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## Balancing financial incentives during COVID-19: A comparison of provider payment adjustments across 20 countries <sup>☆</sup>

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## ABSTRACT

Provider payment mechanisms were adjusted in many countries in response to the COVID-19 pandemic in 2020. Our objective was to review adjustments for hospitals and healthcare professionals across 20 countries.

We developed an analytical framework distinguishing between payment adjustments compensating income loss and those covering extra costs related to COVID-19. Information was extracted from the Covid-19 Health System Response Monitor (HSRM) and classified according to the framework. We found that income loss was not a problem in countries where professionals were paid by salary or capitation and hospitals received global budgets. In countries where payment was based on activity, income loss was compensated through budgets and higher fees. New FFS payments were introduced to incentivize remote services. Payments for COVID-19 related costs included new fees for out- and inpatient services but also new PD and DRG tariffs for hospitals. Budgets covered the costs of adjusting wards, creating new (ICU) beds, and hiring staff.

We conclude that public payers assumed most of the COVID-19-related financial risk. In view of future pandemics policymakers should work to increase resilience of payment systems by: (1) having systems in place to rapidly adjust payment systems; (2) being aware of the economic incentives created by these adjustments such as cost-containment or increasing the number of patients or services, that can result in unintended consequences such as risk selection or overprovision of care; and (3) periodically evaluating the effects of payment adjustments on access and quality of care.

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## 1. Introduction

Since the emergence of COVID-19, health systems worldwide have had to respond to a range of different challenges [1]. Hospital services had to be restructured, intensive care unit (ICU) capacity expanded [2,3], elective admissions temporarily put on hold, and patient pathways reorganized to accommodate COVID-19 services in parallel with non-COVID-19 services. Healthcare professionals such as primary care providers (PCPs), specialists and allied health professionals, also had to take on new tasks, such as testing and treating COVID-19 patients in their clinics and providing more home visits and remote services (e-health services) to protect patients and themselves from potential infection. General practitioners (GPs) in some countries were engaged in contact tracing of patients. In addition, all health providers (hospitals and professionals) had to change their practice patterns in line with new hygiene requirements, making greater use of personal protective equipment (PPE), providing disinfectants, and enabling patients to keep a distance in waiting rooms [4,5].

All of these challenges have had implications for health providers' (hospitals and professionals) income and expenditures. First, the costs of care related to COVID-19 patients can be substantial for hospitals because of long hospital stays, isolation treatment, and complex care on ICUs. Significant investments have been made in many countries to expand ICU and hospital capacity and workforce [6]. In addition, stricter hygiene standards, physical distancing requirements, greater use of PPEs, and widespread testing, have made it costlier and time consuming to treat non-COVID patients. Second, in many countries with activity-based payment mechanisms, health providers experienced revenue shortfalls – at least during the initial phases of the pandemic in spring 2020 – because they had to put elective procedures on hold or because patients simply avoided seeking care.

Many countries have adjusted their provider payment systems in response to COVID-19 [7,8]. The incentives created by payment adjustments can potentially impact treatment patterns, admission policies, activity levels, efficiency, and quality of care [9–11]. However, a systematic overview of payment adjustments in response to COVID-19 and an analysis of the potential impacts of these adjustments remains unavailable. International experiences can provide policymakers with policy options about alternative approaches for adjusting their national payment systems, and they may provide guidance for mid- to long-term adjustments that would improve

resilience of payment systems against future shocks, such as pandemics.

Our objective was to identify how payment systems for health care providers (hospitals and health professionals) in different countries were adjusted (or not) to the pandemic with a focus on changes in 2020 in response to the pandemic. Given the two main challenges to providers' finances outlined above, we focus on analyzing how countries (1) compensated hospitals and outpatient providers for income loss related to reduced activity and (2) paid for COVID-19 related services and the costs of higher hygiene standards. Our analysis covers payment adjustments during 2020 only, therefore payments related to the vaccine rollout are not covered. For hospitals, we focused on acute inpatient care, excluding rehabilitation and long-term care. For outpatient providers we included practices and professionals depending on the context. We focused on outpatient providers, including PCPs, specialists, and allied health professionals, but excluded the payment of nurses or physicians working in inpatient care.

## 2. Methods

## 2.1. Analytical framework

An analytical framework was developed on the basis of initial research on COVID-19 related payment approaches for hospitals and health professionals [7,8]. The aim of this framework was to classify different national approaches into categories that allow to better understand how provider payments changed throughout the first year of the pandemic. The resulting typology of payment adjustments is presented in Fig. 1. It first distinguishes between payment adjustments that aim to either (a) 'compensate income loss' due to lower utilization of care or (b) 'pay for COVID-19' related services. It then defines three strategies to adjust payments: (1) keeping the old payment with the same or higher rates; (2) adding new payment methods, removing components of existing payments, or changing the payment mix; and (3) providing material such as PPE in kind or covering its costs. Below follows an explanation of each strategy:

■ **Old payment** refers to payment mechanisms that were in place before the pandemic and were not changed, regardless of providers' activities, e.g. salaries, budgets or FFS for remote visits. These can be the same or increased rates to account for additional COVID-19 related expenditures or to compensate for

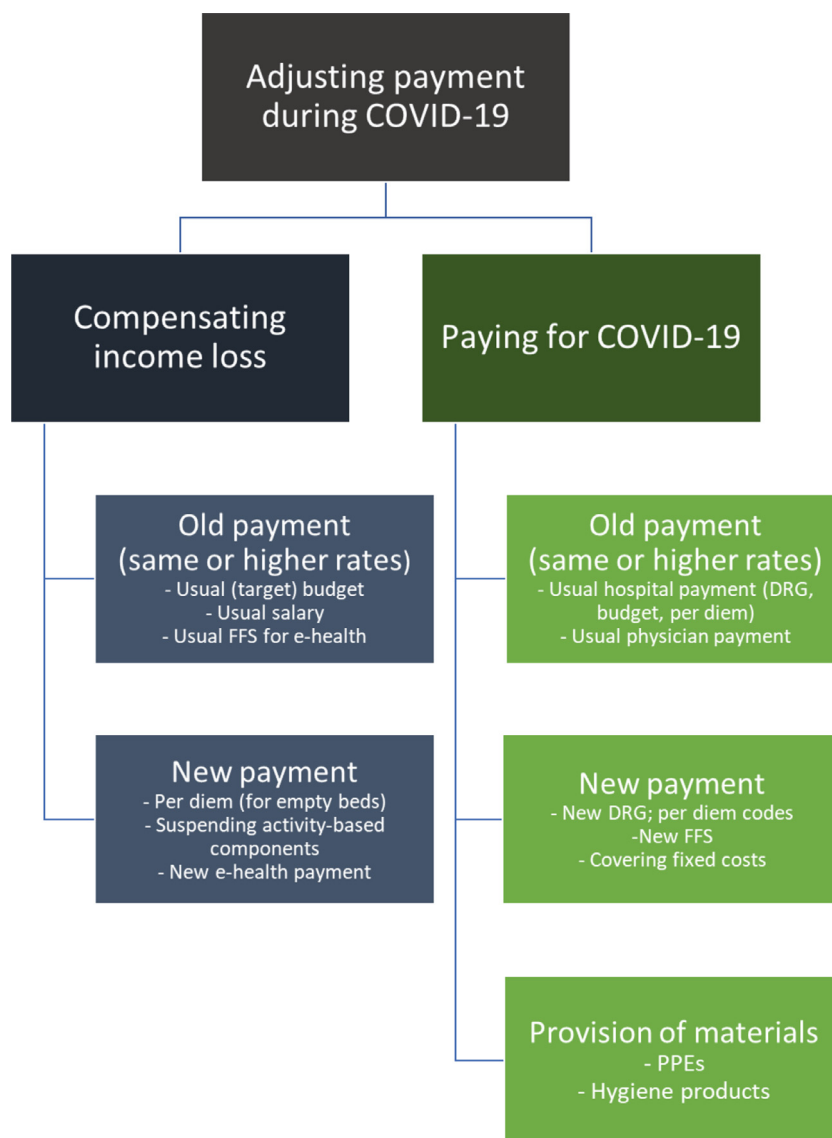


Fig. 1. A typology of COVID-19 related adaption of provider payment  
Source: authors' own compilation.

lower activity. Examples are higher budgets, higher salaries, and higher Per Diem (PD) or Fee-For-Service (FFS) rates.

- **New payment** refers to the introduction of new payment mechanisms or to changes in the mix of payments in place. It includes changes introduced during the pandemic as a response to the financial changes and fluctuation in demand. For example, new PD payments or budgets for empty beds; new PD or Diagnosis-related group (DRG) codes specific to COVID-19 patients, which were priced to account for the higher costs; or new FFS for new services such as testing and tracing. New payments also include the introduction of payments based on previous year turnover or the usual target budget, modifying the share of certain existing payments, suspending performance- or quality-based components of payments, or new direct transfers to cover fixed costs (e.g., salaries, rents).
- **Provision of materials** includes cost coverage, subsidies or in-kind provision of materials needed during the pandemic. These include PPEs, hygiene products and other consumables.

## 2.2. Data collection

The paper builds on the content compiled in the COVID-19 Health System Response Monitor (HSRM). The HSRM is a platform established in March 2020 and designed in response to the COVID-19 outbreak to collect and disseminate up-to-date information on how countries, mainly in the WHO European Region, are responding to the crisis, focused primarily on the responses of health systems (see [www.covid19healthsystem.org](http://www.covid19healthsystem.org)). It is a joint initiative by the European Observatory on Health Systems and Policies, the World Health Organization (WHO) Regional Office for Europe and the European Commission.

The HSRM content is structured broadly around the standard health system functions [12], capturing information on policy responses related to, inter alia, governance, financing, and service provision. The information is collected by experts from the countries that report to the platform (53 WHO European region) and regularly updated by way of an evolving set of questions that serve

**Table 1**  
Compensation of income loss across 20 countries, by payment adjustment strategies and care setting.

Payment adjustment	Outpatient providers			Hospital inpatient care		
	Salary/ budgets	FFS	Capitation	Budget	FFS, PD	DRG or case payment
Old	Finland, Israel (2), Lithuania, Poland, Slovenia, Spain Higher rates: Sweden	Germany (E), Israel (E), Netherlands (E), Poland, Sweden (E), Switzerland (E) Higher rates: Bulgaria, Czechia, France (E), Italy	Czechia, Estonia, Israel, Lithuania, Poland, Romania, Spain	Denmark, England, Israel, Lithuania, Poland, Slovenia, Spain Higher rates: Czechia, Sweden		Poland, Romania
New	Belgium (2), Bulgaria, Denmark (E), England, Estonia (3, E), Italy, Lithuania, Switzerland	Belgium (E), Denmark (2, E), England (3), Estonia (E), Germany, Israel (E), Italy (2, E), Lithuania (E), Luxembourg (2, E), Netherlands, Romania (E), France (5, E), Czechia (E), Slovenia (E)	England, Netherlands	Belgium (3), Bulgaria, Denmark, England (5), Estonia, Finland, France, Israel, Italy, Netherlands, Romania, Switzerland	Germany	

Note: numbers in parenthesis refer to the number of payment adjustments if greater than one; (E) refer to payments for remote services (e-health, phone consultations or telemedicine).

as prompts for the country health policy experts contributing to the platform.

RW and WQ initially screened HSRM materials related to financing, identified and selected countries that reported payment adjustments during the first half of 2020. The typology of COVID-19 related payment approaches (see Fig. 1 and description above) was used to classify the identified payment adjustments into a table for more in-depth analysis. Subsequently, between October and November 2020, country experts, the co-authors of this paper, added and updated information about COVID-19 related payment adjustments. Information was collected from 20 countries: Belgium, Bulgaria, Czechia, Denmark, UK (England), Estonia, Finland, France, Germany, Israel, Italy, Lithuania, Luxembourg, Netherlands, Poland, Romania, Slovenia, Spain, Sweden and Switzerland.

Collected information was further condensed to create overview tables of payment approaches in the 20 countries. As a next step and in order to increase data trustworthiness, co-authors were asked in February 2021 to check and/or complete the table and to report further changes of payment approaches in their countries up until the end of 2020. All authors checked collected data and revised their countries' data and provided feedback where needed.

Payments for hospitals and outpatient providers were analyzed separately as the characteristics of patients and services differ by setting. Patients treated in inpatient settings (i.e. overnight) include severely ill patients, emergencies such as trauma and heart failures, but also elective treatment. Patients treated in outpatient settings include primary and specialist care patients with acute and/or chronic conditions. Both settings treat simple and complex cases, COVID-19 and non-COVID-19 patients. When analyzing outpatient providers, depending on the context, we refer to practices or the health professionals themselves (we included physicians, nurses and allied health professionals, both employees and self-employed). For example, payments for GPs refer to the physicians themselves in Israel, while in Germany, France or England it refers to the practices. We limited our analysis to publicly funded care and excluded private sources such as voluntary health insurance or out-of-pocket payments.

### 3. Results

Tables 1 and 2 summarize payment adjustments to compensate income loss and to pay for COVID-19 related costs across countries based on the analytical framework (Fig. 1). In both tables, payment

adjustments for outpatient providers and hospital inpatient care are classified based on (1) the two strategies to adjust provider payments (old or new payments) and (2) the payment mechanism, i.e. budget/salary, FFS, capitation, PD or case-payment (e.g. DRG-based payment). Table 2 also highlights how providers were reimbursed for expenses related to PPEs and hygiene requirements. More detailed results summarizing payment adjustments in each country are available online in Tables A1 and A2.

#### 3.1. Compensation for income loss

##### 3.1.1. Old payments

**3.1.1.1. Outpatient providers.** In many countries, payment systems were not adjusted because existing payment mechanisms, such as salary, capitation, or global budget, were not linked to activity and providers did not experience a loss of income. For example, GPs or specialists receiving salaries or capitation payments in Czechia, England, Estonia, Finland, Israel, Lithuania, Poland, Slovenia and Spain received their normal payments despite lower activity levels during the pandemic.

The rates of 'old payments' for outpatient professionals were increased in a small number of countries to compensate income loss related to lower activity. For example, Bulgaria increased (old) FFS rates of the National Health Insurance Fund; Czechia increased the rates of FFS payments for specialists and allied medical professionals; England and Italy allowed higher payment rates for afterhours.

**3.1.1.2. Hospital inpatient care.** Similarly, hospitals paid based on budgets before the pandemic in Denmark, Lithuania, Poland (for hospitals in the public network), Slovenia, and Spain were not affected by lower numbers of admissions in early 2020. In Israel, in theory, hospitals always had a revenue guarantee of at least 95% of their target budget if activity was lower than expected, but in 2020 it was the first time that this happened. Budget rates were increased for Czech hospitals, as they received 100% of their usual budget even if their activity reached only 79% of 2018 activity. If activity exceeded this level, budgets were adjusted accordingly.

##### 3.1.2. New payments

**3.1.2.3. Outpatient providers.** New payments were the most common strategy used to compensate outpatient providers who experienced income loss as a result of lower activity. In several countries, budgets replaced activity-based payments. In some countries,



**Table 2**  
Paying for COVID-19 across 20 countries, by payment adjustment strategies and care setting.

	Outpatient Providers			Hospital Inpatient Care		
	Salary/ budgets	FFS	Capitation	Budget	FFS, PD	DRG or case payment
Old	England, Estonia, Finland, Israel, Italy, Spain, Sweden Higher rates: Lithuania, Romania, Sweden	Higher rates: Bulgaria, Italy, Netherlands, Luxembourg	Czechia, Italy, Spain	Spain Higher rates: Sweden	Bulgaria, Spain	Germany, Romania, Switzerland Higher rates: Bulgaria, Germany
New	Bulgaria, England, Netherlands, Romania	Belgium, Bulgaria, Czechia, Denmark, England (2), Estonia, Germany, France (5), Luxembourg, Netherlands, Poland, Romania, Italy, Slovenia, Switzerland	England, Romania	Belgium, Bulgaria, Denmark, Estonia (2), Finland, France, Germany, Israel, Italy, Netherlands, Romania	Belgium (2), Bulgaria, Czechia (2), England, Estonia (2), Germany, Israel, Poland, France	Bulgaria, England, France, Germany (2), Italy (2), Slovenia
PPE, hygiene (in kind /cost cover)	Finland, France, Germany, Israel, Italy, Lithuania, Poland, Spain	Czechia, Belgium, Poland	Poland	Bulgaria, Czechia, England, Finland, France, Israel, Italy, Lithuania, Poland, Romania, Slovenia, Spain	Estonia	Poland

Note: numbers in parenthesis refer to the number of payment adjustments if greater than one.

temporary budgets were set based on previous year's turnover, e.g. in Estonia, England and Lithuania. Also, in Bulgaria, physicians received at least 85% of usual income regardless of the volume of activity during 2020.

Other countries created new budgets specifically to compensate providers for fixed costs when activities were reduced in spring and fall 2020. For example, Estonian and French specialists contracted by the Health Insurance Fund could receive subsidies to cover fixed costs if income did not reach previous years' threshold; in the Netherlands health insurers compensated 60–85% of allied health professionals' past turnovers to cover fixed costs.

In some cases, previous years' income served as a benchmark for eligibility to compensation, and some countries awarded compensatory payments only after loss of income passed a certain threshold. For example, in Belgium monthly allowances for self-employed were provided only to those who had to cease activities for more than seven consecutive days; Danish GPs and outpatient specialists in private practice could claim compensation if turnover fell by more than 30%; Italian self-employed were compensated if income decreased by at least 33%; in Germany ambulatory physicians were compensated if overall turnover decreased by more than 10% compared with the same quarter in the previous year. Compensatory budgets were paid as one-time lump sums in Italy, Denmark and Luxembourg; as monthly allowances in Belgium and Estonia (bimonthly); as quarterly payments in Germany; and as daily allowances in France.

In addition, many countries introduced new FFS payments for remote and e-health services (see Fig. 2). Furthermore, the Netherlands and England created new capitation payments to compensate outpatient providers. In England GPs were compensated based on previous year turnover through contact capitation combined with some FFS.

**3.1.2.4. Hospital inpatient care.** New payments were introduced also for hospitals, mostly in the form of new budgets that were somewhat related to previous year's turnover independent of current activity. For example, in Belgium, Estonia, France and Italy hospitals were compensated with a budget for lost revenue compared to previous years' turnover. In Bulgaria, hospitals received a

budget of at least 85% of the previous year's turnover as an income guarantee regardless of activity. In England, hospitals received budgets that were directly based on previous' years expenditure, while hospitals in Romania received budgets based on agreed contracts (independent of actual activity). Finland, the Netherlands and some Cantons in Switzerland provided budgets for hospitals to compensate deficits, and England and Czechia covered historical debts (for more details about payment adjustments in England see Fig. 3). In addition, hospitals in Belgium initially received a rapid cash advance (based on the 2019 budget), and hospitals in Israel received an additional budget compensating lost revenue from medical tourism.

Germany was the only country to introduce new PD payments for 'empty beds' in mid-March, with empty beds defined as the difference between the number of occupied beds on a day in 2020 and the average number of occupied beds in 2019. These compensatory PD payments became more targeted with time: they were initially set at EUR 560 but were adjusted for hospital case-mix and type of hospital in July 2020, leading to lower payments (EUR 190) for hospitals treating patients of low complexity and higher payments (up to EUR 760) for hospitals treating higher complexity patients. As of November 2020, compensatory payments were restricted to (non-psychiatric) acute hospitals with intensive care capacities that postponed or canceled elective care to potentially treat COVID-19 patients in areas of high incidence.

### 3.2. Paying for COVID-19

#### 3.2.1. Old payments

**3.2.1.5. Outpatient providers.** As mentioned above, payments unrelated to activity remained unchanged in many countries. The same salaries and capitation payments that protected outpatient providers from loss of income were also supposed to pay for new COVID-19 services in Czechia, England, Estonia, Finland, Israel, Italy, Spain, and Sweden.

However, several countries increased the rates of salaries and FFS payments for GPs to pay for new tasks such as managing and tracing COVID-19 patients (Bulgaria, England, France, Italy, Luxembourg, Romania, Sweden). The Netherlands increased fees for home

visits to treat COVID-19 patients. Italy and the Netherlands introduced higher FFS for afterhours in primary care.

**3.2.1.6. Hospital inpatient care.** Some countries also used the same (old) payments to compensate hospitals for treating COVID-19 patients. For example, Bulgaria paid the same PD tariffs for ICU wards regardless of the type of patient (COVID-19 or not); Germany, Romania and Switzerland paid the usual DRG-based payments for severe respiratory diseases, adjusted for new ICD-10 codes. Spain kept paying hospitals via annual budgets based on previous year's expenditures. When needed, Bulgaria and Spain purchased private services with the same public FFS/PD tariffs. Sweden increased hospital budgets but did not change the payment method. In the inpatient sector Germany increased the existing average daily nursing fee, which is a separate payment covering costs for nursing staff of hospitals.

### 3.2.2. New payments

**3.2.2.7. Outpatient providers.** Most countries created new payments for outpatient providers, specific to COVID-19 services or patients. New FFS payments were created for extra COVID-19 related services such as triage, consultations, contact tracing, and diagnostic tests (Belgium, Bulgaria, Czechia, Denmark, England, France, Germany, Italy, Poland, Romania, Switzerland, Luxembourg). England introduced block contracts for community services such as primary, palliative, long-term and mental care, including transports. France introduced add-on FFS payments for GPs visiting patients in nursing homes. The Netherlands introduced new budgets for all primary care providers, i.e. GPs, pharmacists, and allied health professionals (0.2–0.8% of usual turnover) to compensate for extra costs. In addition, in the Netherlands GPs received a one-time extra capitation payment to compensate for COVID-19 related care.

**3.2.2.8. Hospital inpatient care.** In hospitals, new payments aimed to incentivize preparedness for and provision of COVID-19 services. For example, new PD were created for ICU/COVID-19 wards in Belgium, Israel and Poland; in Czechia new PD tariffs were created for COVID-19 patients regardless of the ward. New FFS payments for COVID-19 related hospital services were introduced in Bulgaria, and Poland; and new DRG codes were created in Bulgaria, France, Slovenia and Italy.

Some countries introduced new budgets for capacity increases or for re-organizing hospitals to accommodate COVID-19 needs (Belgium, Denmark, Germany, Poland, Slovenia). Italy introduced new budgets for private hospitals serving public payers. Estonia, Germany, Israel and Poland created flat rate payments per new ICU/COVID-19 bed established or for preparedness of equipment. Israel and Romania also created new budgets for hiring more personnel and, in Israel, also for treating Palestinian patients. In the Netherlands, hospitals shifted to budgets calculated based on negotiated turnover, and an additional extra compensation (a percentage of the negotiated budget) for the extra COVID-19 expenditure and higher PD tariffs. Germany and Italy introduced add-on payments to the DRG tariffs for COVID-19 cases (Italy) or for every case (Germany) treated in hospitals, regardless of hospitalization length. Caps on hospital income were suspended in Germany and Israel (for COVID-19 PD), allowing providers to exceed the pre-negotiated annual income, and in Czechia PCR tests were removed from volume limit regulations.

### 3.2.3. Provision of materials

Finally, countries covered providers for costs of COVID-19 related materials and equipment, either in-kind or in cash. Equipment, tests, PPE, sanitation, were provided in-kind for outpatient professionals in Czechia (in spring 2020 only), Germany, Israel, Italy, Finland, France, Slovenia, Spain; and for inpatient providers

in Bulgaria, Israel, Poland, Slovenia, Spain. In Poland payments for all providers were increased by 3% to cover consumables. Belgium and Czechia created a new fee per contact to reimburse for PPEs. Outpatient providers were fully or partially reimbursed for extra spending related to PPEs, hygiene products and adapting clinics in England, Estonia, France, Germany, Italy, and Switzerland. Hospitals were reimbursed for additional running costs in England, Estonia Finland, France, Lithuania, Slovenia, and Romania.

## 4. Discussion

This paper provides the first comprehensive overview of payment adjustments for outpatient providers and hospitals in response to the COVID-19 pandemic across 20 high- and middle-income countries in the first year of the pandemic. In general, governments or other public payers bore the bulk of COVID-19-related costs. Most payment adjustments that aimed at compensating income loss were introduced during the “first wave” in spring 2020, when elective services were put on hold and when patients refrained from seeking care in person. While several countries did not have to change their payment mechanisms, as payments were independent of activity (e.g. budgets, salary, and capitation), many other countries substituted their activity-based payments with new budgets/ salaries or capitation payments. During the same period, many countries created new payments to incentivize outpatient providers to provide remote services, which partially substituted face-to-face services and contributed to avoiding revenue shortfalls.

Payments for COVID-19 related costs were created relatively early, but they were revised and adjusted as the pandemic evolved during 2020. To pay for COVID-19, most countries introduced new fees for out- and inpatient services. New FFS payments intended to incentivize outpatient providers and hospitals to provide new services such as treating and monitoring COVID-19 patients, testing, and tracing. Hospitals in many countries received new budgets to cover the costs of adjusting their wards, creating new ICU beds and COVID-19 beds, and hiring more staff. Some countries also created new PD and DRG tariffs to pay for COVID-19 patients. A different approach was taken to cover consumables such as PPEs and hygiene material, which were provided mainly in kind or in cash (through cost reimbursements).

Changes in payment mechanisms required or resulted in mobilization of public funds. In some cases, funds were just reallocated among providers or among functions of the health system, while in other cases, additional funds were deployed to complement existing funds. In some countries, ‘State of emergency’ facilitated the release of new funds. Additional public funds were drawn from regular budget sources (by reprioritizing expenditures), or from national emergency reserves. Some countries also suspended national debts and deficit controls to facilitate access to resources. To facilitate the reallocation and deployment of funds, particularly for “higher” or “new” payments, most countries activated exceptional spending procedures, which were then formalized through supplementary budget laws. Some countries reallocated funds through payer agencies such as regional health authorities, health plans or health insurance funds [13].

### 4.1. Compensating income loss: reversed risks during the pandemic

An interesting finding of our results is that COVID-19 changed the perceived distribution of risk that is usually attributed to the incentives of different provider payment mechanisms. Incentives can be analyzed through many different frameworks. For example, some frameworks focus on the time when the payment is determined (before or after the service is provided) [14,15]; others focus on the extent to which payments are fixed or variable,

**Figure 2: Payments to incentivize the implementation and provision of remote and e-health services**

In many countries, COVID-19 served as a catalyst for the use of remote health services such as consultations by phone and other digital means of communication with providers, labs and public health authorities. Payment mechanisms were used to incentivize providers to provide remote services during lock downs and later. While some countries started paying for these services for the first time, others added FFS on top of salaries or capitations, or increased the fees.

In Germany, France, Netherlands (primary care), Sweden, and Switzerland providers were already paid FFS for remote consultations. In Germany, remuneration for remote consultations were continuously extended. In Israel digital consultations were counted as regular visits for contact capitations. In these countries, providers could – to a certain extent – compensate lower turnover of physical visits with remote consultations. This may have lowered the need for extra compensations from the government.

In Belgium, Denmark, Estonia, Italy, Lithuania, Luxembourg, Czechia, Slovenia and Romania remote consultations were not common before the COVID-19 pandemic. In these countries, new FFS payments were created to reimburse and promote remote health services.

In addition, several countries have simplified the conditions of entitlement for remote services and have removed caps on volumes or restrictions. For example, the Netherlands removed the obligation to see a patient first face-to-face before continuing remotely; France abolished patients' copayments, relaxed restrictions, and opened the service to other professionals such as midwives, and allied health professionals (speech, occupational, physiotherapists) for all their patients without any restriction.

Finally, countries promoted remote health services during the pandemic by subsidizing infrastructure. In Estonia for example, providers received a one-time compensation to scale up capacity for remote outpatient consultations, under certain conditions. In England GPs were reimbursed for setting up or enhancing their information technology (IT) capacity and equipment. In Denmark, the regions provided GPs and outpatient specialists in private practice with free software for video consultations.

**Fig. 2.** Payments to incentivize the implementation and provision of remote and e-health services.

i.e. linked to activity [16]; while still others highlight the level of detail of the payment unit (bundled or unbundled) [17]. Ellis and Miller [18] propose considering many elements in a single framework: the information base on which the payment is determined (provider, patient or service characteristics), the breadth or unit (broad, based on a period of time, e.g. a year, or narrow such as service items); and the adequacy or generosity of payments (if they cover costs, are underpriced or overpriced). Figure 4 depicts some of these dimensions and frameworks. The various dimensions used in the different frameworks have somewhat different meanings but are associated and overlap to some extent. For example, prospective payment mechanisms are not directly linked to activities and are usually broad (Figure 4).

Regardless of the dimension or framework used to analyze payment mechanisms, one common feature shared by payments on the left side of the arrows (prospective, broad, not linked to activity), is that they are typically, i.e. in non-COVID-19 times, considered to place financial risk on the provider, since payments (e.g. budgets, salaries and capitations) are known in advance, but not the costs [19]. These kinds of payments create incentives for providers to contain costs, which can be achieved by curbing unnecessary expenditures or by selecting low-risk/low-cost patients and providing less than optimal care. On the other hand, payments at the right side of the arrows (retrospective, narrow, linked to activity) are typically considered to place financial risk on the payer, since the use of services and thus payment amounts are not known in advance. The typical example is FFS payment. Providers have incentives to increase the number of patients treated or services

provided, thus increasing access but potentially leading to overprovision of care. Here, selection of patients is not a concern because each unit of care provided is fully reimbursed. However, the downside is that there are no incentives to contain costs or provide care efficiently [14–16,18–22].

The COVID-19 pandemic showed that the distribution of financial risk between payers and providers may be reversed during times of crises [23]. When hospitals and outpatient providers experienced sharp reductions in non-COVID-19 related activity, in particular during the early phases of the pandemic, those providers that were paid based on activity (FFS or DRGs) lost a considerable share of their income, while those paid based on broad units, unlinked to activity were less affected. Providers paid based on budgets, salaries or capitations continued to receive the “old” payments in place, which seemed to be adequate to cope with the uncertainties of the pandemic. Apparently, “old”-broad and fixed payments served as safety nets, promoting resilience. At the same time, these payment streams could cover (at least some) costs of the new COVID-19-related services because available resources could be reallocated within the broad budgets to provide these services. Otherwise, rates of “old” payments were increased to account for increased costs of care. Yet, the well-known disadvantages of salaries and budgets are that usually they do not incentivize providers to increase productivity and they may incentivize selection of low-risk patients by avoiding complex and high-risk patients, such as COVID-19 patients, and skimp on care.

In countries, where providers were paid based on activity, governments rapidly created a safety net by shifting to payments un-



**Figure 3: Changing the payment mix in England**

England radically changed its payment mechanisms to compensate for the loss of income and pay for COVID-19 related costs.

First, to compensate for loss of income, activity-based and performance-based payments were discontinued, and providers were switched to budgets based on previous year’s expenditures. GPs received a budget based on previous year’s turnover instead of the regular payment based on contact capitation combined with FFS, pay-for performance, and cost reimbursement. In addition, they were reimbursed for setting up or enhancing information technology (IT) capacity and equipment.

In inpatient settings, payments were also shifted to budgets based on previous year’s activity, while activity and performance-based payments were discontinued, e.g. pre-existing performance-related penalties and P4P were put on hold. As waiting lists increased over the course of the year, physician overtime rates were increased to incentivize a catch up with services that had been put on hold. Private inpatient and outpatient providers did not qualify for the compensation based on previous year’s income, but they could apply for the generic government business support scheme.

Second, to pay for COVID-19 related extra costs, new FFS payments or cost-based reimbursement was introduced. For example, in the outpatient setting, some clinical commissioning groups (CCGs) have provided emergency funding per patient to GPs to help cover the extra costs of managing COVID-19. New FFS payments were created for GPs to give COVID-19 and flu vaccines and for enhanced care in care homes. In addition, block contracts were established with community services, including primary care, palliative, LTC, and mental health transport.

For inpatient care, additional funding was made available for cost-based reimbursement of COVID-19 related expenses (e.g., testing). New funds were deployed to support continuity of care for COVID-19 patients discharged from hospitals to long-term care, and new cost-based reimbursement of additional capital and running costs was also provided.

Fig. 3. Changing the payment mix in England.

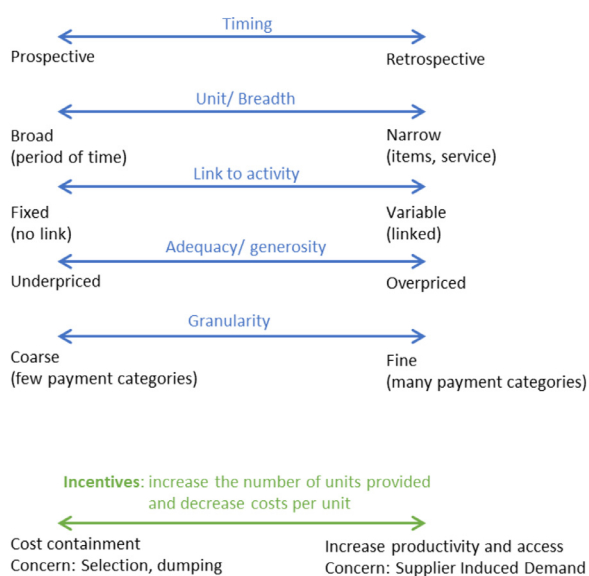


Fig. 4. . Analytical frameworks characterizing payment mechanisms and their incentives Sources: based on [14–16,18,19].

linked to activity such as budgets and salaries [23]. In principle, this allowed providers to receive the target income just through different payment mechanisms. In other cases, countries provided new payments to compensate providers for loss of income such as bonuses or new FFS payments. The main beneficiaries of these payment adjustments were specialists and hospitals’ surgical wards. While these adjustments protected providers from loss of income, they reduced incentives to resume activity and to increase productivity, and they may have led to selection of low-risk patients. Therefore, these temporary adjustments should be discontinued (or at least reconsidered) when the pandemic situation does no longer lead to interruption of regular activity. Yet, with a view to strengthening resilience of payment systems after the pandemic – or in preparation for the next pandemic or other shocks, it might be warranted to introduce safety-net features into the regular payment systems in many countries. This could be achieved by specifying lower limit target budgets, which hospitals or outpatient professionals would always receive, even in case of sudden activity drops (e.g. similar as hospitals in Israel). Another approach would be to combine prospective and broad payments with payment components based on activity [15,24]. Examples of such combinations are widely known, such as budgets or capitations combined with fee for service (FFS), or salaries combined with FFS or pay-for-performance elements.

#### 4.2. Paying for remote and COVID-19 services: new payments, same incentives

While the pandemic reversed the distribution of financial risk between payers and providers, it did not change the incentives of payment mechanisms. The pandemic created high demand for remote services that (partially) substituted face-to-face visits, and for new COVID-19 related services. Most countries chose FFS mainly because they promote restructuring activity and increasing the number of services or patients. While this was a priority during the first months of the pandemic, as it evolved, concerns about high expenditures started to rise. Countries have spent financial reserves or took up debts to pay for the sudden surge in demand for COVID-19 services. However, in the mid- to long-term, FFS payment should probably be complemented with other mechanisms to balance the strong incentive for increasing service provision for Covid-19 patients and to provide incentives for cost containment. Again, examples would be mixing budgets or salaries with FFS for tests or capitations with add-ons for all patients. Some countries opted for creating new DRG and PD codes and tariffs, because they also incentivize treating more patients while reducing the cost per patient. These payments are a potential alternative to pure FFS. Caps on volume or income are another approach that may contain costs for services that are no longer a priority.

Separate payments were provided in some countries to cover COVID-19 related extra expenditures for consumables or the adjustment of infrastructure. Hospitals received new budgets for purchasing new equipment, assembling more beds and ICU units, and hiring more health workers. Similarly, out- and inpatient providers have received in-kind or cash reimbursements to cover consumables such as PPEs, sanitizers and adaptations of clinics to comply with physical distancing requirements. These payments covered costs, providing strong incentives to increase capacity and to use consumables. However, they did not provide incentives to change admission policies or treatment patterns.

#### 4.3. Limitations

This work focused on payment adjustments for compensating income loss and paying for COVID-19 related services. Information on other adjustments was largely ignored although it would complement the picture about the incentives of payment adjustments. For example, in Denmark and Italy, where hospitals were protected from income loss during the pandemic, additional budgets were provided to pay for resuming elective activity that had been put on hold at the height of the pandemic. Yet, these were out of scope of the current work.

We have analyzed only the main payment mechanisms for a given type of service, and additional payments for these services, if present in some countries, were not included. Neither have we extensively collected all payment adjustments for all countries. It is possible that some of them were unpublished or we did not identify them, while others were not significant. In addition, data were collected by a single researcher or a team of a few researchers in each country, and they have not been checked by national officials. This may result in researcher bias, as other researchers might have recorded slightly different changes in payment policy or interpreted the changes in different ways. However, a complete overview of the payment adjustments was not the objective. Instead, our aim was to collect enough information from a variegated type of countries and providers, to draw out interesting (and feasible) alternatives for policymakers responsible for preparing health systems for future shocks. For this purpose, data were sometimes presented in a simplified way.

We do not have detailed information about the design and implementation of each specific payment adjustment, including pay-

ment levels. Therefore, we cannot precisely assess the types and dimensions of the economic incentives created in practice. Countries should evaluate how these adjustments have shaped the economic incentives and affected providers' decision-making, practice, and quality of care.

## 5. Conclusions and policy recommendations

The COVID-19 pandemic is a shock that has created various financial challenges for providers, in addition to the clinical and organization challenges. In countries, where health providers used to be paid based on activity, the sudden drop in hospital admissions and consultations put providers at financial risk. Most countries assumed these risks and compensated providers for their loss of income by introducing financial safety nets in the form of budgets or various forms of compensatory payments. In countries, where provider payment was not related to activity, existing salaries, capitation payments, and budgets protected providers against income loss, but they also reduced incentives to resume activity when lower rates of infections would have allowed to do so. Budgets and salaries also allowed to cover (at least some) costs of new COVID-19-related services but many countries introduced additional FFS payments or increased payment rates. Remote services have been incentivized by FFS payments, but quality and equity in access to this type of care should be assessed closely.

In view of future pandemics and other shocks, policymakers should work to increase resilience of payment systems and mitigate the effects of sudden activity fluctuations by: (1) having mechanisms in place to rapidly adjust payment systems in order to protect providers from income loss, to pay fairly for new services and to cover extra expenditures; (2) being aware of the economic incentives created by these payment adjustments and using these incentives in line with policy objectives, e.g. by introducing FFS payments to increase activity or balancing incentives with blended payment mechanisms; and (3) putting systems in place to assess the effects of these adjustments on providers' admission and treatment policies, both during future crises but also in normal times.

The delicate balance between the various objectives of payment systems has been shifted during the pandemic. Some payment adjustments will likely be temporary while others are likely to remain in place for some time as the new COVID-19-related services will continue to be needed over the coming months. As COVID-19-related services are becoming routine activities of providers, the incentives should increasingly try to balance competing objectives, that is promoting provision of necessary services without leading to overtreatment or overspending of public resources.

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#### Declaration of Competing Interests

The authors declare no competing interests

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## Supplementary materials

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