integrated computerised information management system, previous clinical records could be retrieved only with the patient's cooperation. Although in recent years the electronic health record (*Fascicolo Sanitario Elettronico*, FSE) has been introduced nationwide, the provision of information in the health database is still compartmentalised at the regional level.

After discharge, hospitals are required to fill a discharge record (*Scheda di Dimissione Ospedaliera*, SDO) which contains information on patient characteristics, diagnoses, co-morbidities, procedures, complications at admission, and length of stay. Data contained in the SDOs are monthly sent to the Region. This informative flow (SDO flow) involves all public and private hospital facilities. The codification of diagnoses and procedures contained in the SDO flow (along with length of stay and complications arising on admission) is used by the Region (and the competent ATS) to determine hospital reimbursement through DRG tariffs.

The information to be conveyed according to the SDO flow is standardised at national level, as it is identified by ministerial decrees (the last update was made by the Ministerial Decree of 7 December 2016) and follows shared guidelines for the compiling and coding of personal and administrative information (the last update of the guidelines dates back to 2008). The Ministry of Health recognises the uniformity of the information contained in the SDO flow as an important objective for its increasingly relevance for management, planning and epidemiological aspects.



6.3. Overview of exclusion mechanisms and their payment method

Since 1992, legislation established two forms of financing: reimbursement per DRG and remuneration per function. The latter is considered more functional in financing healthcare activities that are not subject to predefined volumes. The main functions identified at national level are: emergency departments; organ transplant; intensive care; teaching functions. National legislation provides that remuneration per function must be limited to 30% of each healthcare facility financing. An analysis carried out for the period 2016-2018 shows that in Lombardy discretionary funding (remuneration per function, regional funding for strategic health objectives/projects and rebalancing funding) burdened on the financial budget 24.6% in 2016, 24.7% in 2017 and 25.7% in 2018 of the entire ASSTs financing on a regional basis. While overall values were kept below the 30% threshold, an in-depth investigation shows variability at the level of each ASST. Of all ASSTs, 6 exceeded the threshold in 2016, 8 in 2017, and 9 in 2018 (of which 2 reach 38%).¹⁹³

The Lombardy Regional Council has identified 23 functions,^{194, 195} 14 of which are directly connected with hospital care. These functions can be further subdivided in exclusion of specific departments, exclusion of specific products or services provided, and exclusion of specific groups of patients. Functions were also identified based on assessments of: the degree of complexity and the organisational requirements to provide certain types of care (e.g. emergency public network), cost-accounting assessments of loss-making departments (e.g., paediatrics), economic assessments of time-dependent networks (e.g., stroke or acute myocardial infarction). Some functions are not reimbursed by DRGs, others are but also receive additional funds.

Departments

- Function 1 – Emergency departments

The regional government has identified this function due to its high consumption of resources and high variability. Excluding radiology and laboratory diagnostics, the direct costs of the emergency public network alone amount to € 315 million against revenues of € 160 million. As the number of activities increases, expenses grow more than revenues. Therefore, there are increasing losses as the organisational complexity and size of the facilities increase. Hospitals are reimbursed a predetermined tariff based on the level of the emergency department. A higher payment is provided for rural or specialised hospitals (e.g., cardiological or orthopaedic emergency room). An additional tariff is added based on volume of care.

- Function 2 – Stroke units

The regional government has identified this function due to its sub-intensive setting (a neuroradiology unit is also requested) and high consumption of resources. The number of stroke units that should be activated in Lombardy is between 33 and 67 units (42 in 2019) with an overall annual loss of more than € 25 million per year. Hospitals are reimbursed a fixed tariff, calculated on a 5-days period, on top of the DRG tariff.

- Function 3 – Trauma centres

The regional government has identified this function due to its high consumption of resources and high variability. The organisational standards of the hospitals in the trauma network are strongly integrated with those of the emergency public network and they are usually costlier. Hospitals are reimbursed a predetermined tariff based on the trauma centre complexity level.

- Function 7 – Regional emergency centres (poison centre, burn centre, etc.)

The regional government has identified this function due to complexity in defining the necessary resources for proper functioning of the



emergency centres. These are essential services that need to be concentrated in very few centres, always accessible by the emergency public network, in order to achieve higher quality at an affordable cost. Departments are reimbursed following the annual analytic cost reporting, with a full reimbursement of costs.

- Function 10 – Relevant regional centres (tuberculosis, tumours, etc.)

The regional government has identified this function due to complexity in defining the necessary resources for proper functioning of the regional centres. Departments are reimbursed following the annual analytic cost reporting, with a full reimbursement of costs.

- Function 13 – Occupational medicine

The regional government has identified this function due to its wide variability in services provided (medical examinations, on-site visits, inspections, etc). Departments are reimbursed a predetermined tariff for running costs. An additional tariff is added based on the number of supervised workers (per capita) and volume of care.

Products/services

- Function 4 – STEMI treatment

The regional government has identified this function due to running costs of the medical team and coronary care unit. The DRG classification does not provide a tariff differentiation for cases with a major cardiovascular disease treated under the STEMI emergency care pathway. Hospitals are reimbursed based on volume of care.

- Function 5 – Extracorporeal life support

The regional government has identified this function due to maintenance, transport, and running costs of equipment and the technical team. ECMO treatment usually results in an increased cost of around € 45 000 per patient for increased survival and a better quality of life, but these costs are only partly covered by current tariffs. Hospitals are reimbursed a predetermined tariff per active equipment.

- Function 6 – New-born care

The regional government has identified this function due to an inadequate remuneration by the current national tariffs compared to the need of investing in safety and prevention. It must further be acknowledged that the function is concentrated, by regional planning, in a limited number of hospitals that bear all the costs. The rapid deployment of trained medical teams and new-born transfer were also considered. Hospitals are reimbursed a co-participation fee for running costs.

- Function 11 – Drugs management

Although the cost of drugs is reimbursed by the DRG tariff, the regional government has identified this function due to partial coverage of the higher costs incurred for management-related charges of some drugs (e.g., hospital drugs, innovative drugs). Hospitals are reimbursed following an annual analytic reporting of pharmaceutical forms, also known as the 'File F'. The File F is the information flow of drugs directly dispensed from healthcare facilities outside the hospital setting according to the Italian drug authority (AIFA)'s indications. This may include: innovative drugs; drugs authorised outside the national territory; high-cost cancer therapy; drugs for rare diseases; drugs dispensed directly by the medical facility at the end of a hospital stay (limited to the first course of treatment).

- Function 14 – Organ transplant

The regional government has identified this function due to an inadequate remuneration by the current national tariffs. Hospitals are reimbursed a predetermined tariff to cover donor enrolment, organ removal, transport, remuneration of the medical team.



Patients groups

- Function 8 – Minor patients

The regional government has identified this function due to an inadequate remuneration by the current national tariffs (which are 40% lower than costs). Costs usually amount to € 200 million against tariff revenues of € 130 million; the negative economic result is therefore influenced by the public duty to ensure an adequate territorial distribution even with a relatively low number of admissions. Resources are allocated according to the complexity of the patient management and based on the department's characteristics (e.g., highly specialised paediatric department).

- Function 9 – Elderly patients

The regional government has identified this function due to a physiological longer hospitalisation of older patients (2.5 days on average for people over 75 years old). Hospitals receive compensation for reduced revenues: the comparison is made between observed and expected average hospital stays for the two groups of admissions defined according to the age of the patients (<75 years and ≥ 75 years). Up to a maximum of 7 days (countable days) are reimbursed according to a daily tariff.

- Function 12 – HIV-positive people drugs management

The regional government has identified this function because the periodic monitoring of therapy is seen as similar to an outpatient care pathway. Hospitals are paid a fixed monthly remuneration per capita (equal to an outpatient visit payment).

Research activities in IRCCS and training for healthcare professions are also excluded (Functions 15 and 16), the former directly financed by the Ministry of Health, the latter financed by *Regione Lombardia* (depending of the number of enrolled students).

6.4. Control mechanisms

6.4.1. The budget negotiation (ex-ante mechanism)

Every year *Regione Lombardia* allocates the regional healthcare budget (as reported in section 6.1.2) and defines the planning document of the SSR (as per budget document, the document must be approved the year before to which it relates – approval in 2023 for the 2024 rules). This includes the rules for financing, negotiating, and contracting the budgets assigned by each ATS to healthcare providers in the regional territory. In the 2024 rules, it is stated that budgets must be defined on a historical basis (starting from the values identified in contracts signed during the first half of 2023) and must take into account the constraints imposed by the national regulations on the subject of limiting public healthcare spending. The regional healthcare budget sets a spending ceiling for the allocation of resources, but there can be adjustments based on specific needs or circumstances, such as unexpected increases in demand or changes in national regulations (e.g. during the COVID-19 pandemic). The budget cap is primarily defined per healthcare provider (e.g., hospitals, outpatient centres) rather than for individual service lines, such as hospital care.

The negotiation procedure set out in the 2024 rules provides a deadline for signing the final contract (30 April 2024). The contract outline and budget sheets are going to be updated in 2024. The contracted budget refers to all services delivered by the same healthcare provider (with the exception of medical services to foreign citizens, which are regulated by specific legislative provisions). The contract may be subdivided by lines of activity (in particular: hospital care activities; outpatient services; sub-acute care activities; disease-specific networks; etc). For accredited private providers only, two distinct spending caps are identified within the different lines of activity: services provided to *Regione Lombardia* residents and residents outside the regional territory. Payment of healthcare services for out-of-region residents is transferred by the region of residence according to a nationally agreed tariff: since this tariff is usually lower than the DRG reimbursement granted by *Regione Lombardia*, the regional government has provided for a small tariff reduction in order to balance costs (for the region) and revenues (for the provider).



The contract outline regulates the relationship between the ATS and the accredited provider (public or private) regarding the provision of healthcare services on behalf of the SSR. The contract stipulates that the services must be organised to guarantee continuity of care throughout the year (scheduling the activity and adjusting the production capacity to match the assigned budget). Furthermore, the contract provides that no reimbursement will be due for services provided in excess of the assigned budget or for services provided in the absence of regional accreditation requirements. The provider agrees to the remuneration system, the control mechanisms, the sanctions regime and accepts to comply with waiting times established by *Regione Lombardia*. ATS makes monthly payments on the basis of the services correctly reported in the regional information flows (according to the terms established by the regional government). Penalties for non-compliance are in place, after written notification by ATS, both in terms of reduction of the assigned budget (from 0.5% to 2%) and in terms of suspension of monthly payments (from a minimum of 3 to a maximum of 12 months).

To this day, the contract has been based on the determination of providers' budget caps. Minimum or maximum volumes of healthcare services to be provided have never been systematically taken into account. With the spread of SARS-CoV-2 and the increase in waiting lists, in 2024 rules *Regione Lombardia* has included the quantification of minimum volumes to be provided for the following healthcare services: first visits; ultrasound scans; endoscopies; CT/MRI; diagnostics; oncological screening. Since 2022, accredited private hospitals' budgets include a variable quota (7%) for waiting lists reduction and for the provision of specific services identified by the competent ATS on the basis of the facility (single-speciality centre, small hospital, general hospital, etc – also taking into account the development potential of each one). Instead, the negotiation of specific services and challenging targets for public providers takes place at the regional level. Each hospital facility can autonomously organise the volumes of activities to be delivered (see Table 24 for a brief overview of annual financing rules decided by the regional government).


Table 24 – Brief overview of annual financing rules

Revenues	2019	2020	2021	2022	2023	2024
Hospital care activities	Historical (same as 2018)	Historical (same as 2019)	Historical (same as 2019)	Historical (same as 2019)	Historical (same as 2019)	Historical (same as 2023)
Outpatient services	Historical (same as 2018)	Historical (same as 2019)	Historical (same as 2019)	Historical (same as 2019)	Historical (same as 2019)	Historical (same as 2023) + 1%
Sub-acute care activities	----	----	----	Historical (same as 2021) + increased activities	Historical (same as 2022) + increased activities	Historical (same as 2023) + increased activities
Disease-specific networks	----	Historical (same as 2019)	----	Historical (same as 2020)	Historical (same as 2020)	Historical (same as 2023)
Other indications	Regional pilot (2 ATs) for the financing of outpatient services (to meet maximum waiting times)	Single budget experimentation (for regional and out-of- region patients)	<i>Regione Lombardia</i> , in view of the epidemiological context, provided for the continuation of the strengthening of hospital and prevention activities against SARS-CoV-2	Differentiated budgets based on regional residency (accredited private providers)	Differentiated budgets based on regional residency (accredited private providers)	Differentiated budgets based on regional residency (accredited private providers)
	Budget modulation based on performances (+/- 1%)	Regional extension of the financing of outpatient services (to meet maximum waiting times)		Variable quota (7%) for waiting lists reduction	Variable quota (7%) for waiting lists reduction	Variable quota (7%) for waiting lists reduction
	Budget adjustment possible if external causes lead to an increase in activities of (at least) 5%	Budget modulation based on performances (+/- 0.5%)		Outpatient tariff regression	Outpatient tariff regression	Outpatient tariff regression
				Hard limit for budget overrun (except public providers)	Hard limit for budget overrun (except public providers)	Hard limit for budget overrun (except public providers)

when “----” no clear information is stated in the rules



For hospital care, services are reimbursed at 100% up to the allocated budget (according to regional residence, if applicable). Once the budget is exceeded, provided services are no longer reimbursed. For outpatient care, the historical budget is the basis of the so-called '97%' budget. Hospitals are reimbursed up to 106% of provided services: full reimbursement up to 97% (previous year's outpatient budget); between 97% and 103% a maximum rate regression of 30% (60% for the laboratory analysis branch) is applied; between 103% and 106% a maximum rate regression of 60% is applied; above 106% no remuneration is guaranteed.

If a healthcare provider does not use its entire contracted budget, the ATS may shift these resources in the last quarter of the year to other providers (public to public or private to private) up to a value of 10% of the budget of the individual provider involved. This strict, top-down approach based on historical expenditure guarantees that the financing system does not derail the macro-level budget. However, setting a fixed budget also leads to problems in the provision of healthcare services: a small increase in high-reimbursement procedures (e.g. bone marrow transplantation) may have a significant impact on the allocated facility budget; in a balanced budget perspective, an increase in a few high-reimbursement procedures may lead to a reduction in many low-reimbursement procedures. This can lead to waiting lists that are difficult to solve in such a constrained mechanism. However, it is important to emphasise that the phenomenon of waiting lists is complex and includes many variables not always related to the direct financing of services (e.g., emerging needs of the population; accreditation mechanisms for new health facilities; availability of healthcare personnel; regular review of waiting lists; etc).

6.4.2. Control activities (ex-post mechanism)

Before the Lombardy Region introduced the self-checks described in the paragraph below, inspections were carried out in a targeted manner by the Local Health Authority (ASL), based on criteria defined by the Regional Government Resolutions (DGR) that have evolved over the years. Since 2015, the Lombardy regional government has introduced a mechanism of systematic controls managed by ATSs. Since 2022, the ACSS plays a coordinating role with respect to control functions already exercised by ATS.

The ACSS develops verification systems that favour ongoing control methods over ex-post controls; it evolves the control system from a focused model with bureaucratic obligations and sanctioning aspects, towards intelligence-based approaches on data analysis, on development of new control spaces and innovative ways of sampling the activities; it guides checks to increase effectiveness and efficiency of controls from a preventive rather than sanctioning perspective. Every year the regional government issues a document listing the control mechanisms to be used in the following calendar year.

Control activities are usually based on the verification of 12.5% of the hospitalisation in each ATS, with the following methodology:

- 6% referring to generic congruence and appropriateness checks on the performance of hospitalisation, selected with targeted sampling methods;
- 3.5% referring to self-monitoring activities of generic congruence and appropriateness on hospitalisation services, carried out by the providers and subject to verification of concordance by part of the ATS;
- share of up to 3% referring to self-monitoring of the quality of clinical documentation carried out by the providers, selected using random sampling methods and subject to verification concordance by the ATS.

In addition to ordinary checks, particular attention is paid to specific criteria or clinical areas annually recognised by the regional government (especially concerning the 108 DRGs with a high risk of inappropriateness, for 2024 plastic surgery and stroke care are of special interest); each ATS can also autonomously identify specific DRGs which are of particular interest for health politics (e.g. the ATS Metropolitan City of Milan will carry out specific checks on bariatric surgery during 2024 – according to a protocol tested during 2023 that also considers the initial assessment and the post-surgery care phase). Following the criteria set by the Lombardy Region, ATS annually publishes a Deliberation on inspections that precisely outlines the criteria upon which the inspections will focus.



ATS has a specific DRG setting for data extraction and double checks the correctness of SDO. The verification team consists of public health physicians, geriatric physicians, healthcare assistants, and nurses, with the team size varying depending on the size of the ATS. The decision to adjust the budget lies with the ATS, which can modify the global budget cap, the caps allocated to different lines of activity, and/or implement tariff reductions when an agreed-upon activity level is exceeded or not coded correctly.

Table 25 – Main control activities carried out by ATS

Providers	Services	Control activities
Hospital services	Acute care; sub-acute care; physical rehabilitation; outpatient	SDO checks (acute admissions); availability of the intensity index definition form (sub-acute admissions); compliance check with the expected weekly rehabilitation schedule (380 minutes/patient for intensive care rehabilitation admissions); formal and clinical appropriateness checks (acute admissions and outpatients)
Social and health services	(Semi-)residential; home care	Consistency of documental and factual situation through site-visits (residential or semi-residential admissions); formal and clinical appropriateness checks (residential or semi-residential admissions and home care)
Social services	Social assistance activities	Consistency of documental and factual situation through site-visits
Pharmacological services	Hospital and territorial pharmacies; drugs administration; prosthetics	Compliance with authorisation criteria (pharmacies); appropriateness of the process (drugs administration and prosthetics); service quality (prosthetics)

Timing of control is as follows:

- Targeted checks of congruence and generic appropriateness are conducted throughout the entire year.
- Self-monitoring of general congruence and appropriateness takes place in the first four months, and the results are transmitted from the facilities to the ATS by June. In the second semester, ATS carries out the checks.
- Self-monitoring of document quality occurs at any time during the year but is based on records related to discharges in the first quarter.

These control mechanisms allow to measure hospital activities and correctly allocate resources based on emerging needs. Furthermore, they play a role in discouraging choices influenced solely by the profitability of one DRG over another. From this perspective, the regional government tries to balance the real clinical needs of the population, the actual costs that hospitals bear to respond to these needs, and the fiscal capacity of the Region itself to support healthcare costs, continuously building control/reward systems that adhere to what most serves to improve public health. The ACSS promotes the homogenisation of inspection activities and the valorisation of best practices developed at territorial level, assuming for ATSs a role of organisational/technical support and collaborative control. The ACSS manages this control mechanism on hospital, social and health, social, and pharmacological services. Each ATS has an operational control unit (*Nucleo Operativo di Controllo*, NOC), composed of health professionals, in particular hygiene and preventive medicine specialists, healthcare assistants and nurses, experienced in the organisation and supervision of health activities. These units carry out the control activities planned by the ATS. The findings of the completeness and appropriateness checks, if not passed, result in the reduction or abatement suppression of the expected DRG reimbursement for the specific hospitalisation episode under consideration. The latest horizontal analysis of control activities carried out by the NOCs of the 8 Lombardy ATSs dates back to the time span between the years 2013 and 2015. The analysis showed a reduced percentage of modified compared to controlled SDOs (2013 - 9.2%, 2014 - 11.5%, 2015 - 10.9%) with a low variability between ATSs for the quality of clinical



documentation checks (0-6%), whereas for the congruence and the targeted sampling method checks a much higher variability was noted (2-23% and 5-21%, respectively). In the period under review, the percentage of abatement was stable at around 0.4% of regional health reimbursements for hospitalisation (over € 20 million).¹⁹⁶ In the control activities carried out by the NOCs, there is a great deal of attention to the economic aspect (particularly with regard to the correct DRG classification of each hospitalisation episode), but this is not the only goal of this mechanism. It is a continuous confrontation between professionals that may lead to outcomes that differ from financial ones: the role of the NOCs is also to refine and make the DRG system more applicable by shaping the financing model (e.g., highlighting cases of excessive deviation between average costs and DRG reimbursement) and by linking certain procedures to DRGs that are descriptively and/or remuneratively appropriate. Given the key role, there is an intention on the part of ACSS to reactivate a network between the various NOCs to homogenise procedures.

6.5. Payment reforms

Since its introduction, the prospective payment system has become not only an operational financing tool but also a planning and management tool for healthcare policymakers: although implemented as a financing instrument, the Italian DRG system also became a tool to be studied and modified in order to manage the growing complexity of the SSN/SSR system. Overall, the major changes in financing hospital services have not been directed towards a financing reform but rather towards institutional and legislative constraints to address some of the intrinsic critical aspects of the system (e.g. cap healthcare expenditures): the role of the DRG system as a financing method shifted over time towards clinical governance logics. This aspect has been particularly emphasised by leading actors within the system: financing per DRG can work if the needs, problems, opportunities, and requirements of one's own health system are analysed and understood. In the Italian case, this was not done: the DRG reimbursement system was imported and applied following a top-down approach, without having a solid cost accounting mechanism (both at the central level and at the local/hospital level) and without having involved key stakeholders on a systematic basis.

Over the years, the regional government has tried to implement ad hoc initiatives with the aim of linking clinical performance indicators to reimbursement rate changes. To reduce the number of ordinary admissions related to the 108 DRGs with a high risk of inappropriateness and to increase the percentage of patients with a diagnosis of hip fracture who underwent surgery within 2 days, in 2019 the regional government modulated the contracted resources from -1% to +1% on the basis of the positioning of healthcare facilities in the care performance evaluation. This was the seventh annual budget revision experience (from 2013 to 2019) based on regional performance indicators: although this attempt was to include a pay-for-performance system based on facility outcomes in the regional health financing system, it was only limited to specific regional health planning needs. In addition, specific processes at the stage of control mechanisms within the ATSS have been devised to link the DRG reimbursement to the quality of the service provided (e.g., the above-mentioned protocol on bariatric surgery or the follow-up pathway for patients in breast units devised by ATS Metropolitan City of Milan). These initiatives were implemented to add innovative financing criteria into a system that, to this day, is almost outdated and not properly adapted to the Italian and regional health context. After all, the system must be able to update itself and to report costs as there may be cases where costs may vary significantly (e.g., due to the introduction of state-of-the-art technology). The criterion of fixed tariffs based only on length of stay does not consider clinical outcomes or the implementation of high quality and high value procedures (value-based healthcare). Sometimes a paradoxical situation of not adequately remunerating similar episodes of hospitalisation can occur. For example, when considering pancreas or liver operations with complications the regional government has set a threshold value (low trim point) of 9 days. With a hospital stay of 9 days, despite the presence of complications, the DRG is considered uncomplicated (tariff ~ € 7 500). If discharged at 10 days, the same case is considered complicated (tariff ~ € 19 000). Although this threshold value was included to avoid opportunistic phenomena, it does not take into account all eventualities (e.g., use of a more expensive but less invasive method, implementation of the ERAS (Enhanced Recovery After Surgery) protocol, etc).



To briefly summarise, the strength of the DRG reimbursement system compared to the previous system (lump sum) is its economic and clinical representation of services that forces providers to compare themselves on common elements, developing a trend towards improvement in efficiency of care (particularly highlighted in the years following the introduction of DRG reimbursement, especially in relation to a reduction in waiting times, process efficiency, use of resources, etc). This is only valid as long as the system is periodically and effectively updated, as the opposite case could inhibit the introduction of new methodologies and technologies (thus avoiding the risk of certain services becoming non-economic). The Higher Health Council has identified four fundamental implementation conditions without which the DRG system cannot be used effectively: defining the features of each healthcare facility and the services that can be provided (in order to have enough volumes and – accordingly – enough clinical competence); centrally planning the volumes and mixing of services provided by both public and private facilities (defining the eligibility criteria for exceptions); defining the clinical conditions of patients for *ex-post* coding (eligibility conditions); establishing tariffs that are correlated with volumes and differentiated by provider (since costs vary according to volumes, revenues must also be correlated with them).¹⁸⁸ Moreover, *Regione Lombardia* has realised since the introduction of the DRG system that this financing system alone is not enough, there must also be mechanisms for accreditation, control, and monitoring of the quality and outcomes of the service provided. To make the system effective and seamless a certain degree of flexibility should be allowed as there are too many variables that can change the demands on the health service (impact of societal needs, emerging issues, etc); the Italian DRG system is old and should be updated in this sense. The system is indeed representative of an activity, of a pathology cost and allows a planning of the health activity carried out but it should be able to revise the DRG reimbursement based on a periodic analytical cost analysis (with the possibility also to recode, append or remove DRGs). Two reform projects – one regional and one national – are presented below, as they have been the most striking examples of systematic payment system reform implemented in recent years which have tried to address these concerns.

6.5.1. CReG

In 2011, the Lombardy regional government tried to reform the care pathways of patients with chronic diseases through an innovative project. The so-called Chronic Related Group (CReG) project involved five territorial authorities (Bergamo, Como, Lecco, Milano, Milano 2 – in 2015 extended to Milano 1, Varese, Cremona, Monza e Brianza, Sondrio) and the main aim was replicating the idea of classifying chronic conditions (such as diabetes, chronic obstructive pulmonary disease, HIV-positive people) into homogeneous groups depending on the average resource consumption. The idea was shifting care from the hospital to the territorial setting. In fact, chronic disease care was intermittent and fragmented. Primary care organisation at the territorial level lacked not only the contractual premises but also the clinical, managerial and administrative skills to guarantee a real overall taking care of chronic patients outside the hospital.¹⁹⁷ All the necessary extra-hospital services (outpatient, prosthetic, pharmaceutical, home hospitalisation, etc.) were intended to be guaranteed and this for a good clinical management of the pathology/condition, without interruption.

A total of more than 150 groups were defined, even though the main 12 groups already included 80% of the patients (CReG class 901 – hypertension, 28%; CReG class 501 – cardio-vasculopathy, 22%; CReG classes 812 and 813 – hypercholesterolemia and hypertension, 7%; CReG classes 922 and 923 – hypertension and diabetes, 7%; CReG class 301 – heart failure, 5%; CReG class B01 – diabetes, 5%; CReG class 801 – hypercholesterolemia, 2%; CReG class A01 – asthma, 2%; CReG class 412 – COPD and cardio-vasculopathy, 1%; CReG class 832 – hypercholesterolemia and diabetes, 1%).¹⁹⁸ People with chronic conditions were followed by the general practitioner, who became the “care manager”. The main tasks, in addition to clinical follow up, were to draw up, manage and periodically update a care plan including GPs’ visits, specialists’ visits, lab exams, vital signs monitoring (e.g. ECG), etc.¹⁹⁸ The reimbursement fee did not include acute admissions and rehabilitation admissions. This modality was intended to deal with the need of planning the chronic patient's care, overcoming the fragmentation of pathways and treatments, the self-referentiality of specialists and providers, the citizens' lack of knowledge of the service network and the sometime dramatic



consequences of inadequate treatment. The underlying reasoning was that the discontinuity of care entails costs not only in economic terms, but above all for the patient, the family, the healthcare/social workers, and for the entire performance of the care system.¹⁹⁹

Although the idea of defining a bundled payment system for people with chronic conditions to shift care from an inpatient (acute care) to a less costly setting (prevention and early care) was commendable, in the implementation phase the CReG programme turned out to be very fragmented as every provider was free to follow a different way to develop and implement the care plans.¹⁹⁸ By the end of the project in 2016, only 1 008 GPs joined the project (20% of all GPs) and 187 580 chronic patients (out of more than 2 million people, i.e. around 9%) were enrolled. In the Milan metropolitan area, 168 GPs joined the project (out of more than 2 300 GPs) and 16 161 hypertensive and/or diabetic patients were enrolled (out of a population of about 42 thousand people, i.e., 38%).²⁰⁰

Notwithstanding, preliminary results of the project showed a slight reduction in emergency department admissions, in acute care hospitalisations and a slight increase in the consumption of outpatient services and drugs of enrolled patients compared to non-enrolled patients.²⁰¹ In 2015, alongside the healthcare system reform, the regional government also decided to implement a holistic reform of chronic care as well, breaking away from the CReG project – without forgetting its legacy.

6.5.2. It.DRG Project

Although not strictly related to the regional setting, the need to reform the DRG system was perceived at the national level. The It.DRG Project, launched in 2011 and coordinated by the Ministry of Health, has the main purpose of developing a classification system for hospital admissions which is consistent with the characteristics of the Italian population. The project's ultimate aims were the definition and maintenance of a new system for the measurement of hospital products (an evolution of the DRG system) and the provision of electronic/digital tools necessary for a complete use of the system (health digitalisation).²⁰² Thanks to its wide-ranging experience over the years, *Regione Lombardia* has been identified as the leader of the working group on interventions/procedures/treatments classification.

The main objectives of the It.DRG Project were to:

- establish a new classification system for acute hospital admissions, tailored to health services provided by SSN and accredited facilities, with a weighing system capable of measuring the absorption of resources and expected costs also for remuneration purposes;
- establish a new underlying Italian classification and coding system for diagnoses and procedures, allowing an accurate description based on epidemiological and clinical significance, and healthcare value;
- establish methodological, organisational, information and training tools aimed at implementing and the subsequent updating of the new system in the Italian hospital context.

After an initial development stage, between 2013 and 2017, the obtained results from the pilot project were:

- the finalisation of the ICD-10-IM (Italian Modification) manual, which includes 19 031 codes relating to pathological conditions, traumatism, comorbidities, etc. (an increase of over 53% compared to 12 435 codes in the ICD-9-CM currently in use);
- the redaction of the Italian Classification of Procedures and Interventions (*Sistema italiano di classificazione e codifica degli interventi e procedure*) manual, which includes around 5 400 procedures (an increase of over 54% compared to 3 700 procedures in the ICD-9-CM currently in use);
- a new classification of Italian hospital admissions, called It.DRG, developed from v.24 of the CMS-DRGs (with 369 final 'basic' groups compared to the 538 DRGs currently in use), with further subgroups for each 'basic' It.DRG defined within a "modular weighing system" oriented towards an improvement in the predictive capacity of resource absorption;
- the development of an Italian case-mix costing model and the related IT tools to enable its application at national level.



Despite great efforts, the results obtained have never been implemented nationwide and have always remained experimental: after 5 years no national focus has been achieved. Although all preparatory materials have been prepared, the introduction of the new system at national level is at a standstill. Only small steps forward have been made, without significant results: for instance, the 2022 Italian finance law stipulated the updating of the classification systems adopted for coding the clinical information contained in the SDO by 30 June 2023 but to this day (November 2024) no progress has been made in this regard. Therefore, Italian legislation is still stuck with the 2009 coding system and the 2012 tariffs sheet.



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